UDK 616.8

ISSN ????

Neurologia Croatica

SINCE 1953

SAŽETCI / ABSTRACTS

SUPLEMENT

26. 4. – 30. 4. 2022.

Rijeka, Hrvatska

8. hrvatski neurološki kongres

s međunarodnim sudjelovanjem

SUPPLEMENT

April 26 – April 30, 2022

Rijeka, Croatia

8th Croatian Neurological Congress

with International Participation

NEUROL. CROAT. 2022 71 (Supl. 1): 1-52

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HLZ – Hrvatsko neurološko društvo
Klinika za neurologiju, Klinički bolnički centar Rijeka

ORGANIZED BY

CMA - Croatian Society of Neurology
Department of Neurology, Rijeka Clinical Hospital Center

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Lektor /Language Editor Ana Topolovac, mag. polit.

Dizajn /Design Denona d. o. o., Getaldićeva 1, Zagreb, Croatia

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Na preporuku Uredničkog odbora, urednik časopisa Neurologia Croatica prihvaća objavljivanje sažetaka 8. hrvatskog neurološkog kongresa s međunarodnim sudjelovanjem kao suplement časopisa.
Urednici ovoga suplementa pregledali su i odobrili sažetke primljenih radova. Autori pozvanih predavanja odgovorni su za svoje radove.
Koordinirajući urednik suplementa odgovoran je za sveukupnu kvalitetu suplementa.

The Editor-in-Chief of Neurologia Croatica, as advised by the Editorial Board, has accepted publishing the abstracts of the 8th Croatian Neurological Congress with international participation as a journal supplement.
The editors of this Supplement have been committed to review and accept the abstracts of submitted contributions. The authors of the invited lectures are responsible for their own contributions.
The Supplement Coordinating Editor is responsible for the overall quality of the Supplement.

Glavni urednik
Editor-in-Chief

Pozdravna riječ

Poštovane kolegice i kolege,

veliko nam je zadovoljstvo pozvati Vas na sudjelovanje na 8. hrvatskom neurološkom kongresu s međunarodnim sudjelovanjem u organizaciji HLZ – Hrvatskog neurološkog društva i Klinike za neurologiju KBC Rijeka. Nakon odgode Kongresa zbog epidemioloških razloga u studenom 2021. godine, željeli bismo da naši neurolozi, kao i kolege iz srodnih struka, sudjeluju na ovom Kongresu uživo u što većem broju, kako bismo svi zajedno doprinijeli napretku naše struke i našeg rada.

U okviru glavnih tema bit će održana predavanja, okrugli stolovi i interaktivne radionice, a kroz poster sekciju predstavit ćemo zanimljive slučajeve iz svakodnevne prakse.

U ovom suplementu časopisa Neurologia Croatica pronaći ćete sažetke poster prezentacija. Cilj nam je prikazati kliničke i znanstvene novosti iz područja neurologije koji su se dogodili u posljednje četiri godine. Drago nam je vidjeti da novonastale okolnosti u vidu COVID-19 pandemije nisu utjecale na znanstvenu produktivnost hrvatskih neurologa.

S obzirom na to da je Neurologia Croatica časopis koji je vrlo važan za prošlost i sadašnjost neurologije u Hrvatskoj, naša želja je da bude i dio neurološke budućnosti, u svojem novom i unaprijeđenom izdanju.

Nadamo se viđenju u Rijeci!

Zdravka Poljaković
Predsjednica HLZ – Hrvatskog neurološkog društva

Vladimira Vuletić
Predstojnica Klinike za neurologiju KBC Rijeka

Mario Habek
Glavni urednik

Welcome address

Dear colleagues,

It is our great pleasure to invite you to participate in the 8th Croatian Neurological Congress with international participation organized by CMA – Croatian Neurological Society and the Department of Neurology, Rijeka Clinical Hospital Center. After the postponement of the Congress due to epidemiological reasons in November 2021, we would like that our neurologists, as well as colleagues from related professions, participate in this Congress live in as largest number as possible, so we can all contribute to the progress of our profession and our work.

