BALCONE 2018

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9th Baltic Congress of Neurology

Kaunas, Lietuva
2018 m. rugsėjo 6–8 d.

MOKSLINĖ PROGRAMA IR PRANEŠIMŲ SANTRAUKOS

SCIENTIFIC PROGRAM AND ABSTRACTS

Kongreso organizatoriai

LIETUVOS SVEIKATOS MOKSLŲ UNIVERSITETAS

VILNIAUS UNIVERSITETAS · 1579 · UNIVERSITAS VILNENSIS

Lietuvos neurologų asociacija

Pranešimų santraukos pateikiamos pranešėjų pavardžių abėcėlės tvarka

SCIENTIFIC PROGRAM

SEPTEMBER 6 / THURSDAY

	ALFA ROOM	GAMMA ROOM	DELTA ROOM	ZETA ROOM
	Neurosonology practical teaching course (Hands-on)	**Teaching course / Headache**	**Teaching course / ENMG**	**Teaching course / Assessment and treatment of epilepsy / Sleep medicine**
Chairs:	*Dalius Jatužis (LTU)* *Galina Baltgaile (LV)*	*Kristina Ryliškienė (LTU)* *Jean Schoenen (BEL)*	*Miglė Ališauskienė (LTU)* *Michel Magistris (CHE)*	*Milda Endzinienė (LTU)* *Sulev Haldre (EST)*
10^{00}-12^{00}	**Uwe Walter (DEU / UNI-ROSTOCK)** Transcranial brain sonography: applications in neurology	**Jean Shoenen (BEL / ULIEGE)** What is the place of neurostimulation in chronic headaches?	**Kai Rösler (CHE / UNIBE)** Evaluation of myopathies	**Margitta Seeck (CHE / UNIGE)** EEG of complicated epilepsies
	Galina Baltgaile (LVA / RSU) An assessment of the vulnerability of atherosclerotic plaque by different ultrasound techniques	**Aija Freimane (LVA / Latvian Headache Society)** Nocturnal headache	**Aušra Klimašauskienė (LTU / VU)** Sensory and motor nerve conduction studies	**Jörg Wellmer (DEU / KK-BOCHUM)** Contribution of MRI to decision making in epilepsy surgery
	Vaidas Matijošaitis (LTU / LSMU) The role of transcranial ultrasound in diagnostics of patent foramen ovale	**Mark Braschinsky (EST / UT)** Migraine chronification **Kristina Ryliškienė (LTU / VU)** Chronic daily headache	**Michel Magistris (CHE / UNIGE)** Evaluation of nerve conduction blocks	**Torbjörn Tomson (SWE / KI)** Pharmacotherapy of epilepsy in special populations
12^{00}-13^{00}	**Lunch break**			
	Neurosonology practical teaching course (Hands-on)	**Teaching course / Assessment and treatment of stroke**	**Teaching course / ENMG**	**Teaching course / Sleep medicine / Assessment and treatment of epilepsy**
Chairs:	*Dalius Jatužis (LTU)* *Galina Baltgaile (LV)*	*Janika Kõrv (EST)* *Daiva Rastenytė (LTU)*	*Miglė Ališauskienė (LTU)* *Michel Magistris (CHE)*	*Milda Endzinienė (LTU)* *Sulev Haldre (EST)*
13^{00}-15^{00}	**Uwe Walter (DEU / UNI-ROSTOCK)** Neuromuscular ultrasound of neck and arm in neurological practice	**Daiva Rastenytė (LTU / LSMU)** Standardized neurological evaluation in acute stroke (NIHSS) **Givi Lingvenis (LTU / VU)** Early CT score (ASPECTS)	**Miglė Ališauskienė (LTU / LSMU)** Needle EMG: normal and abnormal findings	**Evelina Pajėdienė (LTU / LSMU)** Practical aspects of performing and analyzing sleep studies
	Jurgita Valaikienė (LTU / VU) Ocular color-coded sonography in neurological practice	**Aleksandras Vilionskis (LTU / VU)** Rational use of neuroimaging for selection of reperfusion therapies	**André Truffert (CHE / UNIGE)** Evaluation of carpal tunnel syndrome	
		Janika Kõrv (EST / UT) Strategies of antithrombotic treatment in complicated clinical situations	**Jovita Švilpauskė-Laurynienė (LTU / LSMU)** Evaluation of small fiber neuropathies	**Katrin Põld (EST / ESMA)** Clinical case from sleep studies. Discussion with the audience
	Dalius Jatužis (LTU / VU) Assessment of superficial temporal artery	**Robert Mikulik (CZE / FNUSA-ICRC)** Improvement of stroke logistics: how to reduce onset-to-door and door-to-needle time?	Discussion	
15^{00}-15^{30}	**Coffee break**			

	ALFA ROOM	GAMMA ROOM	DELTA ROOM	ZETA ROOM
15^{30}-16^{30}	**Satellite symposium: Boehringer Ingelheim** **Fausto J. Pinto (PRT / ULISBOA)** **Dalius Jatužis (LTU / VU)** Atrial fibrillation and stroke prevention	**Satellite symposium: Berlin Chemie Menarini Baltic** **Rūta Kaladytė Lokominienė (LTU / VU)** Multimodal analgesia **Kristina Ryliškienė (LTU / VU)** Personalized treatment of migraine attack		
16^{30}-17^{00}	**Invited lecture (ALFA ROOM)** **Amos Korczyn (ISR / EMDA)** Chairman of the Scientific Medical Board of the Israeli Alzheimer's disease association (EMDA) Why have we failed to find a cure for AD			
17^{00}-17^{30}	**Invited lecture (ALFA ROOM)** **Philip Scheltens (NLD / VUmc)** Alzheimer center, Vrije Universiteit Medical Center, Amsterdam, the Netherlands Current state of the art in diagnosis of Alzheimer's disease			
17^{30}	**Opening ceremony (ALFA ROOM)**			

SEPTEMBER 7 / FRIDAY

	ALFA ROOM		GAMMA ROOM	
	Stroke and cerebrovascular disorders		**Epilepsy**	
Chairs:	*Daiva Rastenytė (LTU)* *Eivind Berge (NOR)*		*Giedrė Gelžinienė (LTU)* *Rūta Mameniškienė (LTU)*	
8^{00}-10^{00}	8^{00}–8^{20}	**Eivind Berge (NOR / UiO)** Anticoagulation in stroke secondary prevention	8^{00}-8^{20}	**Torbjörn Tomson (SWE / KI)** Management of epilepsy in pregnancy
	8^{20}-8^{40}	**Robert Mikulik (CZE / FNUSA-ICRC)** Stroke unit and quality of care in acute stroke	8^{20}-8^{40}	**Margitta Seeck (CHE / UNIGE)** Future of epilepsy surgery
	8^{40}-9^{00}	**Inga Slautaitė (LTU / VU)** Update on intracerebral haemorrhage	8^{40}-9^{00}	**Sulev Haldre (EST / TU)** Medical treatment of epilepsy: state of art
	9^{00}-9^{20}	**Antanas Vaitkus (LTU / LSMU)** Stroke of nondominant hemisphere	9^{00}-9^{20}	**Giedrė Gelžinienė (LTU / LSMU)** Outcome of childhood- onset epilepsy: transition to adulthood
	9^{20}-9^{40}	**Janika Kõrv (EST / UT)** Off-label thrombolysis for ischemic stroke: is it safe?	9^{20}-9^{40}	**Normunds Suna (LVA / RSU)** Alcohol-related seizures
	9^{40}-10^{00}	**Evija Miglane (LVA / RSU)** Update on lacunar stroke	9^{40}-10^{00}	**Rūta Mameniškienė (LTU / VU)** Epilepsy in elderly
10^{00}-10^{30}	**Coffee break**			

	ALFA ROOM		GAMMA ROOM		DELTA ROOM	
	Interventional neuroradiology		**Sleep medicine**		**Nurse sessions**	
Chairs:	*Adam Kobayashi (POL)* *Dalius Jatužis (LTU)*		*Claudio Bassetti (CHE)* *Evelina Pajėdienė (LTU)*		*Marianne Elisabeth Klinke (ISL)*	
10^{30}-12^{30}	10^{30}-10^{50}	**Adam Kobayashi (POL / Interventional Stroke Treatment Centre)** Mechanical thrombectomy in elderly stroke patients	10^{30}-11^{00}	**Claudio Bassetti (CH / BENESCO)** Narcolepsy and other central disorders of hypersomnolence	10^{30}-10^{45}	**Eglė Lendraitienė, Toma Petkutė (LTU / LSMU)** Physiotherapy for the prevention and management of secondary complications in patients with neurological conditions (*presentation in English*)

	ALFA ROOM		GAMMA ROOM		DELTA ROOM	
	10^{50}-11^{10}	**Claus Ziegler Simonsen (DNK / AU)** General or local anesthesia in intra arterial therapy (GOLIATH)	11^{00}-11^{30}	**Birgit Högl (AUT / I-MED)** Idiopathic RBD as a symptom of neurodegenerative disorders. Updated diagnostic and treatment approach	10^{45}-11^{00}	**Triinu Kurvits, Anneli Jaska (EST / TU)** Stroke care: a team approach (*presentation in English*)
					11^{00}-11^{15}	**Ester Vatsk (EST / TU)** Nursing in amyolotrophic lateral sclerosis (*presentation in Russian*)
	11^{10}-11^{30}	**Aleksandras Vilionskis / Dalius Jatužis (LTU / VU)** Mechanical thrombectomy beyond 6 hours	11^{30}-11^{50}	**Katrin Põld (EST / TU)** Differential diagnosis of sleep-related movements in adults	11^{15}-11^{30}	**Inga Zopp (EST / TU)** Nursing in multiple sclerosis (*presentation in Russian*)
					11^{30}-11^{45}	**Regina Palatu, Valentina Pjassetskaja (EST / TU)** The role of nurses in Parkinson's disease (*presentation in Russian*)
	11^{30}-11^{50}	**Rytis Kaupas (LTU / LSMU)** Lithuanian experience of mechanical thrombectomy for stroke patients	11^{50}-12^{10}	**Evelina Pajėdienė (LTU / LSMU)** Sleep and stroke: not only sleep apnoea does matter	11^{45}-12^{00}	**Daiva Borkienė (LTU / LSMU)** Nursing patients with epilepsy (*presentation in English*)
	11^{50}-12^{10}	**Karlis Kupcs (LVA / RSU)** Mechanical thrombectomy in the posterior circulation area	12^{10}-12^{30}	**Raminta Masaitienė, Dalia Matačiūnienė (LTU / VU)** Sleepiness and driving	12^{00}-12^{15}	**Marianne Elisabeth Klinke (ISL / HI)** Nurses role in the management of patients with spatial neglect: Clinical manifestations, screening and interventions (*presentation in English*)
	12^{10}-12^{30}	**Riina Vibo (EST / UT)** Estonian experience of mechanical thrombectomy for stroke patients			12^{15}-12^{30}	**Marianne Elisabeth Klinke (ISL / HI)** Nursing issues on Myasthenia gravis: common symptoms, surveillance and alliviating actions (*presentation in English*)
12^{30}-13^{30}	**Lunch break / Poster session**					
	Headache / Pain		**Movement disorders**		**Satellite symposiums**	
Chairs:	*Diana Obelienienė (LTU)* *Rigmor Jensen (DNK)*		*Pille Taba (EST)* *Kallol Ray Chaudhuri (UK)*			
13^{30}-15^{30}	13^{30}-13^{50}	**Jean Shoenen (BEL / ULIEGE)** Pathophysiology-based treatment of Migraines	13^{30}-14^{00}	**Zbignew Wszolek (USA / MAYO CLINIC)** Alpha-synucleinopathies and tauopathies, clinical, genetic and pathological aspects	13^{30}-14^{30}	**Satellite symposium: Bayer** **Birutė Petrauskienė (LTU / VU)** Rivaroxaban in clinical practice
	13^{50}-14^{10}	**Rigmor Jensen (DNK / KU)** Typical and atypical Cluster headache	14^{00}-14^{30}	**Kallol Ray Chaudhuri (UK / KCL)** Nonmotor complications of levodopa: phenomenology, risk factors, and imaging features		
	14^{10}-14^{30}	**Aija Freimane (LVA / Latvian Headache Society)** Headache in the elderly				
	14^{30}-14^{50}	**Mark Brashinsky (EST / UT)** Trauma and headache	14^{30}-14^{45}	**Toomas Toomsoo (EST / TU)** Neuroimaging in pre-motor Parkinson's disease		

	ALFA ROOM		GAMMA ROOM		DELTA ROOM	
	14^{50}-15^{10}	**Diana Obelienienė (LTU / LSMU)** Overview of international classification of headache disorders (ICHD III)	14^{45}-15^{00}	**Evelina Pajėdienė (LTU / LSMU)** Sleep disturbances in movement disorders	14^{30}-15^{30}	**Satellite symposium: Roche** **Renata Balnytė, Dalia Mickevičienė (LTU / LSMU)** **Rasa Kizlaitienė (LTU / VU)** Transforming the multiple sclerosis treatment paradigm
	15^{10}-15^{30}	**Arūnas Ščiupokas (LTU / LSMU)** Pain medicine: chalenges for neurologist	15^{00}-15^{15}	**Ligita Smeltere (LVA / LU)** Essential tremor in Latvia		
			15^{15}-15^{30}	**Rūta Kaladytė Lokominienė (LTU / VU)** Rhythmic auditory-motor entrainment in movement disorders		
15^{30}-16^{00}	**Coffee break**					

	ALFA ROOM		GAMMA ROOM	
	Alzheimer's disease and other dementias		**Short presentations**	
Chairs:	*Gintaras Kaubrys (LTU)* *Pille Taba (EST)*		*Vaidas Matijošaitis (LTU)* *Renata Balnytė (LTU)*	
16^{00}-18^{00}	16^{00}-16^{20}	**Vilmantė Borutaitė (LTU / LSMU)** Protein aggregation and neuronal loss in experimental models of neurodegenerative disorders	16^{00}-16^{15}	**Donatas Zailskas (LTU / VU)** Unresolved questions of essential tremor: an etiological, pathogenetic and phenotypical approach
	16^{20}-16^{40}	**Gintaras Kaubrys (LTU / VU)** Apolipoprotein E: Alzheimer's disease genetic risk factor, course modifier, determiner of distinct AD types, or target for the future treatment	16^{15}-16^{30}	**Raminta Macaitytė (LTU / LSMU)** Challenges of diagnosing sleep disorders: case report
			16^{30}-16^{45}	**Sandra Ütt (EST / West Tallin Central Hospital)** Case presentation: myopathies, rational diagnostic pathway
	16^{40}-17^{00}	**Pille Taba (EST / TU)** Dementias with parkinsonism	16^{45}-17^{00}	**George Chakhava (GEO / GAMS)** Challenges of autoimmune encephalitis
	17^{00}-17^{20}	**Greta Pšemeneckienė (LTU / LSMU)** Challenges and advanced strategies in treatment of Alzheimer's disease	17^{00}-17^{15}	**Agnė Sakalauskaitė (LTU / LSMU)** Pyramidal function and disability in patients with multiple sclerosis
	17^{20}-17^{40}	**Zanda Priede, Madara Kalniņa (LVA / RSU)** Changing perspectives on frontotemporal dementia	17^{15}-17^{30}	**Ravita Gailāne (LVA / RSU)** Analysis of hyperacute ishemic stroke management at Riga East University hospital
	17^{40}-18^{00}	**Eglė Audronytė (LTU / VU)** Olfactory perception and memory as a biomarker for the early diagnosis of Alzheimers's disease	17^{30}-17^{45}	**Tatjana Liakina (LTU / VU)** Demonstration of seizure elements – a possible complimentary seizure semiology diagnostic tool?
			17^{45}-18^{00}	**Sintija Locane (LVA / RSU)** Women with progressive myoclonus – ataxia syndrome and gait instability

SEPTEMBER 8 / SATURDAY

	ALFA ROOM		GAMMA ROOM	
	Multiple sclerosis and other demyelinating diseases		**Peripheral neuropathies / Miscellaneous**	
Chairs:	*Dalia Mickevičienė (LTU)* *Katrin Gross-Paju (EST)*		*Kęstutis Petrikonis (LTU)* *Michel Magistris (CHE)*	
8^{00}-10^{00}	8^{00}-8^{20}	**Eva Hubala Havrdova (CZE / CUNI)** Aggressive multiple sclerosis in the context of reaching NEDA as treatment goal	8^{00}-8^{20}	**Kęstutis Petrikonis (LTU / LSMU)** Metabolic and toxic polyneuropathy
	8^{20}-8^{40}	**Luca Prosperini (ITA / UNIROMA)** Pharmacological treatments of highly-active RRMS: the role of monoclonal antibodies	8^{20}-8^{40}	**Pascal Proot (BEL / UGENT)** EMG approach to polyneuropathy
	8^{40}-9^{00}	**Katrin Gross-Paju (ESN / TU)** Does benign multiple sclerosis exist?	8^{40}-9^{00}	**Ervina Bilić (HRV / UNIZG)** Chronic inflammatory demyelinating polyneuropathy
	9^{00}-9^{20}	**Dalia Mickevičienė (LTU / LSMU)** Comorbidity in MS: implications for disease management	9^{00}-9^{20}	**Elīna Millere, Signe Šetlere, Viktorija Kēniņa (LVA / RSU)** Coexistence of Charcot–Marie–Tooth disease and chronic inflammatory demyelinating polyradiculoneuropathy – Latvian experience
	9^{20}-9^{40}	**Rasa Kizlaitienė, Nataša Giedraitienė (LTU / VU)** Comprehensive and uninterruptible patient monitoring using Multiple sclerosis registry in Lithuania	9^{20}-9^{40}	**Michel Magistris (CHE / UNIGE)** Contraction response to muscle percussion in neurology
	9^{40}-10^{00}	**Daina Pastare (LVA / RSU)** Anti-MOG antibodies in adult patients with demyelinating disorders of central nervous system	9^{40}-10^{00}	Discussion
10^{00}-10^{30}	**Coffee break**			
	Young stroke		**Experimental neurology and technological innovations in neurology**	
Chairs:	*Jukka Putaala (FIN)* *Kristina Ryliškienė (LTU)*		*Vilmantė Borutaitė (LTU)* *Kęstutis Petrikonis (LTU)*	
10^{30}-12^{30}	10^{30}-10^{50}	**Jukka Putaala (FIN / HELSINKI)** Cryptogenic ischemic stroke among young people	10^{30}-10^{50}	**Dietger Niederwieser (DEU / UNI-LEIPZIG)** Stem cell therapy in neurology
	10^{50}-11^{10}	**Annette Fromm (NOR / UIB)** Generalized arterial disease in young and middle-aged ischemic stroke. The Norwegian Stroke in the Young Study (NOR-SYS)	10^{50}-11^{10}	**Vilmantė Borutaitė (LTU / LSMU)** New molecular targets for neuroprotection in ischemic stroke
	11^{10}-11^{30}	**Grzegorz Kozera (POL / UMK)** Carotid dissections	11^{10}-11^{30}	**Sarmite Dzelzite (LVA / RSU)** Clinical usefulness of arterial spin labeling (ASL) magnetic resonance imaging in neurology
	11^{30}-11^{50}	**Kristina Ryliškienė (LTU / VU)** Update on thrombophilia in young stroke	11^{30}-11^{50}	**Regimantas Jurkus (UK / UN)** Combining interdisciplinary in vivo and in silico approaches to investigate fear memory neurocircuitry
	11^{50}-12^{10}	**Siim Schneider (EST / TU)** Outcome of young ischemic stroke	11^{50}-12^{10}	**Ülle Krikmann (EST / TU)** Infusion pump therapies for Parkinson's disease
	12^{10}-12^{30}	**Krista Svilāne, Ainārs Rudzītis, Kristaps Jurjāns, Artūrs Balodis (LVA / RSU)** Long-term outcome after patent foramen ovale occlusion in young patients with stroke. Nationwide register data	12^{10}-12^{30}	**John Vissing (DNK / KU)** Next generation sequencing as a diagnostic tool for muscle diseases
12^{30}-13^{30}	**Lunch break / Poster session**			

	ALFA ROOM		GAMMA ROOM	
	Neurosurgery in neurological diseases		**Oral communications**	
Chairs:	*Arimantas Tamašauskas (LTU)* *Andrius Radžiūnas (LTU)*		*Vaidas Matijošaitis (LTU)* *Renata Balnytė (LTU)*	
13^{30}-15^{30}	13^{30}-14^{00}	**Volodymyr Smolanka (UKR / UZHNU)** Trigeminal neuralgia: neurosurgical approach	13^{30}-13^{50}	**Sigitas Čižinauskas (LTU / AISTI)** Dog with Guillain-Barre syndrome and cat with Tourette syndrome, does it exist?
	14^{00}-14^{30}	**Andrius Radžiūnas (LTU / LSMU)** Brain MRI voxel based morphometry – tool for Parkinson's disease research and use in clinical settings	13^{50}-14^{00}	**Jānis Mednieks (LVA / RSU)** Status epilepticus treatment – CUH experience from Latvia. Is there a necessity for improvements?
	14^{30}-14^{50}	**Saulius Ročka (LTU / VU)** Experience and challenges of epilepsy surgery	14^{00}-14^{10}	**Laura Šinkūnaitė (LTU / LSMU)** Changes of cutaneous and cortical silent responses in a random sample of Lithuania patients with Parkinson disease
	14^{50}-15^{10}	**Antanas Gvazdaitis (LTU / KUL)** Cardiac manifestation of aneurysmal subarachnoid haemorrhage	14^{10}-14^{20}	**Marit Laos (EST / TU)** Analysis of oral anticoagulant treatment in patients with non-valvular atrial fibrillation: a population-based study in Estonia 2010–2016
	15^{10}-15^{30}	**Karolis Bareikis, Paulius Čikotas (LTU / LSMU)** Ethical controversies and decision making in surgery of cerebral ischemia	14^{20}-14^{30}	**Liis Kadastik-Eerme (EST / TU)** Baclofen pump treatment for spasticity
			14^{30}-14^{40}	**Kristaps Jurjāns (LVA / RSU)** Cardioembolic stroke in Latvia: frequency, prevention and long-term outcome
			14^{40}-14^{50}	**Andrejs Kostiks (LVA / RSU)** Cognitive deficit and its causes for patients in early midlife in Latvia
			14^{50}-15^{00}	**Daiva Valadkevičienė, Dalius Jatužis, Rasa Kizlaitienė (LTU / VU)** Work capability level of patients with multiple sclerosis in Lithuania: it's dynamics and relationship with employment status and lethal outcomes
			15^{00}-15^{10}	**Mari Muldmaa (EST / TU)** Impulsive disorders in Parkinson's disease
			15^{10}-15^{20}	**Lukas Šalaševičius (LTU / VU)** Early outcomes of mechanical thrombectomy in acute stroke patients using different types of anesthesia
15^{30}	**Closing and farewell**			

ORAL PAPERS

OP01

NEEDLE EMG: NORMAL AND ABNORMAL FINDINGS

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Needle electromyography (EMG) is an important stage of patient investigation after electroneurography (ENG). Clinical symptoms and ENG findings guide the optimal selection of specific muscle groups and the course of investigation. No rigid protocol suffices for a routine EMG.

EMG has few steps of investigation: analysis of activity observed at rest (spontaneous activity) and EMG during voluntary contraction of the muscle. Spontaneous activity can be classified as normal and abnormal and, according to a site of generation – generated in the muscle or in the nerve or in anterior horn cell. We overview neurophysiology and significance of insertional activity, positive giant potentials, endplate noise and spikes, fibrillation potentials, positive sharp waves, myotonic discharges, complex repetitive discharges, fasciculation potentials, myokymic and neuromyotonic discharges. Also we overview parameters of motor unit potentials and changes of the activity patterns at maximal voluntary contraction of a muscle at different clinical situations (in neurogenic pathology, myopathy, central disorders and others).

Needle EMG is able to detect, quantify, and characterize many neurogenic and myogenic disorders and to assess the activity of a pathological process.

OP02

OLFACTORY PERCEPTION AND MEMORY AS A BIOMARKER FOR THE EARLY DIAGNOSIS OF ALZHEIMERS'S DISEASE

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There is a growing demand for affordable and easily accessible biomarkers for Alzheimer's disease (AD), since all of the disease modifying therapies that are being investigated at the moment will only be effective in the early stages of the disease. Olfactory testing is proposed as one of the candidates for improving diagnostic accuracy and early diagnosis of AD.

Prevalence of olfactory dysfunction (OD) is very high in patients with AD, reaching 85–96%, according to various studies. OD is one of the earliest detectable signs as well, it precedes cognitive decline by several years.

Cognitively normal elderly adults with OD have a higher risk of developing mild cognitive impairment (MCI, prodromal AD). Those with MCI experiencing OD have a higher risk of conversion to dementia. OD was proven to be a reliable predictor of future episodic memory decline which is a hallmark of AD.

OD is also associated with changes that are characteristic of early AD. It is associated with hippocampal atrophy and higher amyloid- load on positron emission tomography, which are recognized biomarkers of AD.

OD is also helpful in differentiating cognitive decline caused by non-degenerative conditions, such as normal pressure hydrocephalus, depression and vascular dementia.

Research on OD in AD is very important. Not only could it be helpful in early diagnosis of the disease. Identification of the exact mechanism by which olfactory dysfunction is related to AD could provide some insight into AD pathogenesis itself.

Keywords: Alzheimer's disease, early diagnosis, olfaction, olfactory dysfunction.

OP03

AN ASSESSMENT OF THE VULNERABILITY OF ATHEROSCLEROTIC PLAQUE BY DIFFERENT ULTRASOUND TECHNIQUES

Presenting author:
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Carotid plaque echolusency detected by Color Coded Doppler ultrasonography (CCDS) and intraplaque neovascularization (IPNV) by contrast enhanced ultrasound (CEUS) have been recognized as a potential markers of plaque vulnerability. Application of Superb Microvascularisation Imaging (SMI) created by Toshiba to overcome the limitations of conventional Doppler technique for the visualisation of microvessels with low velocity flow has been effectively used recent years.

The most important contributors to unstable atherosclerotic lesions such as plaque angiogenesis and intraplaque haemorrhage, as well as plaques echolusency, spotty microcalcifications and higher internal carotid artery strain are analysed in the lecture according to different modalities of imaging. The effectiveness and limitations of different ultrasound techniques as CCDS, elastography, CEUS and SMI for the evaluation of plaques surface, echogenicity, IPNV and arterial wall stiffness are compared to Positron Emission Tomography, Computed Tomography and Magnetic Resonance Imaging.