Lectures, round tables and interactive workshops will be held as part of the main topics, and through the poster section we will present interesting cases from everyday practice.

In this supplement to the journal Neurologia Croatica you will find abstracts of poster presentations. Our goal is to present clinical and scientific news in the field of neurology that have occurred in the last four years. We are glad to see that new circumstances in the form of the COVID-19 pandemic did not affect the scientific productivity of Croatian neurologists.

Given that Neurologia Croatica is a journal that is very important for the past and present of neurology in Croatia, our desire is to be a part of the neurological future, in its new and improved edition.

We hope to see you in Rijeka!

Zdravka Poljaković
President of CMA – Croatian Society of Neurology

Vladimira Vuletić
Head of Department of Neurology of Rijeka
Clinical Hospital Center

Mario Habek
Editor-in-Chief

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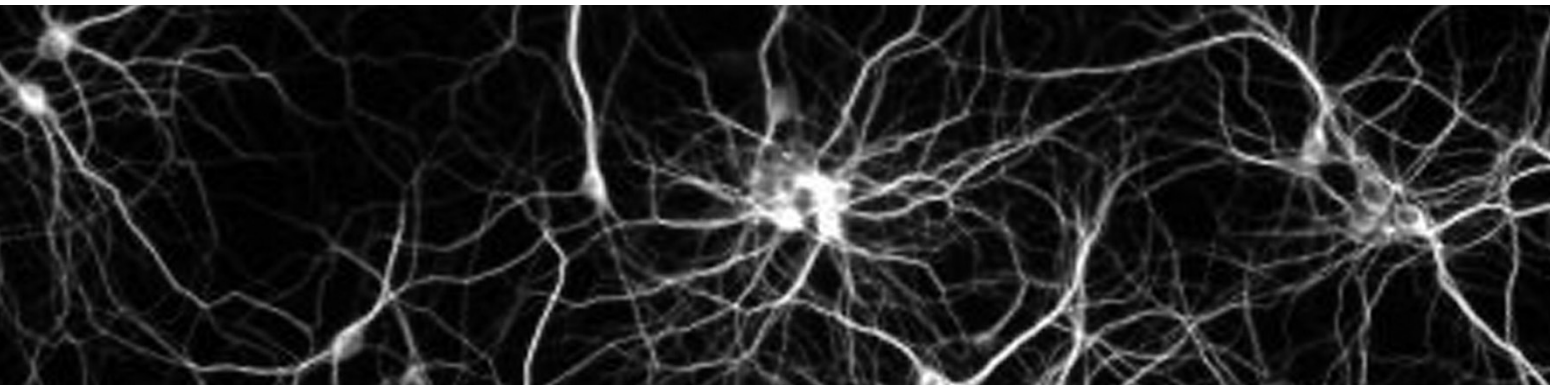

Miller Fisher syndrome following Pfizer COVID-19 vaccine

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Introduction: Miller Fisher syndrome (MFS) is a rare variant of Guillain-Barré syndrome characterized by ataxia, areflexia, and ophthalmoplegia. We present a case of MFS following Pfizer COVID-19 vaccine (Comirnaty®).

Case presentation: A previously healthy 24-year-old female presented with binocular horizontal diplopia 18 days after receiving the first dose of Pfizer COVID-19 vaccine. Anti-ganglioside testing revealed positive anti-GQ1b antibodies. Intravenous immunoglobulins were administered, in a dose of 2 g per kg of body weight over 5 days. On a follow-up exam 3 weeks after the treatment, clinical improvement was noted with normal bulbomotor examination.

Conclusion: Patients with acute ophthalmoplegia occurring after COVID-19 vaccination should be screened for the presence of anti-GQ1b antibodies. If the antibodies are present, intravenous immunoglobulins should be administered as it may hasten clinical improvement.

Stroke associated with Hemoglobin Lepore syndrome: a case report

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Hemoglobin Lepore syndrome (Hb Lepore syndrome) is a genetic disorder in the synthesis of hemoglobin characterized by hemoglobin made up of 2 α-globin chains and 2 δβ-globin chains. A potential complication of the Hb Lepore syndrome is a stroke, as a result of severe anemia.