Although IPNV contribute in the progression and rupture of atherosclerotic lesions some conflicting data exist in the literature for the temporal association of intraplaque inflammation and neovascularization. The limited number of patients in cited reports and in our study and the multifaceted pathophysiology of the atherosclerotic plaque may explain the absence of statistically significantly correlation between plaque echogenicity, inflammation and IPNV.

OP04

NARCOLEPSY AND OTHER CENTRAL DISORDERS OF HYPERSOMNOLENCE

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Central disorders of hypersomnolence (CDH) affect about 1–2% of the general population. Narcolepsy with cataplexy (NT1) is the only CDH with well defined biomarkers (HLA positivity, sleep onset REM periods (SOREMPs), hypocretin deficiency in the cerebrospinal fluid), which allow a precise diagnosis. In the absence of validated biomarkers, CDH other than NT1 (the so-called narcolepsy borderland) such as narcolepsy without cataplexy, idiopathic hypersomnia, insufficient sleep syndrome, hypersomnia in long sleepers, and non-organic hypersomnia remain difficult to be diagnosed. An increasing amount of data, including the recent discovery by our team of specific autoreactive CD4+ T cells in this disease, suggests that NT1 is due to an autoimmune process leading to the loss of hypocretin neurons in the hypothalamus. The etiology of the other CDH remains, conversely, unclear. In the last few years, a great progress was made and new drugs came (or soon will come soon) on the market. The best treatment of NBL remains instead empirical in most cases. Current research suggests new and promising approaches to better understand, diagnose and treat (also causally) CDH.

OP05

ANTICOAGULATION IN STROKE SECONDARY PREVENTION

Presenting author:
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Introduction. Patients with ischaemic stroke or transient ischemic attack (TIA) and non-valvular atrial fibrillation (AF) have a high risk of recurrent stroke and other vascular events. The aim of the ESO guideline is to provide recommendations on antithrombotic medication for secondary prevention of stroke and other vascular outcomes in these patients.

Methods. The working group identified questions and outcomes, graded evidence, and developed recommendations according to the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach and the ESO standard operating procedure for guidelines.

Results. In patients with AF and previous stroke or TIA, oral anticoagulants (OACs) reduce the risk of recurrence over antiplatelets or no antithrombotic treatment. Non-vitamin K antagonist oral anticoagulants (NOACs) are preferred over vitamin K antagonists because they have a lower risk of major bleeding and death. Recommendations are weak regarding timing of treatment, (re-)starting OACs in patients with previous intracerebral haemorrhage, and treatment in specific patient subgroups of those of older age, with cognitive impairment, renal failure or small vessel disease, because of a lack of strong evidence.

Conclusion. For patients with AF and ischemic stroke or TIA, NOACs are the preferred treatment for secondary prevention of recurrent stroke or thromboembolism. Further research is required to determine the best timing for initiating OACs after an acute ischemic stroke, whether or not OACs should be (re)started in patients with a history of intracerebral haemorrhage, and the best secondary preventive treatment in specific subgroups.

OP06

CHRONIC INFLAMMATORY DEMYELINATING POLYNEUROPATHY

Presenting author:
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When we talk about chronic autoimmune neuropathies, we may say that the most important task in clinical work is to distinguish the dominant motor forms of chronic neuropathies, because this finding has a significant influence on the choice of therapeutic approach. An additional challenge is the fact that only 51% of patients with chronic inflammatory demyelinating neuropathy (CIDP) have so-called "a classic form of disease".

CIDP is acquired, autoimmune, most commonly demyelinating and most commonly sensorymotor, but sometimes insufficiently recognized and treated disease. The reasons for possible underestimation of this most frequent treatable neuropathy may lie in the fact that CIDP may overlap with other forms and types of polyneuropathy. Even more, CIDP is nine times more common in diabetics. CIDP can also be found as a secondary neuropathy in patients with inherited demyelinating polyneuropathies. Even though CIDP is dominantly large fiber neuropathy, small sensory or/and autonomic fibers also can be affected.

Fortunatelly, a large number of CIDP patients can be successfully treated with immunomodulatory and immunosuppressive therapeutic approach. This is a neuromuscular disease in which we can witness a rapid recovery of severe motor deficits and monitor the overall recovery of patients to our mutual satisfaction. However, motor deficiency is not the only nor most important clinical manifestation of this disease. Even though we are more aware of the fact that significant autonomic dysfunction occurs in acute neuroimunopathy, it can also occur in CIDP, which may be an important determinant of the patient's prognosis and the success of the treatment.

OP07

NURSING PATIENTS WITH EPILEPSY

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Epilepsy is a chronical polietiological disorder of neurological nature characterized by recurring epilepsy seizures. An epileptic seizure is called a paroxysmal stereotypic disorder of conscious, behavior, emotions, motor function, sensory or perception caused by a sudden and very strong cerebral cortical neuronal discharge.

Epilepsy is a common disease that can affect anyone, regardless of age, gender, race, nationality, age, social background and education.

The role of a nurse plays an important role in diagnosing a disease: observing the seizures, describing and evaluating them, assessing the severity of an attack, explaining the tests, assessing behavior, emotions and mental health. Collaboration between nurses and patients with epilepsy helps to achieve the best results of treatment: the correct dosage of medicine is ensured (dosage form and time). Patients and their relatives are taught about the nature of the disease, the registration of seizures, the regularity of treatment, the side effects of drugs and the peculiarities of a safe lifestyle. The nurse also helps people to understand the disease better, diagnose and treat it, to solve everyday problems and to reduce the psychosocial consequences of the disease. Patients are encouraged to take an interest in the disease, actively ask question and make a conscious effort for their treatment.

OP08

PROTEIN AGGREGATION AND NEURONAL LOSS IN EXPERIMENTAL MODELS OF NEURODEGENERATIVE DISORDERS

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Neurodegeneration due to accumulation of extracellular amyloid plaques and neurofibrilarly tangles are considered as characteristic morphological features of Alzheimer's disease (AD). Peptides of beta amyloid (A) are the main components of extracellular plaques and they may exist in various aggregation forms which differ in their effects on brain cells in vivo and in vitro. The role of A aggregates in pathophysiology of AD is still not precisely understood. Recently we have shown that small A 1-42 oligomers at submicromolar concentrations induced neuronal necrosis whereas large A 1-42 oligomers, fibrils or monomers did not cause neuronal death even at high micromolar concentrations. In neurons, small A 1-42 oligomers induced rapid NMDA/AMPA-receptor-independent plasma membrane depolarization, mitochondrial superoxide generation, mitochondrial depolarization and NMDA-receptor-dependent glutamate release into extracellular medium leading to neuronal death.

Microtubule-associated protein tau is normally located in neuronal axons. In AD affected brains, aggregates of abnormally phosphorylated tau are found in intraneuronal tangles. Accumulation of total tau and phosphorylated tau in cerebrospinal fluids of AD patients is also observed and is considered as a marker of neurodegeneration. In recent years there is accumulating evidence that tau can be actively secreted from neurons though the causes and mechanism of secretion as well as the effects of extracellular tau on neuronal viability are not clear. We found that extracellular isoform tau2N4R did not induce neuronal death during 1-7 days of incubation of primary mixed neuronal-glial cells with this protein. However, number of neurons in cell cultures was found to be gradually reduced after 1-2 days incubation with tau2N4R. In contrast, numbers of microglial cells in cultures significantly increased after 2 days of treatment with tau2N4R independently of aggragation state of this protein. Exposure to tau2N4R also enhanced phagocytic activity of microglia. Tau2N4R-affected neurons exposed phosphatidyl-serine on the outer surface of their membranes without other features of cell death. Neurotoxicity of tau2N4R was suppressed by selective elimination of microglial cells or in the presence of inhibitors of neutral sphingomyelinase, protein kinase C, MERTK, and caspase-1. These data suggest that extracellular tau2N4R induces primary phagocytosis of stressed but viable neurons mediated by activated microglia.

OP09

MIGRAINE CHRONIFICATION

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Headache occurring on 15 or more days per month for more than 3 months, which has the features of migraine headache on at least 8 days per month. Annually, ~3% of people with episodic migraine progress to ChrM. ~26% of patients with ChrM remit within 2 years of the onset of ChrM. Risk factors for migraine chronification include overuse of acute migraine medication, ineffective acute treatment, neuropsychiatric comorbidity, possibly also obesity, low educational status and stressful life events. The pathophysiology of migraine chronification is related to a lower pain threshold for migraine attacks. Refratcoriness in migraine can be multifactorial, understanding it requires an acknowledgement of pharmacologic principles, environmental and behavioral influences.

OP10

POSTTRAUMATIC HEADACHE

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Posttraumatic headache (PTH) is a secondary headache defined as headache attributed to trauma or injury to the head and/or neck and can be devided into acute and persistant. The relation between trauma and headache developement is established to be within seven days after the injury. There is no any distinguished phenotype of PTH. It may also be an exacerbation of an underlying primary headache disorder and ~80% of PTH can be classified under primary HA disorders. There is a higher PTH prevalence after mild traumatic brain injury (TBI) compared to moderate to severe TBI. There are several ohter headaches, that can be related to trauma, like headache attributed to low CSF pressure, headache attributed to autonomic dysreflexia, headache or facial or neck pain attributed to cervical carotid or vertebral artery dissection, painful post-traumatic trigeminal neuropathy, secondary glossopharyngeal neuropathy caused by neck trauma, persistent idiopathic facial pain.

OP11

CHALLENGES OF AUTOIMMUNE ENCEPHALITIS

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Several encephalitis are associated with antibodies against neural proteins. Different are presentation and course of the disease. Paraneoplastic syndromes are combinations of symptoms and signs resulting from damage to organs and tissues distant from the site of a neoplasm and its metastases. Despite initial optimism the interest to these syndromes diminished due to poor response to therapy, especially those with paraneoplastic cerebellar degeneration or limbic encephalitis. At the same time antibodies against cell surface antigens (NMDA and LG1 antibodies) are related with better prognosis and response to therapy and less likely to be associated with cancer. Several case reports including clinical phenotypes, differential diagnose and treatment options will be presented.

Conclusions. An increasing amount of immunocompromised patients with potentially atypical presentation of infectious encephalitis.

More possibly "exotic" infections due to intensive travel activities in western countries.

Testing of antibodies' panel is recommended. It is important to know caveats and link clinical phenotipes to antybody results.

The field of autoimmune neurology has broadened beyond neurology and psychiatry, intensive care physicians and pediatricians should be alert to these spectrum illness.

Differentiation of infectious causes from Antibody-mediated and other etiologies including a differentiated treatment.

Prospective population-based studies to evaluate the impact of different immunotherapy in AIE and to standardize the different diagnostic tests are needed in order to improve the management of these complex disorders.

OP12

DOG WITH GUILLAIN-BARRE SYNDROME AND CAT WITH TOURETTE SYNDROME, DOES IT EXIST?

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Brief introduction. Unlike laboratory animals, companion animals share the same environment and lifestyle as humans and are exposed to similar pollutants and pathogens. Pets develop spontaneous diseases that affect humans also. Pet population receives diagnoses and treatment similarly to humans as dedicated owners actively seek out novel therapies. An ethical advantage over the experimental model is that pet animal studies treat a spontaneous condition.

Materials and methods. Translation of therapeutic interventions from laboratory to clinic has been always challenging. Veterinary clinical trials could take place between preclinical research and human clinical trials and help to bridge the translational gap. Ideally, the spontaneous canine model will help to develop the therapeutic strategies proven successful in preclinical mouse models before advancing to human clinical trials, decreasing the failure rate in human clinical trials.

Results. Key challenges include lack of familiarity with the pet model among nonveterinary scientists. How and when in the translational process the canine clinical model would be most valuable remain to be answered? Another limitation of canine model is the availability of an adequate number of dogs for clinical trials. Collaboration of referral veterinary institutions could make canine model work well in the future.

Conclusions and key words. Since many diseases of the dog have a human counterpart, dog can be considered a man's best friend also in sickness and in health. Collaboration among research scientists, clinicians and veterinarians is essential for building studies that systematically progress from preclinical to canine and later to human trials.

OP13

HEADACHE IN THE ELDERLY

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Headache is a common complaint in the elderly, although the prevalence of headache disorders decreases with increasing age. The etiology of headache in older patients shifts from benign conditions to more serious causes. The prevalence of primary headache disorders such as migraine, cluster and tension- type headache (TTH) decreases with age, while secondary headache disorders such as giant cell arteritis and intracranial mass lesions become more prevalent. The primary headache type hypnic headache is unique to the population of patients older than 60 years.

Aging also brings special considerations in the management of headaches. Primary headache disorders such as migraine change in phenotype with aging. Auras may begin to occur as an isolated phenomenon as in late-life migraine accompaniments. A more extensive workup, including metabolic as well as imaging studies, is required to exclude more serious etiologies of headache. There is an increase in comorbid medical conditions hence treatment of older individual must take into account the specific diagnosis as well the specific characteristics of the older patient. These may include reduced medication tolerance, contraindications to medications due to comorbid conditions, and aggravation of headaches by the medication itself. Finally, medications with chronic and regular use cause medication overuse headache disorders. Downward dose adjustments and simplifying medication regimens are often appropriate, as is using nonpharmacologic therapies whenever possible.

OP14

NOCTURNAL HEADACHE

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It is clear that some headache disorders are profoundly influenced by sleep and some seem to occur exclusively in relation to sleep.

A list of primary benign headache disorders are related to sleep. Migraine attacks are said to be more likely to occur between 4 am and 9 am, which might suggest a timing mechanism that relates to sleep or circadian rhythms, or both. Cluster headache (CH) attacks show a striking relationship to sleep – attacks arise mainly, although not exclusively, during sleep and often occur at similar times each day and night. Several sleep parameters are affected in CH patients. A complex connection with REM sleep, perhaps relating to hypothalamic dysregulation, is likely. Hypnic headache is thought to be a rare form of a headache disorder, mainly affecting women of older age.

Headache awakening the patient is regarded to be a clinical feature (red flag) that warns of a possible underlying disorder causing headaches (European Headache Federation consensus on technical investigation for primary headache disorders, 2016). Headache at night or morning can be an initial warning symptom in space-occupying lesions, vascular disorders, particulary cerebral venous thrombosis, giant cell arteritis. Headache attributed to idiopathic or secondary increased cerebrospinal fluid pressure, disorders of homeostasis (sleep apnoe), medication overuse headache should be taken into account.

The task of a physician is to recognize ominous symptoms and apply appropriate and reasonable investigation tools and tests to start appropriate treatment, thus preventing potentially devastating neurological consequences.

OP15

GENERALIZED ARTERIAL DISEASE IN YOUNG AND MIDDLE-AGED ISCHEMIC STROKE. THE NORWEGIAN STROKE IN THE YOUNG STUDY (NOR-SYS)

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One third of all strokes in Europe occur before the age of 65. The individually identified stroke etiology is substantial regarding recurrence risk, co-morbidity, acute treatment and prevention strategies.

NOR-SYS aimes at systematic investigation of ischemic stroke, and related subclinical and premature cardiovascular disease (CVD). A well-defined population of 385 ischemic stroke patients aged 15 to 60 years and their first-degree family members are subject to prospective work-up and long-term follow-up according to a multidisciplinary study protocol. The investigation beyond standard stroke work-up includes carotid Intima-media thickness (cIMT), Pulse-Wave velocity (PWV), circadian blood pressure (BP) patterns and echocardiographic parameters.

Undetermined cause of stroke was the most frequent subtype, followed by non-arrhythmic cardioembolism, small artery occlusion and cervical artery dissection. The risk factor burden increased with age, dominated by hypertension, dyslipidemia, smoking, overweight and family history (FH) of CVD. Masked hypertension was identified in 12%. Alterations of the circadian BP pattern were common (38% non-dippers, 51% elevated night-time BP). Hypertension was uncontrolled although treated in 56%. Left-ventricular geometry was abnormal in 37%. Mean cIMT was increased in patients with large-artery atherosclerosis, small artery occlusion, and stroke of undetermined cause, most profoundly in the internal carotid artery. A positive FH of CVD was identified as the crucial risk factor for IMT increase among patients <44 years. High-for-age PWV was found in 18%.

The prevalence of clinical, subclinical and premature arterial disease is high already at young age. Our data advocate the extension of young stroke investigations beyond a standard stroke work-up.

OP16

ANALYSIS OF HYPERACUTE ISCHEMIC STROKE MANAGEMENT AT RIGA EAST CLINICAL UNIVERSITY HOSPITAL

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Introduction. Intravenous thrombolytic therapy is the mainstay of treatment for acute ischemic stroke.

Materials and methods. Information was obtained from medical records of patients who were admitted at Riga East Clinical University Hospital after thrombolytic therapy from October 2017 to May 2018.

Results. Medical records of 153 patients were analyzed. Of all patients, 53.6% (n=82) were women, 46.4% (n=71) – men. The average age was 72.76 (SD 11.7). Mean DNT was 55 minutes, but the mean time from the onset of symptoms until the thrombolytic therapy was 2 hours 38 minutes. DNT time until 30 minutes was implemented on 18.3% of patients (n=28/153); until 45 minutes – 47.1% (n=72/153), until 60 minutes – 70.6% (n=108/153). NIHSS from 1 to 4 at admission were 13.2% (N=20) of patients, from 5 to 14 – 61.6% (N=93), from 15 to 19 – 17.9% (N=27), but upon 20 – 7,3% (N=11). On discharge these results were accordingly 56% (N=84), 24.7% (N=37), 5,3% (N=8), 2% (N=3), but exitus letalis – 12% (N18) of patients. In admission mRS one were 5.3% (N=8) of patients, two – 4% (N=6), three – 14.7% (N=22), four –

32% (N=48), five – 44% (N=66). On discharge results were accordingly 20.7% (N=31), 8.7% (N=13), 18.7% (N=28), 16% (N=24), 13.3% (N=20), mRS zero – 11.3% (N=17), exitus letalis – 11.3% (N=17) of patients.

Conclusion. Almost a half of patients had DTN time of 45 minutes. NIHSS and mRS results improved after thrombolytic therapy.

Keywords: door to needle time; DTN; hyperacute ischemic stroke; thrombolysis.

OP17

OUTCOME OF CHILDHOOD-ONSET EPILEPSY: TRANSITION TO ADULTHOOD

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Adolescence is a difficult period even for a healthy teenager with a lot of challenges in social, educational and personal life. When complicated by serious chronic medical condition, it becomes even more traumatic. Transition from pediatric to adult health care system may be difficult to adolescents and their family and help from medical team may be necessary.

Possible traits and patterns of epilepsy evolution from childhood to adulthood will be presented. Some medical aspects of epilepsies with changing pattern, epilepsies that may or may not change with age as well as social aspects will be discussed during the lecture.

OP18

DOES BENIGN MULTIPLE SCLEROSIS EXIST?

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Multiple Sclerosis (MS) is a neurological disease affecting young adults. Many years the concept of benign MS has been a controversial term that has been used for MS patients with minimal disability decades after disease onset. Specific criteria for benign MS are not firmly established.Frequently disability status after 15 and 20 years as indicator of favourable disease course.

Methods. Literature analysis was conducted in order to analyze criteria for diagnosis of benign course of MS, factors associated with benign course of MS, time tends of proportion of patients with benign MS over decades are analyzed. Also, current approach to treatment decisions will be discussed.

Conclusions. Data from long term clinical trials, real world data and registry data indicate that the overall prognosis of MS has changed. The proportion of persons with benign MS is increasing over decades. However, current evidence strongly supports early treatment in all persons with MS, including these persons who may express clinical and radiological features characteristic of more favorable course at onset.

OP19

CARDIAC MANIFESTATION OF ANEURYSMAL SUBARACHNOID HAEMORRHAGE

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Introduction. The aim of study was to assess the functional state of cardiovascular system in patients with aneurysmal subarachnoid haemorrhages (SAH).

Materials and methods. Literature data were reviewed and heart rate, arterial pressure, cardiac output, ECG and blood catecholamines were estimated in 70 patients on 5.0±0.6 day after SAH.

Results. The increase of heart rate, systolic and diastolic arterial pressure, interval Q-Tc of ECG and amount of blood catecholamines were found in majority of patients. These changes indicated altered activity of sympato-adrenergic system. More prominent disorders of cardiovascular system were found in patients with ruptured aneurysms of anterior cerebral artery, after reruptures of aneurysms, in cases with bleedings, complicated by vasospasm or intracerebral hematomas, and in patients in worse health condition with disordered brain stem function. Changes of cardiac output and hemodynamic impairments after aneurysmal bleedings were often established. Importance of heart function monitoring and correction was stressed.

Conclusions. Aneurysmal subarachnoid haemorrhage often increase the activity of sympato-adrenergic system and may provoke serious cardiovascular disorders. The monitoring of ECG and cardiac function after aneurysmal SAH is recommended.

Keywords: subarachnoid haemorrhage, cerebral aneurysms, cardiovascular system, electrocardiogram, catecholamines.

OP20

MEDICAL TREATMENT OF EPILEPSY: STATE OF ART

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Brief introduction. In recent years, new anticonvulsants have become available for treating epilepsy, though quite remarkable proportion of patients still have continuous seizures.

Materials and methods. Literature review was used to identify most relevant articles for summarizing recent advances in medical treatment of epilepsy.

Results. The report will outline author's subjective summary of available abundant information, including recent practice

guideline updates summaries concerning treatment both new-onset and treatment-resistant epilepsy issued by American Academy of Neurology.

Conclusions and keywords. Adequately prescribed treatment may improve the condition of the patient with epilepsy.

OP21

AGGRESSIVE MULTIPLE SCLEROSIS IN THE CONTEXT OF REACHING NEDA AS TREATMENT GOAL

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Multiple sclerosis (MS) is a CNS disorder with autoimmune features in pathogenesis. The course is very heterogeneous as the pathogenesis itself and may lead to serious disability. It is recommended to speed up the diagnosis to start treatment as early as possible to postpone disability. More effective drugs are able to reach the concept of no evidence of disease activity (NEDA) in some patients for certain period of time. Though more and more patients are treated with disease modifying drugs there are still patients with high disease activity where reaching NEDA is extremely difficult. Number of patients treated with low efficacy drugs is increasing all over the word. Many patients have problems with moving to higher efficacy drugs. There are more side effects and higher price. Patients often loose time and accumulate disability waiting for escalation treatment. It is important to recognize aggressive MS early because aggressive treatment should be initiated as early as possible. Severe attacks in the beginning of the disease, consequences from those attacks despite steroid treatment, destructive signs on MRI, high lesion load and activity on MRI are all bad prognostic signs for development of disability and should lead to early high efficacy treatment initiation (alemtuzumab, natalizumab, ocrelizumab), eventually high dose immunosuppression with autologous hematopoetic stem cell support). All these options should be discussed properly with the patient and risk/benefit of drugs weighted towards the risk of severe disability due to MS.

OP22

IDIOPATHIC RBD AS A SYMPTOM OF NEURODEGENERATIVE DISORDERS UPDATED AND DIAGNOSTIC TREATMENT APPROACH

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Since the first description of REM sleep behaviour disorders in humans in the mid-eighties by Carlos Schenck and Marc Mahowald, there is increasing evidence that REM sleep behaviour disorder is not only secondary to -synuclein disorders, but that REM sleep behaviour disorders precedes those by many years or even decades.

Specifically, longterm-follow-up studies have shown that over 80% of patients with originally idiopathic RBD will eventually convert to a -synuclein disorder, namely Parkinson Disease, Dementia with Lewy Bodies or in a few cases. Multiple system atrophy. Based on this specific high rate of conversion, some authors consider REM sleep behaviour disorder as prodromal PD, and the Movement Disorder Society has calculated a likelihood ratio of 130 for patients with idiopathic RBD to suffer from prodromal PD. Based on this situation, it has been suggested that the term idiopathic RBD is no longer appropriate and should be replaced by the term "clinically isolated RBD". Multiple biomarkers of -synuclein disease have been investigated in patients with iRBD, and it has been shown that even in patients with long-standing idiopathic (or isolated) RBD have one or multiple biomarkers of neurodegenerative disease positive, if they are studied in enough detail. The most relevant biomarkers are those which can predict the risk or immediacy of conversion, and best studied are olfaction, DAT SPECT etc. The role of other biomarkers, for instance tissue biomarkers, is not completely clear at the moment, and novel biomarkers are currently under investigation. The talk will give an update on RBD, diagnostic approaches, the current status quo of biomarkers and the roles, and involving concepts as well as standard and investigative treatments.

OP23

MECHANICAL THROMBECTOMY BEYOND 6 HOURS

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Recent studies have shown that mechanical thrombectomy may be safe and effective treatment of acute stroke due to large artery occlusion within 6 hours after onset of ischemic stroke. DIFFUSE 3 and DOWN trials showed that the mechanical thrombectomy is still effective treatment within 16 and 24 hours after onset of stroke in selected patients. Nevertheless, a significant part of the national guidelines still maintains a 6-hour therapeutic window for mechanical thrombectomy.

Various studies used different selection criteria for mechanical thrombectomy in patients presenting in the late time window (6–24 hours). In daily practice the standardization of these criteria and optimization of the management of acute stroke patients is very important step allowing to reduce the time from onset of symptoms to start of endovascular treatment.

Other very important practical issue is the management of wake-up stroke and stroke of unknow onset. Randomized trials and growing clinical experience suggest that properly selected patients with aforementioned stroke may also be successfully treated by mechanical thrombectomy. Extension of

therapeutic window for mechanical thrombectomy would increase the number of stroke patients eligible for mechanical thrombectomy, thereby improving the outcome of ischemic stroke and reducing the long-term disability associated with stroke.

This report discusses practical aspects of the criteria for selecting mechanical thrombectomy and an overview of current international guidelines.

OP24

CARDIOEMBOLIC STROKE IN LATVIA: FREQUENCY, PREVENTION AND LONG-TERM OUTCOME

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Brief introduction. Cardioembolic cerebral infarction is the most severe ischemic stroke subtype, with a low frequency of symptom-free at hospital discharge, a high risk of early and late embolic recurrences, and a high mortality.

Materials and methods. In a prospective study were included all 1970 patients with ischemic stroke and atrial fibrillation admitted at the P. Stradins Clinical University Hospital, Riga, Latvia from 2014 to 2017. Patients were evaluated by modified Rankins scale (mRs) were score of 0-3 considered a satisfactorily functional outcome. Patients were interviewed by phone in 30-90-180-365 days after leaving the hospital. Standardized questions were asked about patients abilities.

Results. At time of discharge 48.06% patients had satisfactory functional outcome, 38.64% had severe disability and 13.30% had died in hospital. Only contacted stroke survivors (n=1842) were included in further study. In 30 days since discharge from hospital 57.16% patients had satisfactory outcome, 24.7% were severely disabled and 18.14% had died. After 90 days 60.78% of patients had satisfactory outcome, 14.68% had severe disability and 24.54% had died. In 180 days 61.47% patients were on satisfactory outcome, 7.23% had severe disability and 31.3% patients had died. Finally, after one year, 59.45% patients were on satisfactory outcome, 5.13% patients were severely disabled, and 35.42% had died.

Conclusions and key words. In Latvia cardioembolic stroke one-year mortality rates are very high. Most of the patients that are severely disabled at the time of discharge die in first year since leaving the hospital. Mortality rates are significantly lower in patient groups with satisfactory stroke outcome at time of discharge.

OP25

BACLOFEN PUMP TREATMENT FOR SPASTICITY

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Intrathecal baclofen therapy (ITB) is a treatment option for patients with severe spasticity who do not benefit from the oral form of the drug. Most frequent conditions related with the refractory spasticity are sclerosis multiplex, cerebral palsy, brain or spinal cord injury and stroke. The primary goal of ITB delivery is to reduce the negative consequences of spasticity and provide functional spasticity control as quickly and safely as feasible. ITB is delivered directly and locally into the cerebrospinal fluid at a targeted spinal cord segment, allowing much smaller daily doses compared to the oral baclofen, and thus minimizing the drug-related systemic side-effects. Planning, initiating and maintaining ITB therapy is a multistep long-term process including patient selection, positive screening test of baclofen via lumbar puncture, a surgical procedure to implant the device, dosage titrations, regular pump refills and pump replacement when needed. The ITB system includes a pump, catheter and external programmer which monitors and programs the pump. Also very effective, this therapy is associated with possible serious complications such as ITB withdrawal or overdose that are needed to be recognized, diagnosed and treated as early as possible. Collaboration of a well-organized and extensively educated ITB-team and thoroughly informed patient/caregiver leads to efficient results with benefits of reduced spasticity. During few years of use of ITB for the treatment of spasticity in Estonia, ITB pumps have been inserted to a total of 15 patients, and majority of patients have reported objective and subjective improvements in function.

OP26

APOLIPOPROTEIN E: ALZHEIMER'S DISEASE GENETIC RISK FACTOR, COURSE MODIFIER, DETERMINER OF DISTINCT AD TYPES, OR TARGET FOR THE FUTURE TREATMENT

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Introduction. Apolipoprotein E gene (APOE) polymorphism is the major risk factor for Alzheimer's disease (AD). APOE variation influences significantly clinical and cognitive phenotypes of AD, hence, APOE may delineate distinctive AD subtypes. The aim of this report is to analyze the influence of APOE on genetic risk, cognitive, clinical, other characteristics of AD, to overview disease modifying treatment (DMT) strategies, targeting APOE.

Materials and methods. Review and analysis of published research and data from genetic databases about the influence of APOE on cognitive, clinical, and other characteristics were per-

formed. Main known mechanisms of this influence were reviewed. APOE targeting DMTs were overviewed.

Results. Research data about the influence of APOE on characteristics of AD, the interaction effects with demographic and genetis factors are reviewed. The new NIA-AA framework toward a biological definition of AD (2018) is based on brain pathology, not on clinical features or genetics, accordingly, the data about the relationship of APOE with AT(N) biomarkers are presented. APOE targeting new DMTs in AD are reviewed.

Conclusions. APOE polymorphism is the most significant genetic risk factor for AD, but its effect is modified by genetic, demographic, clinical, and other factors. APOE has significant impact on cognitive and clinical characteristics in AD, which is of great importance in early diagnostics of AD and in clinical trials of the new, APOE based, DMTs.

Keywords: Alzheimer's disease, APOE polymorphism, risk factor, AT(N) biomarkers, therapeutic target.

OP27

LITHUANIAN EXPERIENCE OF MECHANICAL THROMBECTOMY FOR STROKE PATIENTS

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Endovascular acute ischaemic stroke treatment was introduced in Lithuania right after the first positive clinical trials (MR Clean, Escape, Extend IA, Swift Prime etc) was published. Mechanical thrombectomy was started to be performed on regular basis in the beginning of 2014 when National Health Insurance Fund approved and funded the procedure. There are 6 centres performing endovascular acute ischaemic stroke treatment in Lithuania (2 in Vilnius, 1 in Kaunas, Klaipeda, Siauliai and Panevezys). Due to lack of neurointerventionalists in Siauliai and Klaipeda this procedure is performed by interventional cardiologists after the appropriate training. 24/7 interventional radiology (neuroradiology) service was gradually introduced in Kaunas, Vilnius and Panevezys. More procedures are performed every year since 2014. Stroke centres in Kaunas and Vilnius developed to large and stroke centres in other cities became medium-sized. Due to well geographical locations of the stroke centres very good accessibility is ensured (distance from any place to mechanical thrombectomy performing centre is no longer than 100 km). Appr 100/million thrombectomies are performed each year which is a great number even in European perspective. There are possibilities of these numbers growing up 2 times and more because only in 22 out of 1000 strokes endovascular treatment is performed. 2018 government programme of supplying stroke centres with biplane angiographic equipment for the biggest centres in Kaunas and Vilnius and with new monoplane angio in the rest centres will improve mechanical thrombectomy rate and results in Lithuania.

OP28

COEXISTENCE OF CHARCOT–MARIE–TOOTH DISEASE AND CHRONIC INFLAMMATORY DEMYELINATING POLYRADICULONEUROPATHY – LATVIAN EXPERIENCE

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Introduction. Chronic Inflammatory Demyelinating Polyradiculoneuropathy (CIDP) is a rare autoimmune disorder with a low prevalence rate of 3 per 100000. Charcot-Marie-Tooth (CMT) disease is a group of hereditary neuropathies with highly variable phenotype and age of onset. The prevalence of disease ranged from 9.7/100,000 to 82.3/100,000. Both disorders are characterized by chronic progressive motor and sensory polyneuropathy, but CIDP develops with more rapid progressive course of disease with recurrent motor and sensory dysfunction. CIDP and CMT may clinically manifest not only with similar symptoms, but in rare occasions also co-exist.

Case description. We describe three patients who developed acute or subacute deterioration. Patients were 13-53 years old. Two patients had genetically proven CMT disease type 1A (CMT1A) due to chromosome 17p11.2± 12 duplication, and one is still waiting for genetic confirmation of CMT diagnosis. All three patients had clinical and electrophysiological (patchy temporal dispersion or conduction block) features to indicate the diagnosis of CIDP. All patients had an acute or subacute onset of symptoms following a long asymptomatic or stable period. All patients received steroids and/or intravenous immunoglobulin treatment with positive response.

Conclusions. Patients with hereditary neuropathies could experience a rapid clinical deterioration. In this case an overlap with inflammatory neuropathies should be considered to establish adequate treatment. Typical electrophysiological findings can help to distinguish CIDP from hereditary forms of demyelinating polyneuropathies.

Keywords: Charcot-Marie-Tooth disease; Chronic Inflammatory Demyelinating Polyradiculoneuropathy; peripheral nerve; neuropathy.

OP29

COMPREHENSIVE AND UNINTERRUPTIBLE PATIENT MONITORING USING MULTIPLE SCLEROSIS REGISTRY IN LITHUANIA

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The discussion about the benefits of a robust evidence base derived from clinical trial and real world is becoming important during the last decade. Real world data collection in the clinic and the potential impacts on MS clinical practice allow us to think about the main innovation in the patient care – to provide the information from doctors to doctors.

Real world populations may differ from populations studied in age (elderly, paediatrics), ethnicity, co-morbidities, concomitant medications, lifestyle (smoking, diet) and compliance.

To improve quality and delivery of medical care, to improve patient outcomes, to optimise allocation of resources, as well as personalised therapy decisions, prediction of individual treatment response for different DMTs we use comprehensive and uninterruptible patient monitoring cloud based multicentre Multiple Sclerosis Registry in Lithuania.

From the monitoring point of view, the assessment of relapses, disability progression, evaluation of MRI lesion load and brain atrophy, evoked potentials and retinal changes measured by OCT is really a key aspect. Real world evidence has to become as a new standard of the 21st century in the aim to fill the knowledge gap between clinical trials and clinical practice.

OP30

SENSORY AND MOTOR NERVE CONDUCTION STUDIES

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Electroneurography – techniques and the interpretation of the tests that examine nerve conduction and generation of nerve impulses. Sensory and motor conduction studies are essential for the diagnosis of peripheral nervous system diseases. The main purpose of nerve conduction studies are to: 1) determine if nerve conduction is normal or not; 2) determine whether motor or sensory fibers or both are affected; 3) localize a focal lesion; 4) evaluate the severity of a nerve injury (axonal continuity, axonal loss and demyelination); 5) to characterize the underlying pathophysiology – to determine the most likely primary pathological changes (axonal degeneration or demyelination). Nerve conduction studies participate to the understanding of nerve disorders: polyneuropathies, multineuropathies, mononeuropathies. Principle of the method is bipolar, percutaneous, supramaximal, electrical stimulation of peripheral motor nerve. Motor nerve is stimulated at two or more sites along the nerve and the motor response, the M-wave, is recorded from a distal muscle innervated by the nerve. Parameters to measure are amplitude and shape of the M-wave, distal latency – the time from the stimulus to the onset of the M-wave and motor nerve conduction velocity is calculated.

Sensory neurography is performed by recording the electrical activity directly for the nerve. Sensory nerves action potentials (SNAP's) are recorded. Parameters to measure are SNAP latency – time from the stimulus to the negative peak of SNAP, amplitude, duration. Conduction velocity of the fastest axons is calculated. The serial studies are used to monitor the course of neuropathies and to study the efficacy of treatment.

OP31

NURSING ISSUES ON MYASTHENIA GRAVIS: COMMON SYMPTOMS, SURVEILLANCE AND ALLIVIATING ACTIONS

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Brief introduction. Myasthenia Gravis (MG) is the most common chronic disorder of the neuromuscular junction. Disease progression may be mild to severe. A cardinal feature of MG is fatigable muscles. Muscle weakness often improves with rest and exacerbate with activity. Therefore, symptoms may fluctuate significantly during the day. Patients with MG are often admitted to inpatients care when they show progressive deterioration, have noteworthy bulbar symptoms and/or have emerging respiratory failure. The aim of this presentation is to provide insight into common symptoms of MG, nursing surveillance, and alleviating actions.

Methods. Analyzing and synthesizing contemporary peer-reviewed literature and recent guidelines/consensus statements of high quality – according to the AGREE II measurement tool.

Results. Content encompasses: (a) Primary goals of nursing and common clinical manifestations, such as fatigable muscle weakness and bulbar symptoms, and how nurses can monitor and respond to symptoms. Emphasis will be put on worsening of symptoms and using energy conservation principles to prevent further deterioration. (b) Brief points to enable nurses to differentiate myasthenic crisis and cholinergic crisis, and (c) Check lists for nursing surveillance and patient education.

Conclusions. Nurses play a pivotal role in preventing disease deterioration and complications in patients with MG during hospitalization. By recognizing key elements of the disorder, nurses contribute to patients' safety. Before hospital discharge, nurses should inform patients about important life style changes, energy conservation, and other safety issues to prevent myasthenic relapse and to maximize patients' quality of life.

Keywords: Myasthenia Gravis, nursing, adult patients, inpatient care, interventions.

OP32

NURSES ROLE IN THE MANAGEMENT OF PATIENTS WITH SPATIAL NEGLECT: CLINICAL MANIFESTATIONS, SCREENING AND INTERVENTIONS

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Brief introduction. Spatial neglect (SN) is the most common neuro-cognitive disorder after right hemisphere stroke. SN manifest when patients for instance leave the left half of their dinner plate untouched, tend not to notice items placed to the left side, and omit dressing themselves, washing, and grooming on the left side of the body. To further complicate matters SN patients often lack insight into their own situation. SN has many adverse consequences for rehabilitation outcomes exceeding the ones seen in stroke patients without SN. Therefore, it is important to expand possibilities for treatment. The aim of this presentation is to provide clinically useful descriptions to assist nursing staff in recognizing important components of SN. A further aim is to throw light on assessment methods and viable interventions that may be implemented in ward-based nursing care.

Methods. Results of empirical nursing studies on clinical characteristics and experiences of patients with SN will be presented alongside the main findings of a systematic literature review of SN interventions.

Results. The presentation includes information on: (a) Defective and productive symptoms of SN, (b) screening methods for SN that are applicable in clinical practice, and (c) 11 viable ward-based interventions.

Conclusions. Many opportunities open up in nurse-patient interactions during ward-based care that can be used to assess and provide interventions to alleviate many adverse consequences of SN. Nurses need to screen stroke patients for SN and respond to the disorder with professional comprehension.

Keywords: Hemispatial neglect, stroke, nursing, adult patients, inpatient care, interventions.

OP33

MECHANICAL THROMBECTOMY IN ELDERLY STROKE PATIENTS

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Thrombectomy has proved to be effective in large vessel occlusion in acute ischaemic stroke. The beneficial clinical effect is observed in randomized clinical trials in all age subgroups. Also in elderly patients it is associated with significantly better clinical outcome. Studies comparing thrombectomy in patients aged over 80 do have higher mortality and worse clinical outcome than their younger counterparts.

The risk of poor outcome is independently associated with increasing age, but baseline stroke severity and incidence of intracranial haemorrhage are independent factors of poor outcome in this age group.

Treatment of elderly patients is not only associated with poor outcome, but also they are problematic due to other causes. First of all they more often have comorbities.

Another issue which is often observed in elderly patients is difficulty with arterial access. This is associated with atheromatosis and prolonged hypertension. This requires first of all skill from the operator and careful selection of devices for the procedure.

Treatment of elderly patients with thrombectomy is justified by the evidence. Nevertheless, they require careful selection and careful management after the procedure.

OP34

COGNITIVE DEFICIT AND ITS CAUSES FOR PATIENTS IN EARLY MIDLIFE IN LATVIA

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Brief introduction. The changes in cognition is a frequent complain in early midlife. Considering the need for early detection of any potential neurodegenerative disease, the aim of the review was to analyse cognitive impairment and possible causes for it in patients that have been administered to memory service.

Materials and methods. A total of 143 patients are inquired for this review from the period of 1 January 2017 till 31 May 2018. The patients are divided in three age related groups – First group 35-45 y. o. (n=36); Second group 46-55 y. o. (n=30); Third group – 56-65 y. o. (n=68). All patients underwent MR imaging, routine blood tests and neuropsychological evaluation – MoCA test in neurological office at the time of two visits and Woodcock-Johnson by psychologist.

Results. First group: 77.78% (n=28/36) – anxiety (MoCA=30/30); 11.11% (n=4/36) were diagnosed with sleep deprivation (MoCA=26-29/30); 8.33% (n=3/36) – neurodegenerative disease (MoCA=19 – 21/30); 2.78% (n=1/36) – vascular disease (MoCA=23/30).

Second group: 60% (n=18/30) diagnosed with MCI (MoCA 26-29/30); 26.67% (n=8/30) – anxiety (MoCA=29 – 30/30); 6.67% (n=2/30) – AD (MoCA=13/30 and 17/30); 3.33% (n=1/30) – vascular disorder (MoCA=22/30); 3.33% (n=1/30) – hypoxic CNS damage (MoCA=17/30).

Third group: 35.29% (n=24/68) – MCI (MoCA=24 – 29/30); 33.82% (n=23/68) – AD (MoCA=3 – 24/30); 17.65% (n=12/68) – vascular disorder (MoCA=17 – 22/30); 13.23% (n=9/68) – anxiety (MoCA=30/30).

Conclusions and keywords: MCI – Mild cognitive impairment; AD – Alzheimer's disease; MoCA – Montreal cognitive assessment scale.

OP35

INFUSION PUMP THERAPIES FOR PARKINSON'S DISEASE

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A recent prevalence study on Parkinson's disease (PD) in Estonia by Kadastik-Eerme et al showed that patients today have more severe symptoms with longer disease duration than 20 years ago. As the disease progresses, many patients develop motor and nonmotor fluctuations and dyskinesias. If oral treatment fails, continuous dopaminergic stimulation can be an option, including deep brain stimulation, pump therapies with apomorphine subcutaneous infusion (ApoSCI) and levodopa-carbidopa intrajejunal gel infusion (LCIGI).

Several studies have shown that ApoSCI and LCIGI improve PD symptoms, motor complications and health related quality of life. In 2015, the use of ApoSCI treatment was recommended by the expert consensus group for those patients whose "off"- periods are inadequately controlled by oral medications, who have a positive response to apomorphine injections, but the need for injects exceeds 4-6 times per day. ApoSCI may also help those patients who have "off"- periods with nonmotor symptoms. The main contraindications are dementia and impulse control disorders. Another pump therapy is LCIGI, which has the same indications, but is also suitable for patients with mild dementia. Gastrostomy is required, through which the jejunal tube is placed. Both pump therapies are for daytime use (for approximately 16 hours), flow and bolus rate are titrated individually. There are two centres in Estonia, Tallinn and Tartu, where neurologists and PD nurses are experienced in treating the advanced PD patients.

In conclusion, the management of advanced PD requires an educated and well-organized team and the availability of different treatment options, including pump therapies, to improve the patients' quality of life.

Keywords: Parkinson's disease, infusion pump therapy, subcutaneous apomorphine infusion, levodopa-carbidopa intrajejunal gel infusion.

OP36

MECHANICAL THROMBECTOMY IN THE POSTERIOR CIRCULATION AREA

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Introduction. The results of conservative treatment of acute ischemic stroke in the posterior circulation is high mortality and severe neurological deficit. The efficacy of mechanical thrombectomy in these patients is still not sufficiently studied.

Porpuse. Assess the safety and efficacy of treating patients with basilar and (or) vertebral artery occlusion using thrombectomy (TE) or bridging treatment (intravenous thrombolysis followed by TE) and compare the results with the control group.

Materials and methods. The study included retrospective patients admitted to hospital with acute ischemic stroke due to posterior circulation area, who have reached their condition up to 12 hours from the onset of symptoms.

Results. The study included 61 patients. The number of participants was 20 (33%) patients treated with TE only, 21 (34%) patients in bridging group and 20 (33%) patients were included in the control group.

In the 90 days after discharge, mRS 0-2 was achieved by 45% in bridging group, 30% in the TE group and 5% in the control group, while the mRS 3-5 was 32% in the bridging treatment group, 35% in the TE group and 25% in the control group. The mortality rate was 70% in the control group, 35% in the TE group and 23% in the bridging therapy group.

Conclusion. Higher recanalisation prevalence in bridging and TE groups allowed to achieve better neurological and functional outcomes compared to control group.

Keywords: mechanical thrombectomy, basilar artery occlusion, stroke.

OP37

STROKE CARE: A TEAM APPROACH

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Introduction. According to WHO, stroke is one of the three leading death causes in the world. Ischemic stroke patients have been shown to have better functional outcomes when admitted to a specialized stroke unit. A coordinated and multidisciplinary approach to stroke care may reduce length of stay and morbidity in stroke patients. According to ESO-EAST good stroke care requires a sustained and coordinated effort from a large team, including physicians, nurses, physical and occupational therapists, speech-language pathologists, social workers, and others. For example nursing interventions include patient and family education, complication surveillance, and prevention and coordination of the multidisciplinary team to ensure a smooth discharge.

Materials and methods. Presentation is made using authors personal experiences. To get newest information about team approach in stroke medicine, authors did literature review.

Results and conclusion. Caring for patients after a stroke is both challenging and rewarding. A team-based approach is essential to achieving the best outcomes for patients, and nursing plays a pivotal role in navigating patients and families through this life-altering event.

Keywords: stroke, stroke care, team approach, nursing.

OP38

ANALYSIS OF ORAL ANTICOAGULANT TREATMENT IN PATIENTS WITH NON-VALVULAR ATRIAL FIBRILLATION: A POPULATION-BASED STUDY IN ESTONIA 2010–2016

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Stroke is the major cause of death and disability worldwide. Atrial fibrillation (AF) is one of the main risk factors for stroke. AF prevalence in population has increased remarkably in recent years and the increase is predicted to continue due to ageing of the population. Oral anticoagulant (OAC) treatment has been proven to be most effective for the stroke prophylaxis in AF patients, but because of the complexity of the treatment, it has been underused.

A nationwide study of Estonian Health Insurance Fund database (EHIF) (2010 to 2016) and Health Statistics and Health Research Database (HSHRD) (2012 to 2016) was performed to evaluate the use of anticoagulation for AF in Estonia.

The prevalence of AF in Estonian population has increased rapidly in recent years. AF patients comprised 1.13% of men and 1.16% of women in 2010 and 1.95% and 2.16% respectively in 2016. Oral anticoagulant treatment has increased simultaneously – 89% of AF patients received OAC treatment in year 2016 compared to 43% in 2010. In 2010 warfarin was mainly the only OAC prescribed to patients with AF. In 2016 warfarin was still the most prescribed oral anticoagulant (47% of the patients), followed by rivaroxaban (25% of the patients). Stroke prevalence in AF diagnosed patients decreased from 4.2% to 3.1% and side effects prevalence from 4.8% to 2.8% in a timeframe 2010–2016. Warfarin treatment was re-started after ICH in 14% of patients in 2016.

The prevalence of AF has nearly doubled in Estonian population from 2010 to 2016. OAC treatment has increased remarkably in recent years. The prevalence of warfarin-related complications however has decreased.

OP39

EVALUATION OF SMALL FIBER NEUROPATHIES

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Small fiber neuropathies affect thinly myelinated and unmyelinated sensory and autonomic nerve fibers. Depending on the clinical symptoms and signs suggestive of a small fiber disorder, the evaluation of these fibers may use various neurophysiological tests and skin biopsy.

The cutaneous silent period is a transient suppression of electromyographic voluntary activity that follows painful stimuli. It serves as an objective functional evaluation of the A-delta fibers. The method is simple, noninvasive and is available from many muscles of the extremities.

The nociceptive flexion reflex assesses the nociceptive fibers of very slow conduction. It is readily available from a few limb muscles only.

The sympathetic skin response uses the galvanic response involved in sweating to assess the efferent sympathetic C fibers. The test is simple, rapidly performed, but it is not sensitive and of doubtful clinical relevance.

Quantitative sensory testing assesses thermal sensations served by thinly myelinated A-delta fibers and unmyelinated C fibers. The test requires dedicated equipment and depends on the participation of the subject tested.

Skin biopsy studies the somatic unmyelinated intraepidermal fibers, dermal myelinated fibers and autonomic fibers. Epidermal fibers relate entirely to the dorsal root ganglia, they presumably represent the terminals of C, and perhaps also of A-delta nociceptors. It is sensitive and can be performed in most patients.

The above tests differ widely but are complementary. They allow an objective confirmation of the clinical suspicion and characterization of the fiber type involved in small fiber neuropathies.

OP40

DEMONSTRATION OF SEIZURE ELEMENTS – A POSSIBLE COMPLIMENTARY SEIZURE SEMIOLOGY DIAGNOSTIC TOOL?

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Diseases in which symptoms occur in attacks or seizures are a diagnostic challenge for physicians. In case of epileptic seizures and their most frequent differential diagnoses non-epileptic psychogenic seizures and convulsive syncope the likelihood for physician to spontaneously witness these symptoms is low, in particular if they are infrequent. There is substantial body of evidence that verbal descriptions of seizures by eyewitness or self-reporting are imprecise.

The principal reasons for this are insufficient and ambiguous vocabulary that is used by eyewitness for seizure descriptions (like jerking, shivering), misleading terminology (like "absence" for any kind of unresponsiveness), also only the most spectacular (usually motor) phenomena are spontaneously reported and more subtle elements require active history taking.

Empirical clues exist that patients and witnesses often recognise seizure elements if they are demonstrated. One way to demonstrate a seizure element of interest is to show the video

of a specific seizure, however this is unethical. Current study entertains an alternative approach, where treating physician is demonstrating seizures elements during active semiological history taking.

Our data show that some of the seizures are more reliably acted and recognised that the others. The discussion focuses on the specific semiological sequences that are discriminating for epileptic versus non-epileptic seizures. We propose, that demonstration of semiological elements by trained doctors might be complimentary to purely verbal semiological history taking.

Keywords: seizure semiology, differential diagnosis, epileptic seizures, psychogenic seizures, syncope.

OP41

EARLY CT SCORE (ASPECTS)

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Brief introduction. Alberta Stroke Program Early CT Score (ASPECTS) was developed as a mean for predicting outcomes of acute stroke patients treated with thrombolytic therapy. Recent successful mechanical thrombectomy trials gained additional attention for ASPECT Score as a patient selection tool for endovascular stroke treatment. In our presentation, the basics of calculating the ASPECT Score, its role in the selection of patients for recanalising stroke treatment will be presented, as well as difficulties and pitfalls of interpretation will be discussed.

Conclusions and keywords. ASPECT Score is a useful and convenient tool for assessment of head CT scans of patients with acute ischemic stroke, but its limitations and pitfalls of interpretation are needed to be addressed.

Keywords: ASPECTS; acute stroke imaging; non-contrast CT.

OP42

WOMEN WITH PROGRESSIVE MYOCLONUS – ATAXIA SYNDROME AND GAIT INSTABILITY

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Clinical case – previously healthy 60-year-old female presented to neurology services in year 2016 complaining of progressive gait instability, sensation of trembling in lower limbs, which was progressive and worse on walking. She described episodes of the loss of consciousness without seizures. Her family history was negative. For a long time she was working with chemical substances and heavy metals at the factory. She was an only child and her children have no symptoms.

On examination she presented with negative myoclonus of the legs, postural instability, ataxia of the lower and upper limbs. Tendon reflexes were high. Other neurological evaluation was insignificant. MOCA scale – 21 point.

Blood tests were normal. Lumbar puncture showed a normal opening pressure and routine CSF examination was clear. MRI of brain showed some wider brain grooves of frontal lobes. EEG – without specific changes. Electroneurography and electromyography – no data of polyneuropathy or myogenic pathology. Serum genetic testing was undertaken: this tested negative the spinocerebellar ataxias and myotonic dystrophy.

Patient have had received therapy with levodopa, hat had no significant effect on her symptoms. After clinical evaluation patient was administered anticonvulsants – valproic acid. Therapy with anticonvulsants had a good clinical response; there were no episodes of loss of consciousness, patients gait improved.

Diagnosis of Myoclonus ataxia syndrome was made. Myoclonus ataxia syndrome is a symptomatic secondary myoclonus associated with spinocerebellar degeneration. It is a descriptive diagnosis characterized by myoclonus, ataxia, and infrequent seizures. Often the etiology cannot be determined.

OP43

RHYTHMIC AUDITORY-MOTOR ENTRAINMENT IN MOVEMENT DISORDERS

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Introduction. The investigations of rhythmic auditory-motor entrainment (RAME) provide the background for the hypothesis that different types of music-based interventions (listening to music, singing, playing an instrument, or dancing) can have a restorative impact on various functions of nervous system such as motor performance, speech, cognition, emotional status, and motivation.

Purpose. In clinical practice it is possible to transform the non-musical therapeutic exercises into analogous musical exercises but there is a need of clinical evidence for such intervention.

Method. During the past decade there were an increasing number of controlled clinical studies that assessed the potential effects of RAME in movement disorders.

Results. The instrument playing-based interventions resulted in significant improvement in finger and hand tapping frequency and velocity. The music listening-based interventions resulted in significant improvements over the controls in the domains of focused attention and verbal memory. The rhythm-based interventions were found to improve the gait velocity, stride time and cadence. The multicomponent-based interventions improved posture control and overall motor

condition. The best example of complexed RAME therapeutic application is dance therapy. Modified lindy-hop dance therapy was applied to patients with Parkinson's disease in Vilnius University Hospital Santaros Clinics. UPDRS score changed from 47.8571±17.6890 to 40±13.8119 after the dance therapy program and upper limb movements improved (average time of wrist decreased: right 0.9038±0.1884 to 0.7927±0.1310; left 0.9331±0.2348 to 0.8082±0.1107).

Conclusions. There is a clinical evidence for the effects of RAME-based interventions on supporting cognitive functioning, motor performance, emotional status and quality of life in people with movement disorders.

OP44

CHALLENGES OF DIAGNOSING SLEEP DISORDERS: CASE REPORT

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Introduction. Sleep disorders are frequent, mostly chronic conditions, disturbing life quality, associating with increased morbidity and mortality. It is essential for clinicians to recognize sleep disorders and start appropriate treatment.

Case report. Case of 39 year woman, working as firehouse dispatcher. Complains of irrepressible need for sleep during dailytime, fatigue, disturbed nocturnal sleep. Exessive daytime sleepiness presented 6 years ago, later arised inability to stay awake during daily activity (sleep attacks) that cannot resist, others couldn't wake her up. 2 years ago started episodes of being paralyzed, unable to move limbs, speak, despite being awake and recall the event clearly. These episodes were provoked by stress, pressure at work. Night sleep was light, disrupted, feeling of being awake. About 1 year ago arised realistic nightmares, with death fear. Patient was investigated for epilepsy, cardiogenic syncopes, hypoglycemia, hypercorticism, but no full evidence was found. Patient was sent to psychiatrist, anxiety disorder was diagnosed, patient was hospitalized to Psyciatric clinic, antidepressants were prescribed that worsened her condition. Patient fell asleep at work, skipped call to the fire, lost her job. Patient was sent to sleep specialist, polysomnography and multiple sleep latency test were performed. Reduced sleep latency, patologic multiple sleep latency test was found. According to exessive daytime sleepiness, cataplexy episodes, sleep paralysis, hypnagogic and hypnopompic hallucinations, changes in polysomnography and multiple sleep latency test was diagnosed narcolepsy. For the patient was prescribed methylphenidate, 10 mg/day, patient gradually returned to normal awake-sleep cycle, life quality significantly increased.

OP45

CONTRACTION RESPONSE TO MUSCLE PERCUSSION IN NEUROLOGY

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Neurologists do not usually include direct muscle percussion test to their standard clinical evaluation, probably because of its incompletely elucidated mechanism and unclear clinical significance. It was first reported and named "idio-muscular response" by Schiff in 1858.

The contraction response of the muscle percussed with a reflex hammer succeeds to the direct depolarization of muscle fibers and of intramuscular axons in a proportion that remains unclear and that probably varies with the strength and location of percussion, and in different pathological conditions. Despite these uncertainties the response, best evoked from the region of the motor point, is modified as compared to normal in a number of conditions that affect the peripheral nervous system. The contraction is: **decreased** in myopathies; **decreased and at times prolonged** in case of axonopathies with denervation and in muscle rippling disease; it is **intense and prolonged** in myotonic disorders; **increased** in neuropathies with nerve conduction block (i.e. acute compressive neuropathies, Guillain-Barré Syndrom, Multifocal Motor Neuropathy, Hereditary Neuropathy with liability to Pressure Palsies, Parsonage-Turner, actinic plexopathies).

We underline the value of this "mechano-diagnostic test" that enables to evaluate a number of peripheral nerve disorders in a simple manner and at bedside.

OP46

EVALUATION OF NERVE CONDUCTION BLOCKS

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A conduction block (CB) consists of the non-propagation of the action potential beyond a certain point along the axon, although the latter is intact. Peripheral nerve CB may be suspected clinically. It causes a deficit that differs from that of the severing of a nerve. It consists of a palsy that is accompanied by: little or no atrophy; sensory loss, usually less marked and shorter lasting than motor weakness with retained sensations to temperature and pain; preserved autonomic function. Tendon reflexes are diminished or absent, but the response of the paralysed muscle to percussion is brisker than normal. The CB may be rapidly reversible (weeks) when it is caused by acute nerve compression.

Neurophysiology: ideally nerve conduction studies detect, locate and quantify CB. The CB may be demonstrated by studying the size of the compound muscle action potential (CMAP) evoked upstream in comparison to the response evoked downstream. Most CBs being "partial" affect only a number of axons of a nerve. The degree of a partial CB may be expressed in percentage of reduction of size of the CMAP. Reliable detection and quantification of CB pose a number of difficulties. The critical value of the reduced size of the CMAP that attests a CB

is still controversial; it varies from >10% to 50% in case of temporal dispersion.

Neurophysiological techniques allowing to confirm the reality of a CB will be presented.

A thorough electro-clinical testing that uses different approaches improves the sensitivity and specificity of detection and quantification of CB.

OP47

EPILEPSY IN ELDERLY

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Both the incidence and prevalence of epilepsy are high among the elderly. Cerebrovascular disease and dementia are the most common underlying causes, although as many as 25–40% of new epilepsy cases in the elderly have no obvious underlying etiology. Status epilepticus appears to occur more frequently in individuals greater than 60 years, and the morbidity and mortality of status epilepticus are signiŽcantly greater in this age group. Elderly patients with seizures, particularly focal unaware seizures, present differently than younger adults, which can lead to misdiagnosis. Adverse events are similar in symptomatology, but are more common in elderly patients and occur at lower doses and plasma drug concentrations. Management of the older patient with epilepsy requires knowledge and understanding of the medical and psychological aspects, unique to this age group.

OP48

SLEEPINESS AND DRIVING

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Sleepiness at the wheel is a major issue for road safety and public health. Drowsy driving is likely responsible for 10–30% of all road traffic accidents and a major cause of fatal accidents.

Sleepiness at the wheel is influenced by variety of factors:

– individuals' internal sleep/wake mechanisms (the 'body clock' and 'sleep pressure'),

– behavioral factors: sleep deprivation, irregular working hours, length of time spent at the wheel,

– medical factors: sleep disorders like sleep apnea, PLMS or narcolepsy, use of psychoactive substances and medications, other somatic/neurologic disorders.

During the last 10 years a large step forward was done both in education, training and spreading of information about danger of sleepiness at the wheel (Livre blanc, Wake-up-Bus campaign) and changing European legislation concerning driver licensing for patients with obstructive sleep apnea (European Union Directive 2014/85/EU).

Lithuania has adopted EU directive in the end of 2015 year. The document implemented the same proposed procedure for sleepiness screening (subjective questionnaire) and more rigorous regulations for cessation of driving which are based on Apnea–Hypopnea Index alone. It is known that obstructive sleep apnea is associated with excessive daytime sleepiness in only approximately 50% of patients. Driving risk in obstructive sleep apnea is related more closely to the degree of daytime sleepiness than the objective severity of sleep-disordered breathing.

Keywords: sleepiness, driving, obstructive sleep apnea.

OP49

THE ROLE OF TRANSCRANIAL ULTRASOUND IN DIAGNOSTICS OF PATENT FORAMEN OVALE

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Patent foramen ovale (PFO) is a rather frequent defect of interatrial septum prevalent in 25% of population. For young patients (under 55 years) with stroke PFO plays an important role being pathogenic in up to 80%. If a PFO is present, a clot in the venous circulation can travel across the PFO and lead to arterial occlusion. This paradoxical embolism can lead to a stroke. Subclinical episodes of atrial fibrillation (AF) could be a further mechanism for stroke. Potential source for paradoxical emboli are deep venous thrombosis in lower extremity or pelvic veins.

Some clinical and anamnestic features like weight lifting, long airplane or car travels, having a DVT or PATE recently and having a migraine could raise suspicion of probability having a PFO related stroke.

Management of stroke patients with PFO has been a question for debates for many years but last three RCTs has showed significant benefit of PFO closure procedure with antiplatelet against antiplatelet alone.

A transthoracic echocardiogram (TTE) is part of the routine stroke work-up and a non-invasive way to detect PFO with 99% specificity but only 46% sensitivity. Transesophageal echocardiography (TEE) is considered a "golden standard" for PFO diagnostics with 89% sensitivity and 92% specificity. TEE is superior to TTE for evaluation of the aortic arch, left atrium, and atrial septum. But TEE failed to show a RLS in up to 15.1% of patients, substantial part of them with moderate-large shunt. Other disadvantage of TEE is complicated to perform Valsalva maneuver after sedation. Furthermore, sometimes clinical criteria strongly suggest paradoxical cerebral embolization, but the TEE -PFO is small and this raises many questions about TEE accuracy.

Contrast transcranial Doppler (cTCD) is put to the same level of accuracy by American academy of neurology (a class II indication) together with TEE for interatrial shunt detection. Meta-analysis showed that TCD had a mean sensitivity and specificity of 97% and 93%, comparing to TEE. It is noninvasive, easy to perform at the bedside and shunt grade on TCD is a stronger predictor of stroke or TIA than detection of a RLS on TEE. Further cTCD results evaluation and other issues will be presented in the teaching course.

OP50

STATUS EPILEPTICUS TREATMENT – CUH EXPERIENCE FROM LATVIA. IS THERE A NECESSITY FOR IMPROVEMENTS?

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Brief introduction. The status epilepticus is medical emergency, therefore the treatment of the condition should be prompt and proper medication should be chosen to improve the outcomes of the patients as defined by international guidelines. Is there a place for improvement in CUH settings in Latvia?

Materials and methods. We have retrospectively analyzed medical Pauls Stradins CUH patient history file data entries from year 2012 until 2016. The assessed parameters included: patient demographics; 1st, 2nd, 3rd line therapeutic agents used; side effects of the therapy; duration of mechanical ventilation, duration of stay in ICU and treatment outcome.

Results. In total 44 cases of status epilepticus were identified – 24 men and 20 women. Mean age – 51 year. Level of independence prior to hospitalization – 54.5% fully independent, 15.9% – partially dependent, 13.6% – fully dependent. Medications received: Diazepam – 42/44 (95.4%), Valproic acid – 42/44 (95.4%, Levetiracetam (peroral) – 2/44 (4.5%), Propofol – 4/44 (9.1%), Thiopental – 32/44 (72.7%). Patients treated in ICU – 33/44 (75%). Mean time in ICU 5.6 days, Mean time of mechanical ventilation 82h. Infection – 21/44 (47.7%) (17/21 mechanically ventilated); thrombocytopenia – 6/44 (13.6%); leucopenia – 2/44 (4.5%); Pancytopenia 1/44 (2.3%); respiratory failure –1/44 (2.3%). Mortality rate 5/44 (11.4%).

Conclusions. Status epilepticus treatment options are limited in Pauls Stradins CUH regarding availability of 2nd line agents and the use of propofol as 3rd line agent. Mechanical ventilation and ICU stay duration are comparable to other patient series as well as the mortality rate. In the circumstances of limited treatment options and relatively satisfactory treatment outcomes, a prospective study needs to be carried out to avoid patient selection and other bias.

Keywords: Status epilepticus; treatment outcome; Medication.

OP51

COMORBIDITY IN MS: IMPLICATIONS FOR DISEASE MANAGEMENT

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Multiple sclerosis (MS) is a highly heterogeneous disease with the wide range of symptoms and different outcomes. Recently an increasing amount of evidence suggests that physical and mental comorbidities, and adverse health factors such as smoking, obesity, alcohol or drug use are common in MS and can affect the disease outcomes. These comorbid diseases and lifestyle factors affect the diagnostic delay between symptom onset and diagnosis, disability progression and health-related quality of life. Comorbidity may also be associated with the clinical phenotype of disease and may affect prognostication and treatment decisions. An increased understanding of comorbidities and disease course in MS may provide new insights and enhance MS management.

OP52

UPDATE OF LACUNAR STROKE

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Lacunar cerebral infarction (LACI) accounts for nearly a quarter of all ischemic strokes and is an important cause of vascular cognitive impairment and dementia.

Recent data have shown that LACI commonly is clinical presentation of cerebral small vessel disease (SVD) and occasionally develops due to embolism from heart or large arteries. The main challenge in diagnosis and research of LACI is that the affected arteries and veins are too small to be directly visualized in vivo. LACI are often not well seen on computed tomography, and accurate phenotyping requires magnetic resonance imaging (MRI).

SVD and LACI. LACI may be the single SVD type or coexist with white matter hyperintesities. SVD disturbs structural and functional network integrity in brain networks, even a minor focal lesion can cause not only focal neurological symptoms but widespread effects. SVD lesions mostly occur in subcortical areas, also may exert their effect throughout the brain. SVD commonly develops under exposure to risk faktors, as arterial hypertension, diabetes and smoking in concomitance with unfavourable inheritance. Management of risk factors is essential in prevention of LACI. There are also some well known monogenic SVD syndromes (e.g. CADASIL).

Microembolism and LACI. This mechanism is proved by several case reports in patients with high-risk sources of cardioembolism or following cardiac or aortic arch angiography.

OP53

IMPULSIVE DISORDERS IN PARKINSON'S DISEASE

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Introduction. Impulsive disorders as a side effect to dopaminergic therapy are reported in the range of 3.5-35% in treated Pakinson's disease (PD) patients. However, among patients with dyskinesias the prevalence is found to be higher showing an association between those two complications.

Materials and methods. 334 patients with PD were examined during an epidemiologic study in Estonia. The Item 1.6 (Features of dopamine dysregulation syndrome) of the MDS-UPDRS was used as a screening question to find patients who had gambling, excessive sexual drive, repetitive activities, or were taking extra medication. Based upon interviews and questionnaires, 21 patients were included into the final sample. Impulsive disorders were evaluated by using the Questionnaire for Impulsive-Compulsive Disorders in Parkinson's Disease (QUIP).

Another 47 patients were recruited during an ongoing biomarkers study in Estonia. Unified Dyskinesia Rating Scale (UDysRS) and QUIP-Rating Scale (QUIP-RS) were used to evaluate dyskinesias and impulsive disorders.

Results. Impulsive disorders were found in 6.3% of patients with PD (n=334). Among impulsive patients, 52.4% had two or more different impulsive disorders. Pathological gambling was present in 0.9% (n=3), hypersexuality in 1.8% (n=6), shopping in 2.1% (n=7), eating disorders in 3.6% (n=12), other addictive behaviours in 4.5% (n=15) and compulsive medication use in 1.8% (n=6) of all PD patients.

From the biomarkers cohort, 55.3% (n=26) patients had QUIP-RS score higher than 1 (range 1-64, mean 18.3±16.8). The prevalence of impulsive disorders in dyskinetic patients was 62.1% (n=18). However, the differences between dyskinetic and non-dyskinetic patients in QUIP-RS score was not statistically significant (p=0.084).

Conclusions. Impulsive disorders are common but underreported in PD patients. Patients, especially dyskinetic patients, receiving dopaminergic treatment should be routinely screened using specific tests.

Keywords: Parkinson's disease, impulsive disorders, dyskinesia.

OP54

ALCOHOL-RELATED SEIZURES

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Alcohol withdrawal is commonly encountered in general hospital settings, and patients with alcohol-related seizures are commonly admitted to neurological ward. Seizures could be a symptom of complicated alcohol withdrawal with risk of developing hallucinations or delirium tremens which is life-threatening condition if not properly managed.

Treatment practice of alcohol-related seizures for period of 9 years at our hospital has been analysed. Our data shows that standard treatment does not prevent delirium in patients with alcohol-related seizures compared to no treatment at all.

During my lecture I will present theoretical information about alcohol-related seizures and delirium, describe current recommendations on how to identify patients at risk to develop delirium as well as recommendations on how to measure severity of withdrawal. Different treatment approaches: fixed dose regimen and symptom-triggered treatment will be described and advantages of each regimen will be analysed.

OP55

OVERVIEW OF THE INTERNATIONAL CLASSIFICATION OF HEADACHE DISORDERS (ICHD III)

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In order to effectively study and manage headache disorders, diagnosis is essential. In both research and clinical areas, separating secondary causes from primary headache disorders is a crucial first step, followed by further specificity within these broader categories. Historical approaches to classifying headache disorders culminated in the International Classification of Headache Disorders (ICHD), published in 1988. This was revised as the International Classification of Headache Disorders, (ICHD II) in 2004. The International Headache Society's Subcommittee on Classification began work on the 3rd edition in 2010. ICHD-3 was published as the first issue of Cephalalgia in 2018, followed the publication of ICHD-3 beta version in 2013. The idea behind the beta version was to promote more field testing before presentation of the final ICHD-3. There have been excellent field-testing studies published, in migraine with aura, cluster headache, idiopathic intracranial hypertension and trigeminal neuralgia among others. Consequently, these symptoms are included only in the Appendix of ICHD-3, where they invite further study. These are examples of the evidence-based process of disease classification that now underpins all future changes to the ICHD.

The diagnostic criteria for more than 200 causes of headaches are based upon evidence when available, of a number of primary and secondary headache disorders.

This presentation will attempt to provide an overview of the rationale behind the ICHD, a guide to its use, and a summary of important diagnostic features of the primary and secondary headaches, particularly where these have changed significantly in the ICHD III from ICHD II.

OP56

SLEEP AND STROKE: NOT ONLY SLEEP APNOEA DOES MATTER

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More than one third of stroke patients develop sleep disorders such as sleep apnea, periodic limb movement disorder, insomnia, parasomnias and hypersomnia. Breathing-related sleep disorders, an established independent risk factor for stroke, where obstructive sleep apnea is a highly prevalent disease that is estimated to double the risk of stroke. It remains uncertain whether non-respiratory sleep disorders increase the risk of stroke. Circadian rhythm disorders may also have an impact on cardiovascular pathogenesis via antioxidative and anti-inflamatory features of melatonin and other related metabolites, as well as expression and polymorphisms of various clock genes. According to the arising scientific evidences, sleep has a significant role in neuroplastic recovery after stroke through consolidation of long-term memory and other cognitive functions. Identification of specific non-breathing-related sleep disorders or sleep problems that convey an increased risk for stroke may provide novel targets for stroke prevention.

OP57

THE ROLE OF NURSES IN PARKINSON'S DISEASE

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Parkinson's disease is a whole-body disease, which develops slowly and gradually over time. Constant patient evaluation and counselling are important, to deal various health problems.

The role of the nurse is important in every stage of the disease, starting from the diagnosis, the disease duration in "good" years, and in the advanced disease stage.

The treatment is very versatile, it is individual for each patient and it often changes. It is important that the patient and his relatives understand the purpose of the treatment. It is the role of the nurse to explain the treatment, differences between treatments, effects and side-efects to them.

During the treatment of advanced Parkinson's disease the nurse has the key role in the treatment with LCIG through PEG tube or permanent subcutaneous infusion with APO-go.

In addition to the medicines, it is important to pay attention to patient's diet. The nurse should explain the importance of balanced diet – what is the appropriate food, non-suitable food, the importance of fluid intake, and the weight monitoring.

Nurse's mission is to educate the patient to deal with motor and non-motor symptoms, for example swallowing disorders, walking and balance disorders, freezing, hallucinations, anxiety, sleep disturbances, bladder problems, constipation, orthostatic hypotension etc.

A specialized PD nurse has very important role to maintain patients good condition, and therefore nurse is important member of multidisciplinary PD team.

OP58

ANTI-MOG ANTIBODIES IN ADULT PATIENTS WITH DEMYELINATING DISORDERS OF THE CENTRAL NERVOUS SYSTEM

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Introduction. Antibodies against myelin oligodendrocyte glycoprotein (MOG) are reliably associated with a spectrum of demyelinating diseases including bilateral and recurrent optic neuritis as well as transverse myelitis and neuromyelitis optica spectrum disorders (NMOSD). Association between anti-MOG antibodies and certain clinical phenotypes is emerging now, with implications for anti-MOG as a promising serum biomarker with both therapeutic and prognostic value.

The aim of our study is to review the available literature and analyse the presence of anti-MOG antibodies in patients with optic neuritis, transverse myelitis, NMOSD and multiple sclerosis; to analyze correlation between antibody findings and clinical, radiological and optical coherence tomography (OCT) parameters.

Materials and methods. In this cross-sectional study a total of 50 patients at Riga East University Hospital will be included, diagnosed with optic neuritis, transverse myelitis, NMOSD or multiple sclerosis. Data on disease progression, clinical status, therapy, radiological and OCT characteristics will be obtained. Subsequenlty, blood samples will be collected and examined for the presence of anti-MOG, as well as oligoclonal bands and Aquaporin-4 antibodies.

Results. The results of this upcoming study will present association between the presence of anti-MOG antibodies and clinical, radiological and OCT parameters in patients with demyelinating CNS conditions.

Conclusions. The study holds the potential to add to current knowledge of the clinical value of anti-MOG antibodies. To our

knowledge, this is the first study focusing on anti-MOG presence in demyelinating disorders in Latvia.

Keywords: demyelinating disease, optic neuritis, transverse myelitis, neuromyelitis optica spectrum disorders, multiple sclerosis, anti MOG, OCT.

OP59

PHYSIOTHERAPY FOR THE PREVENTION AND MANAGEMENT OF SECONDARY COMPLICATIONS IN PATIENTS WITH NEUROLOGICAL CONDITIONS

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In case of a severe condition of a patient following a neurological injury, positional therapy aimed at the prevention of complications (thromboembolism, contractures, decubitus ulcers, pneumonia, or spasticity) plays a very important role. The main principle in the application of positional therapy is that all body parts should be in their correct physiological positions. The most commonly recommended positions are supine, lying on the healthy or the affected side, and sitting in bed or a wheelchair. Usually, the patient is placed in a position that extends the most spastic muscles. If muscle force is decreased in one side of the body only, the head should not be bent to the weaker side and turned towards the unaffected side, the upper arm should not be turned inwards and adducted, and the forearm should not be bent and pronated. Flexion of the wrist or the fingers should be avoided, as should be the extension of the thigh and the lower leg with thigh adduction or flexion of the thigh and the lower leg with thigh abduction.

Passive movements are preformed for muscle tone reduction and the prevention of pathological synkinesis. Passive rhythmical slow rotating movements of the trunk and the extremities should be started with large joints, gradually moving on to the smaller ones. In case of unilateral body damage, special attention should be paid to the movements of the shoulder joint – mobilization-stabilization of the scapula and abduction of the upper arm. If the motor function of the upper extremities is impaired, abduction of the upper arm by lifting it above the head is not recommended because carelessness may result in the overstretching of the glenohumeral joint capsule. The muscle tone reduction technique involves movements that increase the distance to the muscle insertion points by mobilizing soft tissues. Passive and active movements should be combined with breathing exercises. To improve the respiratory function, chest compressions during exhalation, percussion, vibration, and drainage positions are recommended. This alleviates the coughing reflex.

Mobility interventions are initiated as soon as the patient's condition stabilizes. The combination of early mobilization with other physiotherapy techniques has a positive effect on the possibilities for functional status recovery.

OP60

METABOLIC AND TOXIC POLYNEUROPATHY

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Peripheral neuropathy has many types of systemic, metabolic, and toxic causes. The big selection of deficiencies and toxins that harm the peripheral nervous system highlight its vulnerability. Chemotherapy-induced peripheral neuropathies, even/especially newer agents continue to frequently cause this pathology been known for years. Peripheral neuropathies secondary to nutriment deficiencies, medications, or toxins are frequently discussed however may be troublesome to definitively diagnose. Precise identification of external nerves wreckers is very important since these conditions are typically curable. It is vital to contemplate these etiologies once approaching patients with a wide range of neuropathic presentations. In addition, etiologic measures are also provided by other or alternative general symptoms.

A systematic approach begins with localization of the lesion to the peripheral nerves, identification of the underlying etiology, and exclusion of undoubtedly treatable causes. Initial blood tests ought to embrace a whole blood count, comprehensive metabolic profile, ESR and fast blood sugar, vitamin B, and endocrine levels (e.g. TSH); specialized tests ought to be ordered if clinically indicated. Spinal puncture and fluid analysis is also useful within the identification or exclusion of Guillain-Barre syndrome and chronic inflammatory demyelinating pathology. Electrodiagnostic studies, as well as nerve conductivity studies/ENMG will facilitate within the differentiation of axonopathy versus demyelinating or mixed pathology. Whereas most of those syndromes presented as a length-dependent sensorimotor pathology, some of the cases presented with asymmetry or radicular localization, especially in the onset, require that these causes to be thought of within the differential diagnosis of most cases of peripheral neuropathy. Treatment should to address the underlying disease process, correct any biological, hormonal and nutrimental deficiencies, and adopt symptomatic treatment of neuropathic pain and underlying autonomic symptoms. In summary, an intensive and careful history taking that incorporates a review of general ailment and malady, medication initiations or changes, and exposures can give etiological clues in most cases of nerves pathology because of metabolic abnormality, nutriment deficiency, toxins, and medications harms.

OP61

DIFFERENTIAL DIAGNOSIS OF SLEEP-RELATED MOVEMENTS IN ADULTS

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Sleep-related motor phenomena in adults comprise a heterogenous group of both clinical entities classified as sleep disorders as well as normal physiological movements. According to the current (2014) International Classification of Sleep Disorders (ICSD-3), motor events of nocturnal sleep are categorized as complex behaviours known as parasomnias and relativley more simple motor sleep-related movement disorders such as restless legs syndrome (RLS). Albeit frequent in general population, sleep-related movement disorders are probably under-recognized as conditions contributing to sleep fragmentation and consequent excessive daytime sleepiness and fatigue. Moreover, motor disorders of sleep can result in sleep-related injuries and adverse interpersonal or, occasionally, occupational or legal consequences. Of all sleep-related movement disorders, only REM-sleep behaviour disorder (RBD) requires polysmnographic (PSG) confirmation of the diagnosis. Nevertheless, video PSG is useful for, e.g. differentiating parasomnias from epileptic syndromes (such as nocturnal frontal lobe epilepsy) and ruling out other sleep disorders such as sleep apnea or periodic limb movement disorder (PLMD). PSG findings must always be interpreted in light of patient history as well as clinical and radiological data.

OP62

CHANGING PERSPECTIVES ON FRONTOTEMPORAL DEMENTIA

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As population ages, the number of patients with dementia increases. Frontotemporal dementia (FTD) is third most common overall cause of neurodegenerative dementia, characterized by atrophy mainly in frontal and temporal lobes. While the definition and underlaying causes are actively discussed and researched, it is important for clinicians to recognize signs and symptoms that are characteristic to FTD.

Clinical onset ranges from 45 to 65 years of age and life expectancy from symptom development is about 7 years, although heterogenous factors, including genetic mutations, atrophy extent and localization, are known to be a major cause of lifespan deviation.

FTD can be classified based on intracytoplasmic inclusions and dominant clinical manifestations – behavioral variant of FTD, semantic dementia and progressive nonfluent aphasia. Common symptoms as social misconduct and inappropriate behavior can be mistaken for psychiatric disorders or written of as a midlife crisis, therefore biomarker use in diagnostics is of the utmost importance.

In addition to formal cognitive testing, magnetic resonanse imaging, laboratory studies, brain single photon emission computed tomography (PET), fluorodeoxyglucose (FDG)-PET and brain biopsy might be considered as an additional tool for diagnostics, until genetic testing, cerebrospinal fluid and other methods become validated and standartized.

Treatment options are limited, as there is no effective use of medication for cognitive symptoms, and dopamine replacement therapy for motor symptoms in FTD is often ineffective. When treating behavioral symptoms, selective serotonine reuptake inhibitors present potential benefits. No specific nonpharmacological treatment guidelines exist, but exercise, balanced diet, speech therapy are recommended.

Future discoveries may lead to better understanding of underlying pathogenesis and increase potential therapy efficacy.

OP63

EMG APPROACH TO POLYNEUROPATHY

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Patients with symptoms of weakness, numbness and / or tingling are commonly referred for a nerve conduction study and electromyogram to look for the one of many different peripheral neuromuscular disorders that may account for heir symptoms. The identifiable etiologies are distributed among myopathies, motor neuron diseases, polyradiculopathies and neuromuscular junction disorders.

A clinical history followed by systematic and focused neurological examination make part of a well-defined approach, since identifiable causes of weakness make up only 11% of patients seen in an EMG laboratory. The role of electrodiagnostic testing is stressed because it provides unique information on the pathologic features of the neuropathy not otherwise available from symptoms and clinical signs.

The process is divided in 7 steps. We would like to elaborate how electroneuromygrophy is involved in these steps to full characterisation of the polyneuropathy. Most recent publications in the field of neuromuscular diseases are shown to prove the importance of each step.

OP64

PHARMACOLOGICAL TREATMENTS OF HIGHLY-ACTIVE RRMS: THE ROLE OF MONOCLONAL ANTIBODIES

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Multiple sclerosis (MS) is the commonest cause of irreversible neurological disability in young adults. Most of the patients diagnosed as affected by MS started with a relapsing-remitting (RR) disease phenotype, but there is a profound individual heterogeneity in clinical course, neuroradiological appearance of the lesions, and response to therapy.

The introduction of monoclonal antibodies (MABs) for treating RRMS has provided a molecular-targeted treatment approach that offers the potential advantage of few off-target effects, unlike smaller molecules or other biological disease-modifying drugs (DMDs) such as interferon beta and glatiramer acetate. Therefore, MABs are gained relevance in the treatment of patients with 'highly-active' RRMS and in those who do not respond to platform DMDs, since they are more efficacious in promptly reducing the risk of relapses and magnetic resonance activity (MRI), and can even lead to disability reduction and improved neurological function in some cases.

Although there is no shared definition or accepted terminology for defining the 'highly-active' status, international guidelines recommend the use of more efficacious DMTs – including MABs such as natalizumab, alemtuzumab, ocrelizumab – in patients who are at high risk of rapid accumulation of irreversible disability and in those with breakthrough disease despite an ongoing platform DMDs.

Long-term clinical experience with natalizumab, the first MAB approved for treating RRMS, and earlier post-marketing experiences with alemtuzumab will be presented to provide insights on their effectiveness in the real world setting. The benefit: risk profile of MABs will be also discussed in the light of their high-level efficacy and safety concerns.

Keywords: multiple sclerosis, highly-active disease, monoclonal antibodies, natalizumab, alemtuzumab, ocrelizumab.

OP65

CHALLENGES AND ADVANCED STRATEGIES IN TREATMENT OF ALZHEIMER'S DISEASE

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Alzheimer's disease (AD) is the most common neurodegenerative disorder, which utterly changes patient's life and destine the burden for the caregivers and the whole society. Despite the abundance of research, growing knowledge of AD pathology, specific and effective treatment remains the overwhelming challenge for decades. Alzheimer's disease is generally assumed as a multietiological condition, thus several different pathological pathways of AD were targeted searching for possible therapy. Progressive methods of AD genetics (research of AD pathology and risk candidate genes, genome-wide association study (GWAS), next-generation sequencing (NGS) technology) could be beneficial for early targeted intervention of AD, but there is still an ethical issue of announcing the AD diagnosis and starting treatment in pre-clinical stages. Agents affecting amyloid cascade (e.g., Antiaggregation of Beta-Amyloid, anti-beta-Amyloid vaccines, APP-processing Enzyme Inhibitors), substances against protein Tau aggregation, inhibitors of enzymes involved in neuronal signaling, antioxidants and anti-inflammatory agents, inhibitors of apoptosis, agents affecting CNS receptors (e.g. endocannabinoid system) and compounds with undisclosed targets are under investigation. Considering AD could be caused by chain reactions, multitargeted therapies, disease modifying drugs looks promising as well. Yet, no new compounds were approved as a new drug for daily AD treatment for a long time. From the practical point of view, cardiovascular risk factors intervention, lifestyle and dietary changes, physical activity, cognitive training should not be underestimated as dementia preventive factors. Accurate early diagnosis and adequate timely treatment, covering the pharmacological intervention, and non-pharmacological measures and support, play essential role in AD management.

OP66

CRYPTOGENIC ISCHEMIC STROKE AMONG YOUNG PEOPLE

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Incidence of ischemic stroke in young people (<50 years of age) has been increased during the last decades. A notable proportion (about 30% in general but up to 50% in those aged <30 years) of ischemic strokes at younger ages remain cryptogenic after complete etiologic work-up. A proximal source for embolism is often suspected but known high-risk source for embolism not detected. Patent foramen ovale (PFO) is a common finding in patients with cryptogenic stroke and recent randomized trials showed that in selected patients, transcatether closure of PFO results in fewer recurrent ischemic strokes compared to antiplatelet therapy. It is yet not well known what features of PFO make it a high-risk structure, although floppy atrial septum, long PFO tunnel and high degree of shunt are associated with a higher risk of stroke. Migraine with aura is another frequent feature in young patients with cryptogenic stroke, but its exact role in the pathogenesis is uncertain. Genetic precipitants likely are in the play and even known monogenic conditions may be underdiagnosed in these patients. Prognosis of cryptogenic stroke in the young appears relatively favorable although some studies suggest that adjusted to age, the risk of recurrent stroke may be comparable to those with known high-risk sources of cardioembolism. More collaborative research is needed to decipher the risk factors, pathogenesis, imaging features, and prognosis of cryptogenic stroke in younger people. Advanced cardiac and vessel imaging methods should be explored. This should lead to improved prevention and development of personalized secondary prevention.

OP67

BRAIN MRI VOXEL BASED MORPHOMETRY – TOOL FOR PARKINSON'S DISEASE RESEARCH AND USE IN CLINICAL SETTINGS

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Brain MRI voxel based morphometry (VBM) is known as a research tool for neurodegenerative and psychiatric disorders. **The aim** of this study was to evaluate a possible association of cortical thickness, cortical and subcortical volume in PD patients.with neuropsychiatric disturbancies after deep brain stimulation, sleep impairment and quality of life.

Methods. Twenty-eight PD patients (14 men and 14 women, median age 58 years) were evaluated for sleep disturbances with PDSS, quality of life with PDQ-39, SF-36 and underwent brain MRI. Twenty-two of these patients underwent STN-DBS and observed for neuropsychiatric complications after STN-DBS implantation surgery. Control group consisted of 28 healthy volunteers who were matched by age and gender. Automated voxel based image analysis was performed with the FreeSurfer software.

Results. PD patients with nocturnal hallucinations had prominent basal ganglia volume reduction. Distressful dreams were associated with limbic system and frontal white matter changes.

Volumetric analysis showed significant differences in cortical thickness between STN-DBS patients with and without postoperative neuropsychiatric complications in 13 gyruses on the right hemisphere and in 7 gyruses on the left hemisphere. White matter volume analysis showed also its reduction in the left caudal middle frontal area. Foundings suggest that neuropsychiatric complications after DBS can be associated with excitation of frontal-striatum-thalamus and temporal-parietal circuits.

Decreased social functioning in PD patients can be associated with white matter reduction in cingulate area.

Conclusions. Neuropsychiatric complications after DBS can be associated with excitation of frontal-striatum-thalamus and temporal-parietal circuits. PD patients with nocturnal hallucinations had prominent basal ganglia volume reduction

Keywords: Parkinson's disease; deep brain stimulation; delirium; quality of life; MRI morphometry.

OP68

EXPERIENCE AND CHALLENGES OF EPILEPSY SURGERY

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Epilepsy surgery is a delicate surgical method of epilepsy management. Majority of epileptic patients will be managed conservatively with satisfactory results. Although up to 30% of them will be resistant to medication and about 10% could be pretendents to epilepsy surgery. Only multidisciplinary discussion and decisions can give better results in epilepsy surgery. The role of neurosurgeon in this multidisciplinary discussion in the expertize in the availability and indications of surgical methods.

Collection of resective, disconective and neuromodulatory surgical tools are available for a surgery. Choosing the correct method of treatment is essential in good epilepsy control. This should be discussed beforehand inside the epilepsy team, as well as with the patient (or his parents) in order to prevent the unrealistic expectations for the treatment.

Experience and way of thinking in Vilnius epilepsy team is presented in lecture, together with the surgical results and complications in 35 patients.

Conclusions. Epilepsy surgery is one of the methods of epilepsy treatment. This is not an adjunct to conservative treatment but must be the first method of treatment in selective cases. Bad control and duration of epilepsy is associated with negative impact to the quality of life, so surgery, when indicated, should be performed as soon as possible. Only the multidisciplinary approach to epilepsy management leads to better results.

OP69

EVALUATION OF MYOPATHIES

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The cardinal symptom of myopathies is muscle weakness. Electrodiagnostic testing (EDX) in myopathies aims to elucidate the origin of muscle weakness, i.e., if the disorder is myopathic or neurogenic. It may also serve to document the distribution of muscle weakness and the disease course.

Nerve conduction studies are helpful in the work-up of muscle disorders. Sensory nerve conductions should be normal, and motor nerve conduction studies may demonstrate reduced stimulation responses corresponding to muscle wasting.

Needle myography can be used to estimate the size of motor units. In muscle diseases, degeneration of muscle fibres causes motor unit potentials (MUPs) to decrease in size. In neuropathies, unaffected nerve fibres may reinnervate denervated muscle fibres, hence increasing MUP size. MUPs are quantified by quantitative myography. The patient performs a liminal muscle contraction, recruiting only few MUPs at once, which can be recognized and reproduced. This lengthy and cumbersome procedure may be examiner-dependent, since recognizing and sampling of MUPs is influenced by the examiners

judgement. The sensitivity of classic "Buchthal"-MUP analysis to detect myopathy or neuropathy is low. Modern automated MUP detection methods attempt to simplify the procedure and to increase its reliability.

Needle myography can also show abnormal recruitment patterns in muscle disease. In myopathies, voluntary activation generates early recruitment, and dense interference patterns of small amplitude. Neuropathies generate high amplitude patterns with reduced recruitment. Recruitment anomalies can be estimated semiquantitatively or using computerized analyses (e.g., "Willison-Analysis").

In this ENMG teaching course, the EDX techniques mentioned above will be described and reviewed. Their usefulness for the work-up of muscle disorders will be critically discussed.

Keywords: Electroneuromyography, ENMG, EMG, Myography, Myopathy, Muscle disease.

OP70

UPDATE ON THROMBOPHILIA IN YOUNG STROKE

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Thrombophilia broadly defines inherited or acquired coagulation disorders associated with increased tendency to form intravascular thrombi. Evaluation for thrombophilia in young patients with cryptogenic stroke is a frequent clinical question. Although the prevalence of this disorder is low in stroke patients, identification of it may influence secondary prevention strategy. No validated testing and secondary prevention with anticoagulation guidelines have been published. Therefore, it is easy to order thrombophilia test, but to decide whom to test and how to use the results – is not. The aim of this lecture is to provide an update overview on the leading thrombophilic factors and their epidemiological, and clinical association with stroke.

OP71

PYRAMIDAL FUNCTION AND DISABILITY IN PATIENTS WITH MULTIPLE SCLEROSIS

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Introduction. Multiple sclerosis (MS) is an immune-mediated inflammatory disease that attacks myelinated axons in CNS and causes physical disability. Transcranial magnetical stimulation (TMS) gives us a possibility to activate cortical motor cortex and detect pathological changes in pyramidal tract even in subclinical presentations.

Methods. TMS of motor cortex was performed on 30 healthy controls and 20 patients with relapsing-remitting multiple sclerosis. Central motor conduction time (CMCT) and amplitude ratio were investigated. Motor functional score (mFS) and the expanded disability status scale (EDSS) score were determined for each patient.

Results. CMCT of all limbs was prolonged in patients with relapsing-remitting multiple sclerosis ($p<0.001$). Whereas the amplitude ratio of all limbs was reduced in patients with MS ($p<0.05$). All interside asymmetries for CMCT and amplitude ratio were prolonged in patients comparing to healthy controls ($p<0.05$). The number of pathological parameters moderately correlated with mFS score ($r=0.69$, $p=0.002$) as well as with the EDSS score ($r=0.52$, $p=0.034$).

Conclusions. All neurophysiological parameters were significantly pathological in patients comparing to healthy controls. The number of pathological parameters correlated with mFS and EDSS score. Motor functional score correlated with the level of demyelination of central motor neuron.

Keywords: multiple sclerosis, transcranial magnetical stimulation, pyramidal function, disability.

OP72

EARLY OUTCOMES OF MECHANICAL THROMBECTOMY IN ACUTE STROKE PATIENTS USING DIFFERENT TYPES OF ANESTHESIA

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Introduction. Mechanical thrombectomy (MTE) for acute stroke patients requires patient's sedation. Which sedation method is superior still remains unclear and the results of studies are controversial. Our aim was to evaluate the role of anesthesia type on early clinical outcomes of acute stroke patients undergoing mechanical thrombectomy.

Materials and methods. A prospective study of acute stroke patients treated with MTE in 2 major Vilnius hospitals was carried out. According to the type of anesthesia (general anesthesia (GA) or consciousness sedation (SC)) patients were divided into two groups. Demographical, clinical and logistical data was analyzed. Primary endpoint was favourable outcome after 24 h, defined as a decrease of NIHSS score 4 points or 0-1. The safety analysis included 7-day mortality and rate of symptomatic intracerebral (sICH).

Results. 143 patients (67.2%) received CS and 105 patients (32.8%) received GA. With exception of atrial fibrillation rate being higher in CS group, other baseline data did not differ between the groups. Favourable outcome was achieved in 51.4%

of GA and 58.7% of CS group patients, p>0.05. Periprocedural mean systolic and diastolic blood pressure and blood pressure at the end of procedure was significantly lower in GA group (p<0.05). The mean time from admission to treatment was similar in both groups. 7 days mortality was and rate of sICH did not differ between the groups, p>0.05.

Conclusions. It seems that type of anesthesia does not impact the early favourable outcome of MTE. Additional subgroup analysis could help identify the benefit of anesthesia method in prespecified groups.

Keywords: mechanical thrombectomy, anesthesia, acute stroke.

OP73

OUTCOME OF YOUNG ISCHEMIC STROKE

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Stroke is an acute disease, but has life-long consequences. Stroke at a young age (18-54 years) has a huge social impact since these patients are at the peak of their careers and have demanding family responsibilities. It is of utmost importance to know the factors that influence prognosis, both short- and long-term, to plan the most optimal prevention strategies.

In studies conducted in the past two decades, case fatality, 5- and 10-year mortality, among young ischemic stroke patients, has ranged from 0% to 4%, 6% to 11% and 12% to 17%, respectively. Vascular disease is the main cause of death. Among TOAST categories, atherothrombotic stroke has the highest mortality and recurrence risk.

Physical (e.g functional outcome, pain, epilepsy) and psychosocial problems (e.g cognitive impairments, depression, anxiety, fatigue, unemployment) are common among ischemic stroke survivors and impact their life quality.

OP74

WHAT IS THE PLACE OF NEUROSTIMULATION IN CHRONIC HEADACHES?

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The mediocre efficacy-adverse effect ratio of available drug treatments for primary headaches has created room for alternative treatments, including neurostimulation methods. The invasive methods like hypothalamic deep brain stimulation, percutaneous occipital nerve stimulation or sphenopalatine ganglion microstimulation can only be considered for some refractory chronic cluster headache patients. By contrast, non-invasive, peripheral or transcranial, neurostimulation has virtually no side effects and can be applied to any headache patient. Amongst the peripheral nerve stimulation methods external trigeminal neurostimulation with the Cefaly® and transcutaneous vagus nerve stimulation in the neck with the Gammacore® are effective to treat migraine attack, although their NNT for pain-free at 2h (10) is superior to that of oral triptans (5-6). Transcutaneous arm stimulation (Nerivio Migra®) is also effective (NNT: 4.2). Daily Cefaly® also significantly decreases migraine attack frequency (NNT for 50% responder rate: 3.8), as does bilateral mastoid stimulation (NNT: 1.5). The Cefaly® was effective for chronic migraine in an open trial. It most likely acts by modulating anterior cingulate cortex activity. The Gammacore® has shown efficacy in cluster headache.

Transcranial magnetic or direct current neurostimulation methods allow a pathophysiologically driven treatment approach in migraine, as they have the potential to modify directly abnormal brain functions. Proof-of-concept trials were positive for both treatment modalities in migraine prevention, but the optimal stimulation protocols remain to be determined.

Non-invasive neurostimulation methods appear thus as interesting alternatives to drugs for primary headache treatment. Because of their favourable adverse effect profile they can also safely be associated with pharmacotherapies.

OP75

PATHOPHYSIOLOGY-BASED TREATMENT OF MIGRAINES

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The complexity of individualized management of migraine mirrors that of its pathophysiology. While the common final pathway of the migraine attack seems to be the trigeminovascular system (TGV) that comprises all transmitters and receptors targeted by acute drugs, the factors upstream leading to activation of this system may vary and include cortical spreading depression, dysfunctioning limbic/pain control centres and disequilibrium between neurono-glial energy reserve and cortical responsivity. At present, triptans remain the mainstay for attack treatment (NNT for pain-free at 2h: 5-6), but they have incomplete efficacy, side effects and vascular contraindications. The 5-HT1F agonist lasmiditan (NNT: 5.9) or the CGRP antagonist ubrogepant (13.3) are not more effective but have less side effects and no vascular action. Preventive drugs act either on neuronal and neurotransmitter activity or on mitochondrial energy metabolism. The mAbs against CGRP or its receptor prevent attacks by acting as long-lasting acute therapies. With NNTs for 50% responder rate varying between 3.2 and 6 they are not superior in efficacy to available preventives like topiramate (NNT: 3) or valproate (NNT: 4), but they have few adverse effects with a number-needed-to-harm between 17.9 and infinite, contrary to the latter (NNH: 17 and 14). Regarding non-invasive peripheral nerve stimulation, cervical vagus nerve stimulation with the Gammacore® and external trigeminal neurostimulation with the Cefaly® are less efficient than triptans for attack treatment. By contrast, Cefaly® has an NNT of 3.8 for migraine prevention and no side effects except local paraesthesias while the preventive performance of the Gammacore® is being investigated.

OP76

FUTURE OF EPILEPSY SURGERY

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Epilepsy surgery is an important line of treatment for patients suffering from focal epilepsy, who are in 40-50% unresponsive to drug treatment. Comprehensive epilepsy programs began to emerge in the 1970s aimed at achieving tailored epilepsy surgeries. Over the years, this approach has proven highly effective for the treatment of drug-resistant focal epilepsies in children and adults with confirmation by two randomized controlled trials. Given these results, the American Academy of Neurology and German-Autrian-Swiss working group advocating referral to tertiary centers if patients do not respond to 2 or more antiepileptic drugs (AEDs). Recent data suggest that earlier surgery leads to better seizure outcome, improved quality of life and socio-professional integration, and may mitigate mortality related to trauma or Sudden Unexpected Death in Epilepsy (SUDEP). However, despite the evidence and official recommendations, observational studies evaluating trends over time reveal that referrals remain delayed and that the number of surgeries are stagnant in the US. However, across Europe there is a trend of earlier referral, both in children and adults. Over the last 20 years, there have been major advances in epilepsy knowledge, diagnostic methods, and their application in order to identify suitable surgical candidates. Patients with MRI-negative epilepsy, but with a focus well identified may be better surgical candidates than previously suggested. Stronger field MRIs and voxel-based morphometry, molecular and functional imaging, electrical source localization, as well as multi-modal co-registration contribute to improved outcomes, leading to excellent seizure control in the vast majority of patients.

OP77

EEG OF COMPLICATED EPILEPSIES

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Electroencephalography (EEG) is an established diagnostic tool with important implications for the clinical management of patients with epilepsy or nonepileptic attack disorder. The development and optimization of protocols for standard EEG but also long-term EEG using simultaneous video recording expanded the range of available techniques for the investigation of paroxysmal clinical events. In order to diagnose correctly an event, it is of utmost importance to correctly differentiate interictal physiological from pathological pattern. Seizures and status epilepticus are epilepsy emergencies with high morbidity and mortality, thus those patterns need to be recognized and treated immediately. Early treatment is crucial for optimal effect on seizure control. Finally EEG is an excellent tool to monitor diseases, either as prolonged monitoring or as repetitive standard EEGs, which should be requested timely. All these aspects are relevant in the diagnosis and follow-up of complicated epilepsies, which persist despite drug treatment.

OP78

GENERAL OR LOCAL ANESTHESIA IN INTRA ARTERIAL THERAPY (GOLIATH)

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Background. Endovascular therapy (EVT) is the standard of care for patients with stroke caused by large vessel occlusion (LVO). There is equipoise concerning the anesthetic approach. Observational studies suggest that general anesthesia (GA) during EVT is associated with worse outcomes compared to conscious sedation (CS).

Materials and mehtods. Prospective, randomized, open-label trial with blinded endpoint evaluation. We included 128 consecutive patients with anterior circulation LVO within 6 hours of onset. Patients had to be independently living, and the initial infarct had to be smaller than 70 ml. Patients were randomized to either GA or CS (1:1 allocation) before EVT.

The primary endpoint was infarct growth between MRI scans performed before and 48-72 hours after EVT.

Results. Of 128 patients enrolled, 65 were randomized to GA. The mean age was 71.4 years; median NIHSS score was 18 and 49% were female. Four (6%) patients in the CS group were converted to GA. Successful reperfusion was achieved in 68.8%, with significantly higher rate in the GA arm (76.9% vs. 60.3%, p=0.04). The difference in the volume of infarct growth among patients treated under GA or CS did not reach statistical significance (median growth 8.2 ml vs. 19.4 ml respectively, p=0.10). We found better clinical outcomes in the GA group with an odds ratio for a shift to lower mRS of 1.91 (95% confidence interval 1.03-3.56).

Conclusion. In acute ischemic stroke patients undergoing EVT for anterior circulation LVO, GA did not result in worse tissue or clinical outcomes compared to CS.

OP79

CHANGES OF CUTANEOUS AND CORTICAL SILENT RESPONSES IN A RANDOM SAMPLE OF LITHUANIA PATIENTS WITH PARKINSON DISEASE

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Aim. to investigate the properties of central and periferal inervation in Parkinson disease (PD) using transcranial magnetic stimulation (TMS) and electroneurography (ENG), also to evaluate the impact of PD on the quality of life (QOL).

Materials and methods. Participants underwent neurological examination, including UPDRS III scale (PD patients) and responded to SF-36 questionnaire. Neurophysiological studies were performed bilaterally on the ulnar nerve and abductor digiti minimi muscle, using Nicolet Viking and Magstim 200 electrodiagnostic system.

Results. 17 PD patients and 14 healthy controls participated in the study. Peripheral nerve conduction was in the normal range in both groups. CuSP measures were similar in both groups, but greater standard deviation was observed in the PD group. CSP was shorter in the more affected side (MAS) of the PD group and that difference was statistically significant in patients with a more advanced PD stage (p=0.0439). A negative correlation between the duration of time since the last dose of PD medication and the duration of CuSP (r=0.583) and positive correlation between CSP and CuSP in the MAS of PD patients were observed. QOL in the PD group was significantly worse in 4 of 8 scores of the SF-36 questionnaire.

Conclusions. impairment of inhibitory networks can be considered as a pathophysiological mechanism in PD. Further studies are needed to evaluate the impact of clinical variables on the measures of neurophysiological tests, also to establish a common mechanism affecting the duration of both CuSP and CSP. PD had a significant effect on the patients' QOL.

Keywords: Parkinson's disease, electroneuromyography, transcranial magnetic stimulation, cortical silent period, cutaneous silent period, neurophysiology.

OP80

UPDATE ON INTRACEREBRAL HAEMORRHAGE

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Intracerebral haemorrhage (ICH) is the second most common subtype of stroke and a critical disease usually leading to severe disability or death. During the last 10 years much effort is being made to clarify the pathophysiology of acute ICH and medical and surgical treatment options for ICH have been under intense investigation. Spontaneous ICH can be classified as either primary or secondary depending on the underlying cause. Clinicians should keep in mind that the concept of so-called "primary" ICH is misleading since many causes should be searched for. Various forms of cerebral small vessel diseases underlie the majority of spontaneous ICH. Traditionally, primary ICHs are attributed to vascular changes due to hypertension, atherosclerosis, and cerebral amyloid angiopathy.

ICH is a medical emergency and ICH patients must be admitted in an acute stroke unit.

The main task of acute treatment is to fight against ICH expansion. Early control of arterial hypertension and reversal of coagulopathy increases the chance of survival for patients with severe ICH. The risk of recurrence depends on the underlying vessel disease and blood pressure should be strictly managed. Even after publication of large clinical trials evaluating different treatment options, treatment of acute ICH remains challenging, and many promising interventions for acute ICH await further evidence from trials.

In the topic the new data from pathophysiology, management of ICH and option of treatment will be presented. Some practical issue will be discussed as well.

OP81

ESSENTIAL TREMOR IN LATVIA

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Introduction. Essential tremor (ET) is one of the most common movement disorders in the world. In clinical praxis tremor requires differential diagnosis. More precise genetic and clinical diagnostic markers were searched in the study.

Materials and methods. 240 ET patients were involved in genetic testing of ETM1, ETM2 loci and candidate genes *HS1-BP3*, *HCLS1*, *DRD3*, *LINGO1*. 40 ET, 35 PD patients and 39 controls were included in clinical study. Fahn, Tolosa, Marin tremor rating scale was used for ET patients, UPDRS III for PD patients and 5 self-assesment questionaires – DASS, BDI, SIAS, SPS, STAI – for all groups.

Results. In Latvian population ET phenotype was related to LINGO1 gene in "Familial ET" ($p<0.05$). No other linkage was found.

ET phenotype in Latvia: 100% postural hand tremor; 95% difficulties in drawing a spiral; 83% intention tremor; 78% postural leg tremor; 75% difficulties in drawing a straight line; 50% rest tremor in both hands; 48% changed handwriting; 43% vocal tremor; 38% head tremor; 25% face tremor.

BDI test revealed depression of various severity in 79.5% ET, 91.2% PD, 66.7% CG ($p<0.05$ between the patients and controls). Social phobia symptoms, including mild, were diagnosed in 50.0% ET, 42.9% PD and 20.5% CG. Tremor severity and results of social phobia scale (SPS) moderately correlated in ET ($r_s=0.35$; $p=0.02$).

Conclusions. Genetic analysis cannot be used for diagnostic tests of ET. Frequent comorbidity of psychiatric disorders in ET and PD patients does not allow differentiating movement disorders, but they are important additional diagnostic clinical symptoms.

OP82

LONG-TERM OUTCOME AFTER PATENT FORAMEN OVALE OCCLUSION IN YOUNG PATIENTS WITH STROKE. NATIONWIDE REGISTER DATA

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Brief introduction. Percutaneous patent foramen ovale (PFO) closure procedure in Pauls Stradins Clinical Univeristy Hospital, Riga, Latvia is available since 2004. One of the indications for the closure is stroke of undetermined cause in young adolescents as stroke etiology in those patients has been suggested to be due to a paradoxical embolism or cardioembolism.

Materials and methods. The aim of the study is to assess PFO closure effect on long-term recurrent stroke risk reduction.

The pathogenetic subtype of stroke were classified by radiological imaging and Causative Classification System for Ischemic Stroke (CSS).

In a prospective study 40 patients have been enrolled, with 23 patients followed up for three years. Patients were followed up by phone 90 days, 180 days, 1 year, 2 years and 3 years after PFO closure, standardized questions were asked about recurrent cerebrovascular events and prescribed therapy.

Results. Of 23 patients included 47.8% (n=11) were female. The mean age was 43±12 (19-66) years. According to CSS 86.9% (n=20) patients had possible cardio-aortic embolism (or paradoxical embolism) and 13.1% (n=3) patients had small artery occlusion.

In a three years recurrent stroke was reported in 13.1% (n=3) patients. Secondary stroke prevention with antiplatlet agents is still used in 30.43% (n=7) patients, oral anticoagulants - 8.69% (n=2) and 60.88% (n=16) patients are no using any antithrombotic therapy.

Conclusions and keywords. PFO is possible risk factor for cryptogenic stroke in young adolescents. PFO closure is effective in reducing recurrent cerebrovascular events. Majority of patients do not require long-term antithrombotic therapy after the procedure.

OP83

DEMENTIAS WITH PARKINSONISM

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Dementia is a complex process that involves specific molecular pathways affecting cellular functions due to accumulation of abnormally folded proteins as the core neuropathologic mechanism, causing complex clinical syndromes with cognitive decline, behavioural disorders, and motor dysfunction including movement disorders. Among neurodegenerative dementias with parkinsonism, there are Parkinson's disease dementia, Lewy body dementia, and corticobasal degeneration. These diseases are characterized by both motor and non-motor clinical manifestations including hypokinesia and neuropsychiatric disorders, with variable pattern of syndromes and course, and different underlying neuropathological mechanisms: Parkinson's disease and Lewy body dementia are alpha-synucleinopathies with formation of Lewy bodies, but corticobasal degeneration belongs among atypical parkinsonism syndromes, with tau-protein as a pathological marker. Biomarker research for complex neurodegenerative cognitive syndromes continues on genetic and epigenetic, inflammatory and trophic factors, linking them with radiologic and clinical biomarkers, with an aim to improve the early diagnosis and specific therapies.

OP84

MANAGEMENT OF EPILEPSY IN PREGNANCY

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The goal of the management of epilepsy during pregnancy is to maintain control of in particular major convulsive seizures with minimal exposure the fetus to potentially teratogenic drugs. We have learned that AEDs differ in their teratogenic potential. In particular, valproate has been associated with greater risks for major congenital malformations and adverse effects on the child's cognitive and behavioral development. Valproate should therefore, whenever possible, be avoided in pregnancy, and regulatory bodies, such as EMA, have issued restrictions on its use in women of childbearing age. Topiramate has been associated with impaired intrauterine growth, and there are signals of increased risk for malformations with this drug. In general, teratogenic risks appear to be dose-dependent and the aim should be to established the lowest effective dose before pregnancy, regardless of which AED that is used. Many AEDs undergo pronounced changes in their pharmacokinetics during pregnancy, resulting in significant decline in the serum concentration with associated risk of deterioration in seizure control. This is particularly pronounced for lamotrigine, but seen also with oxcarbazepine and levetiracetam. Drug level monitoring is therefore often recommended during pregnancy. The value of this is in-

creased if the optimal serum concentration has been documented before pregnancy to serve as an individual reference and target concentration. Whether a decline in serum concentrations as such during pregnancy should prompt a dose increase, or if this should be considered only in case of loss in seizure control, is still debated.

OP85

NEUROIMAGING IN PRE- MOTOR PARKINSON'S DISEASE

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The process of neurodegeneration in Parkinson's disease begins long before the onset of clinical motor symptoms. Parkinson's Disease is currently diagnosed when the cardinal motor sign of bradykinesia appears alongside rigidity, tremor or postural instability The period between the onset of neurodegeneration and the development of motoric disease would be the ideal time to intervene with disease modifying therapies. This pre-motor phase can last many years, but the lack of a specific clinical phenotype means that objective biomarkers are needed to reliably detect prodromal disease. The ideal diagnostic imaging test would not only confirm the presence of prodromal Parkinson's but also give some information about the lead time to motoric disease and the rate of progression. The wide range of imaging modalities that has been investigated can be broadly divided into three approaches: 1) those that target dopaminergic function in the basal ganglia 2) those that directly image the substantia nigra and 3) those assessing perturbations of disease-related brain networks. Techniques such as dopaminergic radiotracer imaging, imaging of the substantia nigra (transcranial sonography and MRI), imaging brain network activity (imaging networks through metabolism and perfusion and fMRI). Diagnostic algorithms that include clinical, genetic and molecular biomarkers in addition to imaging may have yet greater power to detect early disease.

OP86

EVALUATION OF CARPAL TUNNEL SYNDROME

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Brief introduction. Carpal tunnel syndrome (CTS) is the commonest entrapment mononeuropathy and electrophysiological tests remain the main tool to investigate this condition. The aim of this teaching course is to review these different electroneuromyographic (ENMG) methods.

Materials and methods. The ENMG techniques employed in CTS are described in detail. They include: median nerve sensory and motor electroneurography (ENG), comparative ENG of median and ulnar (ring-diff, thumb-diff, 2L-2IO-diff) or radial (thumb-diff) nerves, and conventional needle EMG. Technical pitfalls or anatomical variant are frequent, often tricky and may lead to misinterpretation.

Results. Overall, the electrodiagnosis (EDX) of CTS has excellent sensitivity and specificity with respect to clinical criteria, which define the CTS. False negative results include irritative, pre-lesionnal symptoms of mild CTS, or insufficient use of targeted tests when required by the clinical form of CTS (depending of the examination guidelines used). False positive results include asymptomatic or presymptomatic focal median nerve injury in some exposed workers. Needle EMG mainly helps to discard differential dioagnoses. ENMG also helps to precise the nature (myelinic or axonal) of nerve injury and quantifiy its severity, that are important informations in therapeutical decision making.

Conclusions. ENMG evaluation is a diagnostic, predictive and prognostic biomarker of CTS and as such is often helpful to hand surgeons. However it has little value to assess patients' response to surgery.

Keywords: CTS investigation, electrophysiology.

OP87

STROKE OF NONDOMINANT HEMISPHERE

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For most people, the right hemisphere is not dominant. Persons with a dominant right hemisphere are left-handed or bivalve. Only about 15 percent of Left-handers in the right hemispheres are a talking area. Although dominance of the right hemisphere does not matter in terms of speech impairment, there are changes in the quality of communication, cognitive impairment.

The stroke of the dominant hemisphere usually has a higher NIHS score and is associated with a worse prognosis. Malignant morbidity and mortality from MCA stroke are more common in the non-dominant hemisphere. Stroke of the non-dominant hemisphere is a risk factor for sudden death. Secondary parkinsonism clinical is observed approximately 3 months after the stroke. SSRI antidepressants accelerate neurologic recovery after a stroke and reduces the risk of dementia. Functionally non-dominant stroke treatment for neuroplasticity is very individualized.

OP88

WORK CAPABILITY LEVEL OF PATIENTS WITH MULTIPLE SCLEROSIS IN LITHUANIA: IT'S DYNAMICS AND RELATIONSHIP WITH EMPLOYMENT STATUS AND LETAL OUTCOMES

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Brief introduction. Multiple sclerosis is one of the world's most common neurological disorders, wich is one of the most common causes of disability among young people. In this study, we review the progress of multiple sclerosis and dynamics of employment status among the patients in Lithuania.

Materials and methods. This study contains data on 2072 MS patients diagnosed and visited Disability and Working Capacity Assessment Office at the Ministry of Social Security and Labour Republic of Lithuania (DWCAO) for the period 2006-2015, collected from national databases, managed by the DWCAO. The birth date, gender, and current employment status were analysed as sociodemographic data. The time of visit, current diagnosis, work capability level and validity of work capability level were analysed as research data.

Results. 451 (21.67%) patients visited DWCAO twice, 291 (13.89%) – three times, 749 (35.73%) patients four times and more. Patients who visited DWCAO at least twice (N=1491) revealed that 688 (46.1%) patients who were working at the beginning of the study, 212 (30.8%) did not work during the second visit. The data show that the older becomes the patient the lower is his/her work capability level (Pearson correlation coefficient between age and work capability level is r=-.313, p<.0014).

Conclusions. Patients with MS have a significant downward trend in employment rates until they revisit DWCAO and the minority re-entering work environment. The understanding others factors, which highly influence the life of patients with MS may help to provide better social and work environment for MS patients.

Keywords: multiple sclerosis, disability, work capability level.

OP89

OCULAR COLOR-CODED SONOGRAPHY IN NEUROLOGICAL PRACTICE

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Color-coded duplex sonography is a well-known non-invasive method in daily practice for ultrasound examination of brain vessels and parenchyma in cerebrovascular, neurodegenerative and other neurological diseases. However, ocular or transorbital color-coded duplex sonography (TOCS) is a relatively new ultrasound technique, recently introduced into neurological practice. It is simple to perform, inexpensive, fast, easily accessible and repeatable even at the patients' bedside.

TOCS provides an important structural and hemodynamic information for differential diagnosis in a wide spectrum of neuro-ophthalmological or systemic diseases in case of visual impairment (e.g. "spot sign" signal in case of central retinal artery occlusion, dilatation of superior orbital vein in arteriovenous fistula), or in presence of clinical signs of increased intracranial pressure (e.g. papilledema, enlarged optic nerve sheath diameter), etc. The TOCS technical requirements, main parameter settings of ultrasound system and safety considerations will be presented, as well as anatomical landmarks for ultrasound examination, normal values, basics of vascular diagnostics and measurements of optic nerve sheath diameter. A clinical presentation of pathological cases will be given.

To summarize, the proposed teaching course will aim to highlight clinical uses of transorbital color-coded duplex sonography as a very informative, fast and promising tool for neurologists in neurovascular, cerebral and systemic diseases.

OP90

NURSING IN AMYOLOTROPHIC LATERAL SCLEROSIS

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ALS is a rapidly progressive rare disease that belongs to the motor neuron disease group. The cause of the disease is unknown. With ALS diagnosis, the illness lasts for 3 to 5 years. ALS disorders are due to neuromuscular damage and subsequent weakening of muscles subordinate to it. The frequency of the disease is 6 cases in 100 000 inhabitants. ALS usually manifests in 50 years of age and more often in men.

Various scales are used to evaluate the functional capacity of patients to evaluate the patient's functional capacity for ten different activities – swallowing, speech, etc. My report is based on the literature review and my practical experience.

Results. It is important to have adequate treatment of symptoms in order to maintain the functionality and mobility of the joints for as long as possible. The role of the nurse is to provide the patient with instructions – gastrostomy care, use of different aids, nutrition, choice of communication methods, oxygen therapy at home, counselling of the loved ones, etc. Weakening of muscles in ALS can not be reduced in patients.

Summary. At the end stage of the disease, it is important that the patient does not feel pain and is able to die peacefully. The availability and use of the corresponding tools are important. Patients and their relatives need repeated counselling about the disease and its progression. Most of all, patients and their loved ones need a kind word from their helpers and human understanding.

OP91

ESTONIAN EXPERIENCE OF MECHANICAL THROMBECTOMY FOR STROKE PATIENTS

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Introduction. In Estonia, intravenous thrombolysis (ivTP) has been available for acute stroke treatment since 2003 and thrombectomy from 2009. The population of Estonia is 1.3 million inhabitants. We have 4 stroke units (3 per million), 6 ivTP centers, 3 centers providing thrombectomy (two of them 24/7). In 2017, 21% of all ischaemic stroke patients in Estonia received revascularisation treatment (ivTP or thrombectomy).

Materials and methods. A study assessing the clinical characteristics and outcome of patients treated with thrombectomy from 2015 to 2017 in two main interventional stroke centers (North-Estonian Medical Center and Tartu University Clinics) in Estonia was conducted using the SITS registry. Patients with large artery occlusion treated with intraveonous thrombolysis and thrombectomy or only by thrombectomy were included.

Results. During the study period, 287 patients were included with mean age 72 years and median NIHSS on admission of 17 points. The majority of patients (72%) received ivTP treatment prior to thrombectomy. A TICI score of 2b or 3 was reached in 77% of patients. The proportion of patients with mRS 0-2 at 90 days was 32%. Also the 90-day mortality was 32%.

Conclusion. The outcome of stroke patients treated with thrombectomy in Estonia is comparable to previous studies. The overall availability of acute stroke treatments is good, but a governmental strategy is needed to further improve the treatment of stroke in Estonia.

OP92

RATIONAL USE OF NEUROIMAGING FOR SELECTION OF REPERFUSION THERAPIES

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Modern neuroimaging techniques allow to get detailed information about brain tissue and vasculature in acute stroke patients. It is very important to select "right" patients to "right" treatment. On the other hand, it takes more time and delays the start of treatment.

The non-contrast plain computed tomography (CT) allows to exclude intracerebral haemorrhage and provide enough information to select patients for intravenous thrombolysis within 0–4.5 h window form stroke onset. Non-contrast plain CT is low cost, wide accessible and needs the short time. Brain CT angiography allows quickly and accurate to diagnose the occlusion of extra- and intracranial arteries as to give information about collateral supply as well. It is necessary to select patients for mechanical thrombectomy.

Brain CT perfusion could be used to distinguish the area of irreversible damage of ischemic brain tissue for reversible, but it needs more time, special soft and experienced staff. This test could be useful for acute stroke patients with unknown time of onset or stroke onset beyond 4.5–6 h.

Brain MRI is very accurate test and doesn't need the use of contrast agent and is safer for patients with renal insufficiency. The main disadvantages are high cost, longer time and limited accessibility.

This topic discusses the rational implementation of different neuroimaging techniques for acute stroke patients in various clinical situations. The schematic guideline of neuroimaging for acute stroke patients will be presented.

OP93

NEXT GENERATION SEQUENCING AS A DIAGNOSTIC TOOL FOR MUSCLE DISEASES

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Genetic confirmation of rare muscle diseases has for long been a tough challenge, using a one-by-one gene Sanger sequencing approach. With the advent of next generation sequencing (NGS), genetic diagnostic work has been considerably facilitated, and several centers around the world have now set up "muscle gene panels" or whole-exome sequencing techniques to diagnose previously undiagnosed patients with myopathy and new cases with no clear phenotype pointing at one disease. The use of NGS has proved particularly fruitful in the diagnostic workup of patients with suspected hereditary myopathies, providing diagnostic yields of close to 50% in many cases, which is a far better yield than for other diseases. Experiences with NGS using "muscle gene panels" in unclassified presumed genetic myopathies will be elaborated on in the talk, and also the many limitations of the technique, which include; 1) false-negative results (what type of mutations doesn't NGS cover?), 2) false-positive results, 3) verification of candidate genes that are not certain pathogenic, 4) the experience of the clinician in interpreting results, 5) ethics of accidental findings (what does the patient/family want to know), and 6) what to do with negative results?

OP94

NEUROMUSCULAR ULTRASOUND OF NECK AND ARM IN NEUROLOGICAL PRACTICE

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Ultrasonography (US) allows non-invasive, real-time imaging of nerves and muscles and their surrounding structures. US of cranial nerves (especially the vagus nerve) is of diagnostic value in neuroinflammatory as well as in neurodegenerative disorders such as Parkinson's disease. US of cervico-brachial nerve roots and arm nerves is used for the discrimination of neuritis (e.g. chronic inflammatory demyelinating polyneuropathy) from motoneuronopathy. US of peripheral arm nerves is most often used in clinical practice for the assessment of nerve compression syndromes such as carpal tunnel syndrome and cubital tunnel syndrome. Another important application of nerve US is the diagnosis of traumatic and iatrogenic nerve lesions. Tumours of peripheral nerves can be detected using US. Muscular ultrasound in the neck and arm region is increasingly applied to visualise, guide, and standardise the procedure of intramuscular botulinum toxin (BT) application in patients with dystonia and spasticity. Visual identification of muscles and depth control of needle placement are the key features of ultrasound-guided injection that lead to improved targeting and safety of BT injections. Small randomized studies suggest that US-guidance can improve therapeutic efficacy and reduce adverse effects of BT therapy when compared to conventional placement. US-guidance should be used especially in forearm muscles when functionality is important. In recent years, this technique has been increasingly used also for the exact targeting of BT injection in patients with cervical dystonia. The ultrasound-guided BT injection is especially recommendable if the scalene muscles, the longus colli, longissimus capitis, or the obliquus capitis inferior muscle are targeted.

OP95

TRANSCRANIAL BRAIN SONOGRAPHY: APPLICATIONS IN NEUROLOGY

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Transcranial B-mode sonography (TCS) is a non-invasive, low-cost, short-duration neuroimaging method that allows high-resolution imaging of deep brain structures. With contemporary high-end ultrasound systems, image resolution of echogenic deep brain structures can even be higher on TCS than on MRI. TCS is applied for the early and differential diagnosis of movement disorders, and for the monitoring of ventricle widths and midline shift in intensive care neurology. Hyperechogenicity of the substantia nigra (SN), a TCS feature detectable in about 90% of patients with idiopathic Parkinson's disease (PD), is already present in presymptomatic disease stages and indicates an increased risk of developing PD, especially if present in combination with other risk markers. The TCS finding of SN hyperechogenicity discriminates PD from other Parkinsonian disorders such as multiple-system atrophy and welding-related Parkinsonism. In turn, normal SN echogenicity in combination with lenticular nucleus hyperechogenicity indicates an atypical Parkinsonian syndrome rather than PD with a specificity of more than 95%. TCS detects characteristic basal ganglia changes also in other movement disorders such as lenticular nucleus hyperechogenicity in idiopathic dystonia and Wilson's disease and caudate nucleus hyperechogenicity in Huntington's disease. Reduced echogenicity of midbrain raphe is frequent in depressive disorders and correlated with both, sucidal ideation and responsivity to serotonin reuptake inhibitors. TCS reliably and safely displays deep brain stimulation electrodes in patients with movement disorders and allows intra- and postoperative monitoring of electrode location. Upcoming technologies such as digitized image analysis and TCS-MRI fusion imaging will promote novel diagnostic applications in neurodegenerative brain disorders.

OP96

CONTRIBUTION OF MRI TO DECISION MAKING IN EPILEPSY SURGERY

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The success of epilepsy surgery is strongly influenced by the fact, whether or not epileptogenic lesions are recognized preoperatively and if they are resected or destroyed completely during a surgical intervention, or not. This lecture presents requirements for presurigcal MRI quality (MRI protocol), techniques to delineate epileptogenic lesions from healthy tissue, and the how regions of interest can be created for import into neuronavigation. The impact of MRI on strategies of invasive presurgical work-up and new minimal invasive epilepsy surgery approaches will be discussed.

OP97

ALPHA-SYNUCLEINOPATHIES AND TAUOPATHIES: CLINICAL, GENETIC AND PATHOLOGICAL ASPECTS

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This talk reviews clinical, genetic and pathologic aspects of neurodegenerative diseases that have two different underlying pathologies: -synucleinopathy or tauopathy. Parkinson's disease (PD) and multiple system atrophy (MSA) are disorders with -synucleinopathy. Several clinical subtypes of PD and MSA exist. Genes for familial PD and risk loci for MSA will be discussed. -Synuclein is the main component of intra-

neuronal Lewy bodies (LBs). Pathology shows either diffuse and widepread LB pathology including neocortical areas or more limited LB pathology (e.g. LBs mostly seen in the brainstem). While in PD presynaptic striatal dopaminergic denervation occurs, in MSA postsynaptic striatal dopaminerig denervation is seen. Tauopathies present with a wide range of phenotypes, including behavioural variant frontotemporal dementia, primary progressive aphasias with speech/language difficulties (svPPA, navPPA, lvPPA), FTD with motor neuron signs, corticobasal syndrome, and progressive supranuclear palsy syndrome. Thus, tauopathies can present with predominant behavioural, cognitive or motor signs, including atypical Parkinsonism. Alzheimer's disease is a secondary tauopathy, since amyloid- pathology is seen concomitant with tau+ neurofibrillary tangles. Frontotemporal lobar degeneration (FTLD) is subclassified based on the predominant pathologically accumulated protein into FTLD-tau (45%), FTLD-TDP (50%) and FTLD-FET (rare). FTLD-tau compromises distinct 3R, 4R and 3R+4R tau pathologies, including progressive supranuclear palsy, corticobasal degeneration, globular glial tauopathy, chronic traumatic encephalotpathy and argyrophilic grain disease. Mutations in the MAPT gene are associated with familial FTLD-tau. More than 20 genes are also associated with tauopathy as a concomitant pathology. GWAS risk loci for PSP and CBD include the MAPT H1 haplotye, MOBP and CXCR4.

Keywords: Parkinson disease, MSA, frontotemporal dementia, PSP, CBD, Lewy bodies, neurofibrillary tangles.

OP98

UNRESOLVED QUESTIONS OF ESSENTIAL TREMOR: AN ETIOLOGICAL, PATHOGENETIC AND PHENOTYPICAL APPROACH

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Essential tremor (ET) is one of the most common movement disorders. Ever since the introduction of the term in 1874, its definition and criteria have changed multiple times, with the last being the updated Consensus Statement on the Classification of Tremors by International Parkinson and Movement Disorder Society Task Force on Tremor in 2018. Despite the condition being widely recognized and accepted, ET remains controversial. It is still commonly misdiagnosed, with no drug offering more than a modest benefit. In addition, to date, ET still has no clear etiology, established pathogenetic mechanism or, despite some interesting findings (i.e. fused in sarcoma gene, cerebellar atrophy), sufficiently reliable paraclinical biomarkers. These ambiguities, however, serve not as signs of an improper scientific or clinical approach towards ET, but more as a marker that ET may not be a uniform condition. Current consensus is that ET is a syndrome, and a possibility exists that it serves as an umbrella term, covering a number of different diseases with different etiologies that share a common mechanism. This overview explores the changing landscape of ET definition, data on its pathogenesis and the implications for the current understanding of ET syndrome phenotypes.

OP99

NURSING IN MULTIPLE SCLEROSIS

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Multiple sclerosis (MS) is one of the most common neurologic disease of young adults. Nursing role in MS comprehensive care is growing every year as patients' needs and nowadays medical situations demands educated and well prepared specialized nurses as a professionals.

The MS nurse is a specialist who collaborates with people affected by MS and shares knowledge, strength and hope. Nursing practice aims to both manage and influence the patient's illness by supporting disease-modifying treatments, facilitating symptoms management, promoting safe, maximal function and supporting a wellness-oriented quality of life. MS nurse is often the key person for people with MS in the acute care, outpatient, rehabilitation and home care settings, supporting them throughout the course of the disease.

POSTER PAPERS

PP01

CLINICAL SYMPTOMS OF BENIGN BRAIN TUMOURS

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Introduction. Early recognition of symptoms is important in diagnosing brain tumours.

Aim. To assess the most common symptoms of different benign brain tumours.

Materials and methods. Medical data of all cases with benign brain tumours diagnosed in 2015 were collected form the Brain tumour database and medical records at Kauno klinikos, Hospital of Lithuanian University of Health Sciences. Statistical analysis was performed by using Microsoft Excel and SPSS 23.0 software.

Results. Study group consisted of 130 cases, 84 (64.6%) female and 46 (35.5%) male ($p<0.001$), mean age 57.4±15.4 years. Meningioma was diagnosed in 91 (70.0%), hypophysis adenoma in 21 (16.2%), schwannoma in 10 (7.7%), other rare tumours in 8 (6.2%) cases. The clinical symptoms recorded (in isolation or combined) were headache (67; 51.4%; as a single symptom in 23, 34.3% cases), epileptic seizures (22; 16.9%), imbalance (18; 13.9%), vision problems (22; 16.9%), ex-

tremity weakness/numbness (13; 10.0%), hearing loss 10 (7.7%), speech disorder (6; 4.6%), endocrinopathy (5; 3.9%). Headache was recorded 51 (76.1%) females, 16 (23.9%) males (p=0.005). Headache alone or in combination was present in 51 (56.0%) cases with meningioma, 10 (47.6%) cases with hypophysis adenoma, 2 cases with schwannoma. Epileptic seizures were recorded exclusively in meningiomas, present in 24.2% of these tumours.

Conclusion. Headache was the most common symptom, more prevalent in females, also in cases with meningioma and hypophysis adenoma as compared to schwannoma. Epileptic seizures were present exclusively in meningioma cases.

PP02

PHENOCONVERSION AMONG PARKINSON'S DISEASE CONTROL COHORT

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Objective. To investigate the conversion of otherwise healthy and unaffected controls to affected and "deeply phenotyped controls".

Background. We have been enrolling control study participants for our research on neurodegenerative conditions for over 20 years. Health conditions change over time; strong study controls are susceptible to developing neurodegenerative conditions with age. Cognitive decline and mortality ensue in every control study population.

Design/Methods. A comprehensive chart review was undertaken for our entire control study population. Several factors were tabulated: date of enrollment, date of last visit, family history, symptoms of impaired olfaction, chorea, REM sleep behavior disorder, Parkinson's disease (PD), Alzheimer's disease (AD), ataxia, dystonia, essential tremor, dementia, atypical PD, restless leg syndrome (RLS), mild cognitive impairment (MCI), tremor, parkinsonism, head trauma, stroke, and date of death. We also collected data in regards to other neurological conditions that may be present such as peripheral neuropathy.

Results. Out of a total of 1624 control study participants collected over the years, 707 participants were followed here at Mayo Clinic Florida. Seven patients were accidently placed in the control group; they were affected at time of enrollment. Thirty-four of the participants developed gait impairment while being in the study, 17 patients have been diagnosed with mild cognitive impairment, and eight have developed dementia.

Conclusions. Nearly 60 controls can no longer serve as fit control study participants. Peripheral neuropathy and age may have led to gait impairment seen in some of the cases and can thus be considered a confounder. Some of the ataxia cases could have been acquired as a result of cerebral infarction. As time passes, control study participants are susceptible to developing various ailments in addition to neurodegenerative diseases; phenoconversion must be accounted for. Therefore, a concentrated effort needs to take place every few years in order to maintain a healthy control population.

PP03

CASE REPORT: STEINERT'S DISEASE

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Myotonic dystrophy type I (DM1), also known as Steinert's disease, is a rare disease with an incidence of 4.5/100000. It is the most common form of adult-onset muscular dystrophy. With the adult form of DM1, symptoms generally appear between the age of 10 to 50 years. It is characterized by progressive muscle weakness and myotonia, however when disease has progressed, myotonic symptoms can be absent.

A 50 year old female presented complaining of weakness in arms and legs, difficulty to walk, frequent stumblings, difficulty to carry things, and ptosis. Symptoms have been noticed two years ago. In the beginning not painful muscle spasms were also observed. No family history of inherited neuromuscular diseases, infections, endocrine system disorders were reported by the patient. Rosuvastatin has been prescribed for dyslipidemia for last 4 months.

During examination bilateral ptosis, weakness of eyelid muscles, hair loss in frontal and temporal head areas were observed. Muscle weakness and atrophies of distal upper extremities, also weakness of the distal lower extremities and calfs' pseudohypertrophy were noted. There were hypoactive deep tendon reflexes and hypotonus in upper and lower extremities. No pathological reflexes, muscle fasciculations or fibrillations, no sensory loss were noticed. During ENMG myotonic discharges, which are characteristic for myotonic dystrophy, were observed. Taken into the account specific age of the disease onset, phenotype and ENMG findings, adult type DM1 was diagnosed. Since no specific treatment is available, patient was scheduled for follow up and referred for genetic counseling.

Keywords: myotonic dystrophy, Steinert's disease, myotonia.

PP04

NON-TRAUMATIC HEADACHE PRESENTING TO THE EMERGENCY DEPARTMENT

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Objectives. To identify the causes of non-traumatic headache (HA) presenting to the emergency department (ED), assess the adequacy of history, investigation and treatment.

Methods. Cross-sectional study of alert patients presenting with non-traumatic HA to the ED of university hospital was

conducted from November 2017 to January 2018. The adequacy of diagnosis and management of discharged HA patients was evaluated by phone-interview.

Results. From 5040 patients, 2.9% (n=145) reported HA as main complaint, mean age was 42 years (SD±18), 62.1% (n=90) were female. Primary HA accounted for 24.8% (n=36): migraine 15.9% (n=23), tension-type HA 5.5% (n=8), trigeminal autonomic cephalgia 2.1% (n=3). 42.8% (n=62) had secondary HA: 11.0% (n=16) attributed to arterial hypertension, 13.8% (n=20) stroke, 3.4% (n=5) intracranial neoplasm, 3.4% (n=5) NSAIDs-overuse. 26.9% (n=39) had HA not otherwise specified. Preliminary ED diagnosis of tension-type HA (n=17) was misused in 82.4% (n=14). 60% (n=87) underwent CT scan, 8.3% (n=12) CTA. Simple analgesics were used in 40.0% (n=58), NSAIDs 30.3% (n=44), opioids 3.4% (n=5). From 84 patients interviewed, 48.8% (n=41) had HA episodes for >2 years; from the last, 51.2% (n=21) were unaware about their HA cause, 58.5% (n=24) recognized poor control over HA, 29.3% (n=12) had HA-related work absence during last months.

Conclusions. The majority of patients had secondary HA. Tension-type HA diagnosis was often misused at ED. Most frequently used treatment was simple analgesics. Remarkable proportion of patients had HA history for years along with poor control over HA that indicates shortcomings in pre-hospital management of HA patients.

Keywords: headache, emergency.

PP05

TINNITUS RELATIONSHIP WITH CAROTID ARTERY STENOSIS AND FOLLOW-UP RESULTS AFTER CAROTID SURGERY

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Introduction. Subjective non-pulsatile tinnitus associated with increased intima-media thickness (IMT) has been recurrently studied, however, relationship between them is controversial. The aim of this study was to investigate coherence between tinnitus and carotid artery stenosis (CAS).

Methods. Prospective study comprised 237 CAS patients admitted to university hospital during 2015-2016. CAS and tinnitus were evaluated with Computed tomography angiography, Doppler ultrasonography, Tinnitus handicap inventory (THI) and Visual analogue scale. Data were analyzed in SPSS Statistics.

Results. From 33.3% (n=79) patients with tinnitus, 58.2% (n=46) were male, mean age was 70.2±8.0 years. No statistically significant correlation found between tinnitus intensity and CAS degree at the relevant side, laterality of tinnitus and ipsilateral CAS (p>0.05). The factors implying greater risk of tinnitus were recent stroke (RR=1.19, 95%CI=0.82-1.73), female gender (RR=1.15, 95%CI=0.80-1.65), uncontrolled arterial hypertension (RR=1.09, 95%CI=0.76-1.57). 74 tinnitus patients underwent carotid surgery; subsequent evaluation within 52, 200 and 450 days revealed decreased tinnitus severity in 61.4%, 37.7% and 35.3% patients, respectively; mean decrease at the last visit was -18.7 THI score (SD±13.0). No statistically significant correlation detected between tinitus severity and IMT at the last two visits (r^2=0.008 and 0.035).

Conclusions. There was no statistically significant correlation between tinnitus intensity and CAS degree, laterality of tinnitus and ipsilateral CAS, therefore tinnitus was rather associated with other factors than CAS: recent stroke, female gender, uncontrolled arterial hypertension. After carotid surgery, notable proportion of patients reported decreased tinnitus severity that may be considered either as pathogenetic treatment effect or a placebo.

Keywords: tinnitus, carotid stenosis.

PP06

SUBCUTANEOUS IMMUNOGLOBULIN (SCIG) THERAPY IN PATIENTS WITH CHRONIC AUTOIMMUNE NEUROPATHY IN RIGA EAST CLINICAL UNIVERSITY HOSPITAL "GAIĻEZERS" – OUR CLINICAL EXPERIENCE

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Brief introduction. Chronic inflammatory demyelinating polyradiculoneuropathy (CIDP) and multifocal motor neuropathy (MMN) are both immune mediated diseases. Contrary to patients with CIDP patients with MMN does not respond to steroid and immunosuppressive therapy. Because of that immunoglobulin therapy (IGT) is the only effective therapy for those patients and in progressive cases of CIDP.

Materials and methods. Retrospective study design was used. Information was obtained from medical records of patients with CIDP and MMN treated with IGT at Department of Neurology of Riga East Clinical University Hospital "Gaiļezers" from 2015 to 2018. Data were analysed using SPSS 22.0.

Results. 7 patients received IGT – 2 patients with MMN, 5 with CIDP. Of all patients, 14% (n=1) were women, 86% (n=6) men. Average age was 49.29 (SD 7.91). All patients had received IVIG therapy and it was effective in all cases, but in most instances (71.4% (n=5)) prolonged remission was not achieved. The average duration of IVIG effectiveness was 10 weeks, thereby IVIG therapy was switched to SCIG. The administration schedule for all patients was 6.5 mg once per week. None of patients admitted serious side effects from therapy and it was effective in 4 patients. One patient admitted that IVIG was superior to SCIG and therapy was switched back to maintenance IVIG therapy 2 times per year.

Conclusions. IVIG and SCIG therapy are both effective for patients with immune mediated neuropathies and significantly

improves the quality of life. SCIG therapy is good option for maintenance therapy and is technically simple, safe and effective for those patients. Prior SCIG therapy all patients had received IVIG.

Keywords: CIDP, MMN, subcutaneous immunoglobulins.

PP07

GOOD STROKE AWARENESS AMONG SCHOOLCHILDREN IN ESTONIA

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Introduction. In Estonia, stroke is in a third place of death causes. It is important to pay more attention to informing the public about stroke. It will help to speed up hospitalization time. For the patient, it is important, that their relatives know, what to do, when stroke occurs. It is important to educate children how to act in case of stroke. The aim of this study was to evaluate the awareness of stroke among school children in Tartu county.

Methods. To assess students' knowledge about stroke, questionnaire were used. Statistical analysis were made using StatCrunch website.

Results. A total of 526 6 to 11th year students participated. 11 different schools from Tartu city or county took part in the program. Half of the students thought that stroke is a vascular disorder of the brain. Most of students knew that stroke appears suddenly. Speech disorder, one side of the face paralysis and one side of the body or limb paralysis were considered as stroke symptoms. Students thought that stroke risk factors are high blood pressure, insufficient physical activity, smoking, arrhythmia, and abuse of alcohol. 97% of students knew that when stroke occurs, there is need to call ambulance immediately.

Conclusion. It was surprising that the students knowledge about stroke were so good. Such educational programs should be continuous to promote healthy lifestyle, prevent cardiovascular diseases, to recognize stroke symptoms and to encourage people to seek immediate help in case of stroke.

PP08

OUTCOMES OF REPERFUSION THERAPY IN CAROTID VERSUS VERTEBROBASILAR ISCHEMIC STROKE

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Introduction. current stroke diagnosis and treatment methods are based on a carotid stroke (CS) pattern. Carotid and vertebrobasilar circulations differ anatomically and hemodynamicaly, leaving us with the question if their outcomes differ too. We aimed to analyse outcome differences between carotid and vertebrobasilar circulation strokes after reperfusion therapy.

Methods. we analysed demographic, clinical, laboratory and radiological data of 423 ischemic stroke patients treated with reperfusion therapy in Vilnius University Hospital Santaros Klinikos. Outcomes were assessed using Modified Rankin Scale (mRS) and National Institutes of Health Stroke Scale (NIHSS).

Results. 65 (15.4%) patients had vertebrobasilar stroke (VBS). Unchanged neurological status occured more frequently in VBS than in CS (30.2% vs 17.3%; p=0.026), as well as nursing facility discharge (18.2% vs 9.8%;p=0.043), intubation (22.7% vs 7.9%; p=0.001), gastric tube insertion (27.3% vs 16.8%; p=0.036), higher mortality after endovascular treatment (37.5% vs 11.8%; p=0.004), despite lower initial NIHSS score in VBS compared to CS (9 vs 11; p=0.021). mRS and NIHSS on discharge did not differ significantly.

Conclusions. our study demonstrates that though the standard scales did not reflect any difference between VBS and CS outcomes, a lot of secondary features of poor outcome were more prevalent in VBS group, making the finding of initial lower NIHHS score questionable. We suggest that the diagnostic and treatment approach should be different when it comes to VBS. This highlights the need for creating the specific methodology for VBS diagnosis and treatment.

Keywords: ischemic stroke, reperfusion, carotid, vertebrobasilar, outcomes.

PP09

OLFACTORY FUNCTION DECREASE IN PATIENTS WITH COGNITIVE IMPAIRMENT

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As the population ages, incidence of neurodegenerative diseases is increasing. Decrease of olfactory function is part of physiological ageing process, but pathological loss might be a sign of early neurodegeneration that results in dementia.

Cross-sectional study was performed by interviewing patients aged above 60 with no history of strokes. Patients were asked about additional factors that can influence olfactory function. Patients were assessed using The Montreal Cognitive Assessment (MoCA) and with validated olfactory Screening 12 test.

Study was conducted with 40 patients with average age of 75.9 years. Patients were divided in 3 groups based on MoCA score: normal cognitive function (26 points, 9 patients), mild cognitive impairment (17-25 points, 18 patients) and dementia (16 points, 13 patients). Normal cognitive function group recognized 9.2 out of 12 possible scents on average, mild cognitive impairment group recognized 6.9 scents, rangeing from 4 to 10, while dementia group recognized 5.2 scents correctly. Correlation was proven with Pearson's correlation coefficient (r=.71, p 0.01).

Low MoCA scores have direct correlation with decreased sense of smell, based on the Screening 12 test. Patients in mild cognitive impairment group should be monitored long-term to assess correlation between fewer recognised scents and potential development of dementia.

Mild cognitive impairment, dementia, neurodegeneration, olfactory dysfunction.

PP10

STROKE, OTHER CEREBROVASCULAR IMPAIRMENT AND BOWEL DISEASES

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Objective. To analyse cerebrovascular impairment in patients with bowel diseases.

Methods. In the Departments of Internal Diseases, Abdominal Surgery and Intensive Care Unit of Vilnius City Clinical Hospital 106 patients with bowel diseases and neurological pathology (74 women, 32 men; age – 18-99 years, mean – 67.3 years) were examined. All the patients underwent sonoscopy of internal organs, some of them – retrograde irigoscopy, colonoscopy, CT of abdominal organs, cerebral (spinal) CT, MRI.

Results. Cerebrovascular impairment has manifested in 19 (17.9%) patients: 4 (3.8%) – ischemic stroke (IS), 3 (2.8%) – reversible ischemic neurological deficit (RIND), 11 (10.4%) – consequences of IS (CIS), 1 (0.9%) – intracerebral hemorrhage (ICH). 3 (2.8%) out of 4 (3.8%) patients with IS and 7 (6.6%) out of 11 (10.7%) patients with CIS had colon carcinoma. In the event of CIS in comparison with the group of patients with chronic cerebral ischemia the decreased level of hemoglobin, erythrocytes, hematocrit and potassium was diagnosed – 118.1±3.6 g/L respectively, $p<0.001$; $3.85\pm0.2\times10^{12}$/L, $p<0.001$; 35.9±1.4%, $p<0.05$; 3.8±0.1 mmol/L, $p<0.001$. Other neurological pathology was diagnosed in 87 (82.1%) patients (cerebral or spinal metastases, epileptic seizures, neuropathy, Guillain-Barré syndrome, etc.).

Conclusions. The association between ischemic stroke and colon carcinoma has been established. In patients with previously diagnosed ischemic stroke the decreased level of hemoglobin, erythrocytes, hematocrit and potassium was detected.

PP11

CEREBROVASCULAR DISORDERS IN PATIENTS WITH THYROID DISEASES

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Objective. To analyse cerebrovascular disorders in patients with thyroid diseases.

Materials and methods. 62 patients (60 women and 2 men) with thyroid diseases and neurological pathology were examined in the Departments of Internal Diseases and Nephrology of Vilnius City Clinical Hospital. The age of patients ranges from 39-88 years (average 66.8±1.9 years). All the patients underwent a complete blood and biochemical blood tests, the amount of the serum thyroid hormones (TSH, FT4) has been measured, sonoscopy of the thyroid gland has been performed, part of the patients underwent cerebral (spinal) CT, MRI.

Results. Cerebrovascular disorders have manifested in 12 (19.4%) patients: 3 (4.9%) – ischemic stroke (IS), 2 (3.2%) – reversible ischemic neurological deficit (RIND), 2 (3.2%) – transient ischemic attack (TIA), 5 (8.1%) – consequences of IS. It has been identified that all patients with IS and TIA suffered from hypothyroidism and 4 (6.5%) out 5 (8.1%) patients with the previously diagnosed IS were ill with hypothyroidism. In case of IS a statistically significant increase in the amount of TSH in blood (6.47±1.0 mIU/L; $p<0.05$) has been found in comparison with the group of patients with chronic cerebral ischemia (3.04±1.3 mIU/L). Non-cerebrovascular neurological pathology (cerebral metastases, Hashimoto's encephalopathy, epileptic seizures, hypothyroid myopathy, thyroid neuropathy, etc.) was diagnosed in 50 (80.6%) patients.

Conclusions. Cerebrovascular disorders are the most common neurological manifestations of thyroid diseases. The association between ischemic stroke and hypothyroidism has been established.

PP12

NON-MOTOR SYMPTOMS IN ICELANDIC PATIENTS WITH PARKINSON'S DISEASE: PRELIMINARY RESULTS OF A MIXED METHOD STUDY

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Introduction. Non-motor symptoms (NMS) is the primary reason for impaired quality of life in patients with Parkinson's disease (PD). Since 2014, the 30 item NMS-quest have been administered at the PD outpatient clinic at the National University Hospital in Iceland. Our aims were to describe (a) the prevalence of NMS in Icelandic PD patients, (b) how NMS affect the daily life of PD patients, and (c) alleviating solutions.

Method. A mixed method research design. Qualitative and quantitative data were collected from electronic patient records from 2014 to present (in total 220 patients). Quantitative variables included the NMS-quest, the Hoehn and Yahr scale, recordings of orthostatic blood pressure, body mass index, NMS prior to the diagnosis, length of disease, and PD medication. Qualitative data were extracted from textual descriptions from different interdisciplinary healthcare professionals. An interim analysis was conducted from the evaluation of 100 patients, using descriptive statistics.

Results. The mean age of patients was 68 years (range 24-85: *SD* 9.89). The number of non-motor symptoms were 11 (range 3-21: *SD* 3.82), mean body mass index 28 (range 18.5-40.0: *SD* 4.80). The most prevalent NMS were constipation (69%), urgency to pass urine (66%), difficulties with swallowing (49%), and unexplained pain (43%). Problems with sleep and depression were also frequent. Obese PD patients were more troubled by their NMS. An updated data analysis will be presented at the congress.

Conclusions. NMS are common in Icelandic patients with PD. Healthcare professionals need to provide proactive actions to alleviate the consequences of NMS.

Keywords: Parkinson's disease, non-motor symptoms, mixed method study, outpatient care.

PP13

RADIOGRAPHIC PREDICTORS OF MORTALITY IN PATIENTS WITH ACUTE HYPERTENSIVE SPONTANEOUS CEREBELLAR HEMORRHAGE

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Brief introduction. Spontaneous cerebellar hemorrhage (SCH) is, arguably, the most lethal among all intracerebral hemorrhages (mortality rate of 20–75%) because of its unique neurological location near the brainstem. Hence, neuroimaging predictors of mortality in patients with acute spontaneous SCH are valuable.

Materials and methods. 92 consecutive patients with acute hypertensive SCH were retrospectively analyzed. Neuroradiographic data were determined on admission. The patients were divided by Glasgow Outcome Scale (GOS) score at discharge into the survival (GOS score 2-5) and fatal (GOS score 1) outcome groups. The patients with concurrent diseases in the fatal outcome group were excluded. The association between fatal outcome and neuroradiologic findings was investigated using a logistic regression.

Results. There were 68 (73.9%) patients in the survival and 24 (26.1%) in the fatal outcome groups. There were significant differences between survival vs. fatal outcome groups in initial baseline SCH volume, diameter, location of hematoma, presence of brainstem compression and width of perifocal edema around the hematoma ($p<0.05$). The following radiographic three risk factors were significantly correlated with fatal outcome within acute phase by univariate analysis: SCH volume, maximum diameter, location of hematoma in the right hemisphere and vermis. On the other hand, only higher admission SCH volume was independently correlated with fatal outcome by multivariate logistic regression (B=1.448; OR=4.256, 95% CI 2.022-8.955; p=0.000).

Conclusions. The presented study supports predominant role of SCH volume among neuroradiographic data in predicting fatal early outcome in patients with acute hypertensive SCH.

Keywords: cerebellum hemorrhage, outcome, neuroradiological predictors.

PP14

THE BASELINE SCORES OF THE CAMBRIDGE NEUROPSYCHOLOGICAL TEST AUTOMATED BATTERY AS COGNITIVE PREDICTORS OF DONEPEZIL TREATMENT EFFICACY IN ALZHEIMER'S DISEASE

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Introduction. The Cambridge Neuropsychological Test Automated Battery (CANTAB) was used to establish, which tests scores are able to predict the efficacy of donepezil treatment in Alzheimer's disease (AD). Prospective cognitive predictors were explored alongside with demographic and clinical indicators. The aim of this study was to establish the ability of CANTAB baseline scores to predict the treatment efficacy at the maximum improvement time-point after 4 months of therapy.

Materials and methods. 62 treatment-naïve AD patients and 30 healthy controls were enrolled in the prospective, follow-up study. Parallel versions of Choice Reaction Time (CRT), Stockings of Cambridge (SOC), Paired Associates Learning (PAL), Spatial Working Memory (SWM), Pattern Recognition Memory (PRM) cognitive tests were used. The measure of overall dementia severity was Mini-Mental State Examination (MMSE). Depression level (Geriatric Depression Scale, GDS) and vascular factors were included in the General Regression Models (GRM).

Results. Both groups didn't differ according to age, education, gender, depression. Significant General Regression Models showed that 7 baseline scores of PAL (t-values for regression coefficients 2.57-2.86, $p<0.05$, the best results were for PAL Mean Trials to Success and PAL Stages Completed), PRM delayed (PRMd) ($t=3.08$, $p<0.05$) and CRT Mean Correct Latency ($t=3.42$, $p<0.05$) were significant predictors of efficacy at 4 months of donepezil treatment. No predictive value was found for SWM and SOC.

Conclusions. The CANTAB PAL, PRM, and CRT tests, performed before the start of treatment, provide reliable cognitive prediction of donepezil efficacy in Alzheimer's disease.

Keywords: Alzheimer's disease, donepezil, CANTAB, efficacy predictor.

PP15

EFFICIENCY OF INTRAVENOUS IMMUNOGLOBULIN THERAPY IN CASES OF MYASTHENIA GRAVIS AT PAUL STRADINS CLINICAL UNIVERSITY HOSPITAL NEUROLOGY CLINIC FROM 2015 TILL 2017

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Introduction. Myasthenia gravis is a relatively rare autoimmune disorder caused by an antibody-induced neuromuscular transmission blockade. It causes skeletal muscle weakness.

Approximately 15-20% of patients suffers from the myasthenia crisis, usually within the first 2 years from the diagnosis.

One of the most effective myasthenia crisis management is intravenous immunoglobulin therapy.

Materials and methods. In a retrospective study, patients diagnosed with Myasthenia gravis who received intravenous immunoglobulin therapy were selected and analyzed.

The purpose of the study is to evaluate the reduction of symptoms after receiving the treatment.

Patients analysis were based on clinical symptoms, duration of the disease, and complications during treatment.

Results. The proportion of patients tested was significantly reduced in a few days. Some patients did not show signs of remission. Some patients did not receive a complete course of treatment in response to indirect immunoglobulin side effects.

Conclusions. For most patients, treatment was effective. Effectiveness is not directly related to the onset of therapy. The severity of the symptoms is not related to efficacy.

PP16

POSTERIOR REVERSIBLE ENCEPHALOPATHY SYNDROME (PRES) IN RIGA EAST UNIVERSITY HOSPITAL (REUH)

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Posterior reversible encephalopathy syndrome (PRES) is a rare condition, clinically presented by rapid onset of neurological

symptoms – seizures, severe headaches, blindness or loss of consciousness (Faille at al., 2017). Described by *Hinchey* (Hinchey et al., 1996) for the first time. Etiology of PRES is still not completely understood. PRES development is associated with such conditions as eclampsia, preeclampsia, organ transplantation, acute kidney failure, chemotherapy (McKinney et al., 2007).

Our target was to identify number of patients with confirmed PRES in REUH during the period 2017-2018 and analyse the possible cause of disease, patient age, gender and methods of treatment and diagnostics.

During 2017 – 2018 (May) were diagnosed 4 cases of PRES. All of the patients were women 17-51 years old. Each of them had different cause of PRES development – massive blood transfusion, chemotherapy course, eclampsia and unspecified meningoencephalitis. In 3 cases – seizures were present. In one case – in electroencephalogram (EEG) was confirmed focal *status epilepticus*. In all cases – cognitive disorders and cortical blindness were present. All patients had typical Magnetic resonance imaging (MRI) findings. In all cases, symptomatic treatment was performed. All patients received anticonvulsant and analgesic drugs. Two patients received – antipsychotic drugs. There is no specific treatment option for PRES, each patient is treated individually.

PP17

SELF-REPORTED CAUSES OF FALLS IN MULTIPLE SCLEROSIS

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Introduction. Falls in patients with multiple sclerosis are common, cause injuries, fear of recurrent falls, affects mobility. Our objective was to investigate main self-reported causes of falls in patients with multiple sclerosis.

Methods. It was a prospective study of the relapsing-remitting multiple sclerosis patients in remission with the disease modifying treatment and the Expanded Disability Status Scale (EDSS) < 6.5. Patients were asked to fill the original questionnaire about falls past 6 months, its causes and fear.

Results. We analyzed data from 69 patients. 21 (30.4%) of them fell one or more times past 6 months and were included in the fallers group and 48 (69.6%) haven't fell and were included to non-fallers group. Groups were similar by age (p=0.469), gender (p=0.378) and disease duration (p=0.527). Mean of falls was 3.57±0.62. Fallers were asked to name reasons that determine their falls. Mostly falls were caused of coordination disturbances (76.2%), also of fatigue (42.9%), visual problems (28.6%), muscle weakness (28.6%) and spasticity (4.8%). Fear of falls indicated 28 (40.6%) patients. Fear at home indicated 26 (37.7%), in publicity – 23 (33.3%), fear affecting daily activity – 19 (27.5%) patients. Comparing results, fear of falling was common for the fallers (61.9% vs. 31.3%, p=0.017). Fallers were more likely to feel fear of falling at home (61.9% vs 27.1%, p=0.006) and at publicity (57.1% vs 22.9%, p=0.006), daily activity didn't differ (42.9% vs. 20.8%, p=0.06).

Conclusion. Patients indicated coordination problems as a main cause of falls. About 40% of patients feel fear of falling.

PP18

HEADACHE PROFILE IN MULTIPLE SCLEROSIS PATIENTS

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Brief introduction. Reports suggest that multiple sclerosis (MS) patients have an increased incidence of headache. Understanding headache and MS coincidence and headache impact on quality of life can improve patient care.

Aim, Materials and methods. Aim of study is to determine epidemiological data and phenotype of headache in MS patients, to identify impact of disease modifying therapy (DMT) on headache and to analyze the influence of headache on daily activities.

In cross-sectional study 56 MS patients with relapsing remitting MS on remission stage (age 20-60) and 56 healthy controls (age 19-64) completed questionnaire, identifying headaches according to ICHD-3. To identify the adverse impact of headache we used *The Headache Impact Test-6* (HIT-6).

Results. 23 (41%) of MS patients had headache before MS diagnosis. 6 (11%) MS patients had a headache since they began to use DMT. The majority 16 (29%) of patients received Glatiramer acetate.

Headache incidence for MS and control group – 30 (54%) and 38 (68%); of those – migraine 12 (21%) and 20 (36%); tension-type headache 18 (32%) and 17 (30%) acordingly.

Headache had little to no impact on quality of life for 21 (38%) MS patients and 18 (32%) control subjects; headaches are having a very severe impact on quality of life for no MS patients but for 5 (9%) controls.

Conclusions and keywords. More than half of MS patients have primary headache, it has little or no effect on quality of life for most MS patients. DMT has little impact on headache occurrence.

PP19

LONG TERM HEALTH RELATED QUALITY OF LIFE AFTER CAROTID ARTERY REVASCULARIZATION OR MEDICAL THERAPY

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Objectives. To evaluate health-related quality of life (HRQoL) in patients with severe carotid disease who underwent revascularization or received best medical therapy (BMT).

Methods. This prospective cohort study involved 213 patients with severe carotid stenosis who underwent carotid endarterectomy – CEA (n=159), stenting – CAS (n=29) or received BMT (n=25). HRQoL was measured using SF-36v2 before revascularization, at 6 and 12 months follow-up period.

Results. During the 6 and 12 months follow-up period, there weren't statistically significant changes in any of SF36v2 scores in CEA and CAS groups. In CEA group SF36v2 scores <50 were observed in general health (GH), physical (PCS) and mental (MCS) component summary domains which remained unchanged at 6 and 12 months. The highest scores (>70) in CAE group were for social functioning (SF). In CAS group SF36v2 scores <50 were in role physical (RP), GH, PCS un MCS which remained unchanged at 6 and 12 months. The highest scores (>70) in CAS group were for SF and mental health (MH) before stenting and at 6 months. In BMT group SF36v2 scores in RP became significantly lower at 6 (34.6) and 12 (37.5) months as compared with scores at the enrolment (p=0.039, ^{2}=0.392). Similar findings were observed in MCS where SF36v2 scores became lower after 6 (47.9) and 12 (44.5) months.

Conclusions. There seems to be no major association with changes of HRQoL after CEA or CAS in one year period. The HRQoL worsened in role physical and mental component in patients who received BMT.

Keywords: carotid artery stenosis, health-related quality of life, endarterectomy, stenting, best medical treatment.

PP20

EFFECT OF CAROTID ARTERY REVASCULARIZATION ON THE COURSE OF COGNITIVE FUNCTION AND DEPRESSIVE SYMPTOMS

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Introduction. Carotid artery disease is not just causal risk factor of ischemic stroke, but it may predispose patients to cognitive function decline and affect emotional state. The aim of the study was to evaluate long term effect of carotid artery revascularization and best medical treatment (BMT) on cognitive function and depressive symptoms.

Materials and methods. In this prospective observational cohort study 213 patients with extracranial carotid artery stenosis (70%) underwent assessment of cognition and depressive symptoms before carotid endarterectomy (n=159), carotid stenting (n=29) or best medical treatment (n=25) and as well as at 6 and 12 months follow-up.

Results. There was statistically significant improvement of cognitive function after carotid artery endarterectomy (CEA) and stenting (CAS): median total MoCA score before endarterectomy (CEA) was 25 (IQR 22-27), 6 months after CEA – 26 (IQR 24-28), 12 months after CEA – 27 (IQR 25-29), p<0.001, *Kendall's W*=0.28. Median MoCA score before CAS was 24 (IQR 21-26), after 6 months – 24.5 (IQR 21-28), after 12 months – 25 (IQR 22-28), p=0.01, *Kendall's W*=0.261. Statistically significant differences were not observed in BMT group: median total MoCA score at the beginning was 25 (IQR 23-26), after 6 months – 26 (IQR 23-27), after 12 months – 26 (IQR 23-28). Frequencies of depressive symptoms did not change at 6 and 12 months follow-up in none of the study groups.

Conclusions. High-grade carotid artery revascularization seems to exert beneficial effect on the course of cognitive function but not on the course of depressive symptoms in patients with atherosclerosis.

Keywords: carotid artery stenosis, cognitive function, depression, endarterectomy, stenting, best medical treatment.

PP21

PARANEOPLASTIC NEUROPATHY COMBINATION WITH LIMBIC ENCEPHALITIS WITH POSITIVE ANTI-HU ANTIBODY. A CASE REPORT

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Anti-Hu antibody – associated paraneoplastic neurological syndromes (Hu-PNS) are presented as encephalomyelitis and/or sensory neuropathy. Paraneoplastic encephalomyelitis (PEM) is characterized by involvement of several areas of the nervous system, including temporal lobes and limbic system, brainstem, cerebellum, spinal cord, dorsal root ganglia and autonomic neuropathy. Detection of anti-Hu antibodies allow early diagnosis of PEM.

We report the case of a 63-year-old woman with a two-years history of progressive leg and hand numbness and mental disturbances (short-term memory loss and difficulties with concentration and orientation). General laboratory tests showed no significant pathological findings. The neurophysiological examination suggested demyelinating polyneuropathy. Hyperintensive lesions in the medial part of the temporal lobes were presented on the T2 and FLAIR MRI sequences. In CSF protein was slightly elevated (480.2 mg/L). The CSF microbiology was also negative. Blood serum was positive for anti-Hu antibody. As there was no evidence of specific symptoms suggesting primary malignancy, a CT scan of chest/abdomen/pelvis was performed. Enlarged mediastinal lymph nodes were found. Diagnostic videostroboscopy with lymph node biopsy was followed, but malignant cells were not verified. At the moment, oncological screening is ongoing and short-term immunomodulatory therapy is initiated.

PP22

THE ONSET OF EPILEPSY AFTER EXPERIENCING TRAUMATIC BRAIN INJURY

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Brief introduction. Post-traumatic epilepsy accounts for 2-16% of all epilepsies and an increasing incidence of traumatic brain injury (TBI), which is the most common cause for young adults to develop epilepsy, has been observed recently.

Materials and methods. A retrospective study of Kaunas Clinics patients that developed epilepsy after TBI in 2014-2015 was performed.

Subjects were divided into three groups according to the frequency of epileptic seizures (ES): ES occurred 1 time per week, <1 time per week but 1 time per month and <1 time per month.

Subjects were divided into three groups according to the number of anti-epileptic drugs (AEDs) used for treatment: treated with one AED, two AEDs and three or more AEDs.

According to the severity of TBI subjects were divided into two categories: mild TBI and moderate/severe TBI.

Statistical analysis was performed using SPSS 23. Data were analyzed using Mann-Whitney, Spearman correlation and Kaplan-Meier tests. A value of $P<0.05$ was considered statistically significant.

Results. Data of 76 subjects, 33 (43.3%) women and 43 (56.7%) men, was analyzed. Mean age of the subjects – 45.2±11.9 years, respectively – women – 46.4±2.7 years, men – 44.3±11.4 years. Mean of age during TBI – 20.0±13.7 years, respectively – women – 22.5±14.5 years, men – 21.60±13.19 years.

The average onset period of epilepsy after TBI was 5.53±7.63 years. During the first year after TBI epilepsy occurred in 29 (38.2%) subjects, during the second year – 11 (14.5%), during the third year and later – 36 (47.3%). Epilepsy occurred in men 4.9±6.5 years after TBI, in women – 6.3±9.0 years ($p>0.05$).

No correlation was found between the age of subjects during TBI and the onset period of epilepsy after TBI ($r=-0.01$, $p>0.05$). Epilepsy occured after 8.0±9.3 years in subjects who experienced mild TBI and after 4.8±7.7 years in subjects who experienced moderate/severe TBI ($p>0.05$).

The average onset period of epilepsy after TBI for subjects who experienced ES 1 per week was 8.3±6.9 years, respectively <1 per week but 1 per month – 7.8±12.1 years, <1 per month – 4.4±6.2 years ($p>0.05$).

The average onset period of epilepsy after TBI was 5.2±8.9 years in the group of patients treated with one AED, 5.4±6.3 years – in the group treated with two AED and 7.9±8.1 years in the group of patients treated with 3 AED ($p>0.05$).

Conclusions. The average onset period of epilepsy after TBI was 5 years: in about 38% of patients it was less than 1 year and in 47% of patients it was longer than 3 years. To 1/3 of the subjects epilepsy occurred in less than 1 year, to half – 3 years.

No association between sex, age during TBI, severity of TBI and the onset period of epilepsy after TBI was observed.

No associations between the duration of the onset period of epilepsy after TBI and the frequency of ES and number of used AED were observed. No association between the onset period of epilepsy after TBI and the number of AEDs required for treatment was observed.

Keywords: epilepsy, traumatic brain injury.

PP23

HEART RATE VARIABILITY AND CARDIOVASCULAR AUTONOMIC NEUROPATHY ASSOCIATION WITH HEPATIC STEATOSIS INDICES IN DIABETIC PATIENTS

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Introduction. Cardiac autonomic neuropathy (CAN) is a serious complication of longstanding diabetes. Diabetic patients with low heart rate variability (HRV) and hepatic steatosis have an increased prevalence of complications and risk of mortality. Fatty liver index (FLI), hepatic steatosis index (HSI), non-alcoholic fatty liver disease-liver fat score (NAFLD-LFS) have been validated for evaluation of risk of hepatic steatosis.

Methods. The study examined 64 type 2 diabetes patients aged 35-75. Cardiovascular autonomic function tests were performed on tilt table. Ewing et al (1985) classification was used for staging of CAN. Hepatic steatosis indices were calculated by formulas. HRV data was collected through a Task Force monitor.

Results. Characteristics of the group: mean age 58.6±9.5 years, mean duration of diabetes 6.9±5.1 years, mean HbA1c 6.9±1.3%. The prevalence of possible CAN was detected in 40 (62.5%), definite CAN in 15 (23.4%), severe CAN in 4 patients (6.3%). Frequency domain analysis of HRV – low frequency/high frequency (LF/HF) ratio didn't show significant differences between groups with versus without CAN (1.73 versus 2.07, p=0.480). LF/HF ratio correlates with FLI (p=0.024) and NAFLD-LFS (p=0.045). HSI, FLI and NAFLD-LFS were higher in patients with definite CAN (FLI: CAN patients 89.7±15.4 versus patients without CAN 71.5±27.6, p=0.009; NAFLD-LFS: CAN patients 2.7±1.7 versus patients without CAN 1.3±1.7 p=0.002). BP response to standing correlates with HSI (p=0.000) and FLI (p=0.007); HR response to VM correlates with FLI (p=0.022).

Conclusions: We found association of hepatic steatosis markers with CAN and HRV. Low HRV and liver steatosis might be associated with increased cardiovascular morbidity thorough CAN.

PP24

THE PATIENTS WITH EPILEPSY: QUALITY OF LIFE

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Brief introduction. Epilepsy may affect patients' quality of life (QOL). It is important to know which factors influence QOL in patients with epilepsy (PWE).

Materials and methods. Patients at the Hospital of LUHS aged 12-17 years (Group I) and aged 18 (Group II) filled out PESOS questionnaire (scores 0-100, higher score indicating poorer QOL, provided as means). Only statistically significant values ($p<0.05$) are provided.

Results. Group I: 77 patients, mean age 14.7±1.7 years. Group II: 100 patients, mean age 33.6±14.6 years.

QOL was disturbed in both groups, especially regarding mobility/leisure time (38.3 in Group I, 50.9 in Group II), epilepsy-specific fears (39.9 and 47.0), education (41.1 and 39.8).

In adults, higher seizure frequency impacted negatively educational (34.2 vs 50.1) and living situations (28.4 vs 40.3), mobility/leisure time (46.3 vs 56.2), restricted daily life (23.6 vs 42.8), disturbed adaptation (24.2 vs 45.3), increased stigmatisation (10.4 vs 27.2), epilepsy-specific fears (42.0 vs 52.9). In adolescents, higher seizure frequency restricted daily life (21.1 vs 10.6) and disturbed adaptation (27.0 vs 15.0).

In adults, incontinence during seizures restricted daily life (44.3 vs 25.5), disturbed adaptation (47.9 vs 25.7), increased stigmatisation (28.4 vs 12.1), epilepsy-specific fears (54. vs 42.8). Adolescents with incontinence during seizures had restricted daily activity (31.5 vs 13.3), felt more stigmatized (27.9 vs 9.5) and had epilepsy-specific fears (55.4 vs 37.4).

Seizure-related injuries lead to more restrictions in daily life (25.1 vs 36.4), poorer adaptation (27.9 vs 37.2) and increased stigmatisation (13.2 vs 20.8) in adults.

Conclusion. QOL in PWE was disturbed. Higher seizure frequency, incontinence and injuries during seizures affected QOL significantly.

Keywords: epilepsy, PESOS questionnaire, quality of life.

PP25

SAFETY AND EFFICACY OF ISOLATED MECHANICAL THROMBECTOMY IN IVT-ELIGIBLE PATIENTS

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Background. Studies have shown that bridging therapy (BT), compared with mechanical thrombectomy (MTE) alone, is a more effective treatment. But there is no data about efficacy of MTE alone comparing to BT in eligible for IVT patients only. The aim of our study was to compare safety and efficacy of MTE alone to those of BT in IVT-eligible patients.

Materials and methods. Acute stroke patients, eligible for IVT and treated with MTE alone or BT in 2 Vilnius stroke centres, were enrolled. Primary endpoints were NIHSS score change over the first 24h and favourable outcome. 7 days mortality and rate of symptomatic intracerebral haemorrhage (SICH) were chosen for safety analysis.

Results. 128 patients were treated with BT and 40 – with MTE. Rate of congestive heart disease was higher in MTE group; the other baseline parameters were similar. The mean NIHSS score change over 24h (5.4 in BT and 7.1 in MTE group, p>0.05) and favourable outcome (57% and 65%, p>0.05), as well as mean onset-to-recanalization (289 and 269 min, p>0.05), needle-to-recanalization times (58 and 52 min, p>0.05) and rate of successful recanalization (81.5% and 87.5%, p>0.05) were similar. 7 days mortality was higher in BT group (10.2% and 0%, p=0.036), but the rate of SICH was similar.

Conclusions. It seems MTE alone is an effective and possibly safer treatment option for acute large vessel ischaemic stroke in IVT-eligible patients, compared to BT. Larger randomised prospective study is required.

Keywords: ischaemic stroke, bridging therapy, isolated mechanical thrombectomy.

PP26

TRANSIENT ISCHAEMIC ATTACK MIMICS AT PREHOSPITAL STAGE IN LATVIA

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Brief introduction. It is very important to identify Transient ischaemic attacks (TIAs) promptly because of the very high early risk of ischaemic stroke. It requires urgent investigation. TIAs have many clinical situations and diagnosis as mimics. TIA is a common diagnostic challenge at the pre-hospital stage.

Materials and methods. Aim of this study was to evaluate TIA mimics at the pre-hospital stage in Latvia.

This observational and retrospective study included all consecutive adult patients with prehospital diagnosis of TIA (G45 by IDC-10) referred to five hospitals in Latvia during 12 months.

Referrals were considered correct if the prehospital diagnosis of TIA matched with the hospital discharge diagnosis.

Results. In total, 2874 patients were included in our study.

The prehospital diagnosis of TIA was correct in 14.4% cases.

The most frequent mimics were vertigo (517, 17.9%), stroke (364, 12.7%), blood hypertension (295, 10.3%). In total there were 235 different hosptial discharge diagnosis.

Conclusions. Transient ischaemic attacks have a high rate of mimics at prehospital stage in Latvia. The accuracy of prehospital diagnosis with hospital dicharge diagnosis is very low (14.4%). The most frequent mimics are vertigo, stroke, blood hypertension (40.9% combined). TIAs are a serious diagnostic challenge at the prehospital stage. This indicates that in Latvia there is a room and need for improvement at the prehospital TIA identification methods.

Keywords: TIA, transient ischaemic attack, prehospital, mimics.

PP27

THROMBOELASTOGRAPHIC PROFILE OF PATIENTS WITH ISCHEMIC STROKE

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The aim of the studies is to assess the change in the functional activity of the blood coagulation system in patients with

ischemic stroke. The study was performed on the basis of the stroke service of the neurological department of the Center for Reconstructive and Renovative Medicine of the Odessa National Medical University in 2016-2018. 189 patients with ischemic stroke were treated, dynamics of coagulographic and thromboelastographic parameters was studied. The average length of stay in a hospital is 17.9±1.1 days. It is shown that in the acute period of ischemic stroke hypercoagulation occurs accompanying hyperaggregation. Normalization of indicators occurs by the third day. In patients after thrombolysis, hypocoagulation with hyperaggregation and activation of coagulation drive is observed during the day. By 12-14 days after a stroke, hypocoagulation is observed. With hemorrhagic transformation there is hypercoagulability with a tendency to hypoaggregation. Five main patterns of thromboelastographic profile are described, indications for double and triple therapy are determined in patients with high risk of thromboembolic complications.

Keywords: ischemic stroke, blood coagulation system, diagnosis, prognosis.

PP28

ASSOCIATIONS OF GENETIC RISK VARIANTS FOR PARKINSON'S DISEASE (PD) AND FOR COGNITIVE IMPAIRMENT WITH CLINICAL FEATURES IN PD

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It was the aim of this study to analyse associations of genetic risk variants for PD and cognitive impairment with clinical motor and non-motor features in PD.

There is a large clinical heterogeneity observed in PD, both in regard to motor and non-motor features. Recently, we classified patients with PD into four distinct clinical subtypes based on their prominent motor feature. Studies on associations of genetic susceptibility variants with PD features are limited and mostly analysed variants in only one gene (e.g., *SNCA, LRRK2, MAPT, GBA*). We performed association studies on multiple risk loci as identified in GWAS for PD and on variants associated with cognitive impairment.

We included 862 Caucasian patients (550 male, mean AAO: 64 yrs) with PD, who had demographic and detailed clinical data available. Patients were classified into one out of four clinical subtypes: tremor-dominant (43%), akinetic-rigid (28%), mixed (18%), and gait difficulty (10%). Genotyping was performed for 33 independent PD risk variants and three risk variants for cognitive impairment (GBA and TREM2 variants, APOE genotype). Frequencies of variants were compared for motor and non-motor signs, subtypes, rate of progression, survival, and early cognitive decline.

Orthostatic hypotension, rapid progression, hallucinations, resting tremor and RBD showed associations with PD risk variants. The APOE4 genotype was significantly associated with risk for dementia.

Genetic susceptibility variants account for some of the clinical heterogeneity observed in PD in our large single-site patient cohort. Clinicogenetic studies can provide a better understanding for this variability including parameters for prognosis.

Keywords: Parkinson disease, neurogenetics, dementia, susceptibility variants.

PP29

ORAL ANTICOAGULANT USE AMONG PATIENTS HOSPITALIZED WITH STROKE IN RIGA EAST CLINICAL UNIVERSITY HOSPITAL

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Brief introduction. Oral anticoagulants (OACs) are highly effective for stroke prevention in patients with atrial fibrillation. Strict adherence to medication is crucial for maximizing treatment benefits (Yao et al., 2016).

Materials and methods. We used a retrospective study design. Stroke registry data about all patients treated at the Department of Neurology of Riga East Clinical University Hospital from November 2016 to April 2018 was used. Data was analyzed using SPSS software.

Results. Medical records of 2410 patients with stroke were included in the study, 65.3% (n=1573) were women and 34.7% (n=837) were men. The average age was 73.71 years (SD 12.45). The available data showed that 48.0% (n=1080/2251) of patients had atrial fibrillation (AF).

Cardioembolic stroke was the most common subtype of ischemic stroke and was diagnosed in 39.2% (n=944/2410) of patients. Only patients with AF were included in further analysis. Medical data of oral anticoagulant usage before admission was available for 63.9% (n=690/1080). Among these patients, 77.2% (n=533/690) did not use OACs prior to admission. Only 22.8% (n=157/690) of patients used OACs, of which 68.2% (n=107/157) used vitamin K antagonist (VKA) and 31.8% (n=50/157) – direct oral anticoagulants. Among patients using VKA, 74.8% (n=80/107) had subtherapeutic, 18.7% (n=20/107) – therapeutic and 6.5% (n=7/107) supratherapeutic international normalized ratio levels on admission.

Conclusions. Approximately three-quarters of patients with atrial fibrillation did not use oral anticoagulants prior to admission. The most commonly prescribed oral anticoagulant was vitamin K antagonist. Adherence to anticoagulant use is poor.

Keywords: Stroke, atrial fibrillation, adherence to treatment.

PP30

PUBLIC ATTITUDES ON SOCIAL ASPECTS OF EPILEPSY REFLECTED ON INTERNET PORTALS

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Introduction. Multiple studies on public attitudes towards epilepsy have been published, most of them based on structured surveys. Internet, being a popular way of communication, may well reflect the evolution of epilepsy-related attitudes in modern society.

Methods. All available epilepsy-related comments on the internet news portals in Lithuanian from January 2014 to June 2016 (20 articles; 1486 comments) underwent mixed quantitative and qualitative content analysis.

Results. The most common topics discussed were personal attitudes (200 comments), driving (128 comments), employment (88 comments), family (16 comments). Approach to driving of patients with epilepsy (PWE) was aggressively negative (73 comments). Negative attitude towards PWE employment was also observed: PWE can be employed with certain jobs only (8 comments); should be working from home (16 comments); PWE distracts colleagues (30 comments); seizures at work are stressful (30 comments). Some commentators hated PWE (24 comments), while others were angry with the intolerant society (83 comments) and supportive to PWE (117 comments). The majority of comments appeared as a reaction to articles with expressive or stigmatizing headlines. It was suggested that professionals' opinion should accompany each article about epilepsy (53 comments).

Conclusions. Although tendency to limit the opportunities of social integration for PWE was still observed, the majority of expressed attitudes towards PWE were basically favorable and supportive. Society seems to acknowledge the lack of objective information; health professionals should be encouraged to collaborate with media by providing their comments to the published material.

Keywords: epilepsy, attitudes, comments, Internet, content analysis.

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BURDEN OF HEADACHE DISORDERS IN PRIMARY AND SECONDARY CARE

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Brief introduction. Headache (HA) is one of the most common reason patients ask for medical help. Headache disorders are often unrecognized and under-treated. The aim of study was to estimate accuracy of HA diagnosis and management in primary and secondary care.

Materials and methods. The prospective cross-sectional, multicenter study of HA patients presenting in two university hospitals at emergency department, in five general practices and in three neurological outpatient offices in Riga, during period from November 2017 to February 2018. Data collection was done by structured phone- interview.

Results. Of 264 respondents, 72 were male and 192 female patient, mean age 41.1 (SD±18). 64.3% (n=170) of patients were from primary care (PC), 35.6% (n=94) from secondary care (SC). Primary HA diagnosis at the baseline was made in 41.3% (n=109), among them migraine in 23.3% (n=62). After reevaluation according to ICHD-3 54.5% (n=144) cases met criteria of primary HA diagnosis, and 32.9% (n=87) responded to migraine. Above all misdiagnosed were in PC. From all migraine patients only 4.5% (n=12) take triptans for acute treatment. Diagnose of Medication overuse HA in PC and SC, was made in 0.8% (n=2) cases, although more than 70 patients mentioned analgetic usage 10 days per month. 59.1% (n=156) patients recognized insufficient control over HA and 34.1% (n=90) could not go to work 2 days in last tree month because of HA.

Conclusions. There is an urgent need to improve HA recognition and management in primary and secondary care.

Keywords: headache disorders, headache care, headache burden.