A 39-year-old patient was admitted to the emergency department due to speech difficulty and weakness of the right extremities. Symptoms started day before admission. Neurological status showed motor dysphasia, right sided faciobrachial paresis, and hypoesthesia of the right half of the face and right arm. Mild anemia was presented in the laboratory findings. Multi-slice computed tomography brain scan didn't show ischemic or hemorrhagic changes, but magnetic resonance imaging showed a recent ischemic lesion in left parietal lobe and a lesion of an earlier date parietoposterior right. The patient is originally from Macedonia and he was diagnosed with Hb Lepore syndrome during childhood. Several male members of his family suffer from the same syndrome. A hematologist, who recommended regular monitoring of blood count, was consulted. The clinical course was favorable and the patient was discharged on his request, before the workup was finished.

Hemoglobin Lepore syndrome is a potential rare cause of cerebral infarction or transient ischemic attacks in younger people. Already in childhood, they can be neurologically recorded in the form of a *silent stroke*, which increases the risk of developing a symptomatic cerebrovascular incident in adulthood. The cooperation of a multidisciplinary team of physicians is necessary for a timely diagnosis, treatment and follow-up of patients with Hb Lepore syndrome.

Neurological-speech pathology algorithm management of patients with neurogenic dysphagia

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Recognizing and managing patients with swallowing disorder is often a challenge. Due to complexity of the disorder the entire procedure should be handled by a multidisciplinary team consisting of a neurologist, speech and language pathologist, nurse, gastroenterologist, and nutritionist. The main objectives of this paper are to present a neurological-speech pathology algorithm for the care of patients with neurogenic dysphagia and to emphasize the importance of a multidisciplinarity in the neurological intensive care unit. The algorithm with all its components includes a proper screening, diagnosis and therapy of patients with dysphagia. The aim of this algorithm is to reduce unrecognized swallowing disorders and secondary complications that represent a significant health system burden.

Do we need decompressive craniectomy of posterior cranial fossa more often?

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Infarction in posterior cranial fossa accounts for 1-4% of all cerebral infarctions and magnetic resonance imaging (MRI) is the gold standard in diagnosis. Mortality is high, due to the brainstem compression.

Suboccipital decompressive craniectomy with external ventricular drainage and debridement of infarcted tissue is the treatment of choice, within first 48 to 72 hours.

We present the patient with an acute cerebellar stroke due to the suboclusion of the basilar artery on computed tomography angiography (CTA). Magnetic resonance imaging of the brain showed multiple cerebellar infarctions more pronounced on the left. Level of consciousness rapidly decreased to coma with respiratory insufficiency that required mechanical ventilation. Computed tomography (CT) verified extensive edema and compression on the brainstem. Decompressive suboccipital craniectomy and external ventricular drainage was performed with the good clinical outcome.

Neurologic 24-hour monitoring of the patient is important, not to miss the time window for treatment of posterior cranial fossa infarction with decompressive craniectomy. The GCS scale is the most important tool in the assessment. The method of choice for deciding on further treatment is emergency MRI of the brain, to assess the impact of cerebellar edema and compression of brainstem due to infarction.

Depression and quality of life in patients with epilepsy – our experience

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Introduction: Epilepsy is often associated with comorbid psychiatric illnesses and the most frequent of these is major depressive disorder, which affects around 40% of patients with epilepsy. Compared to general population epidemiological studies show a consistent increased prevalence of depression in epilepsy.

Material and Methods: The prospective cross-sectional study was carried out at the tertiary teaching hospital (Zagreb University Hospital Centre, Croatia, Referral Centre of the Ministry of Health of the Republic of Croatia for Epilepsy) with prior Ethics committee approval. The main aim of this study was to evaluate the relationship between epilepsy, antiepileptic drugs (AEDs) and depression, and possible association between depressive symptoms in patients with epilepsy with the quality of life (QoL). Depressive symptoms were evaluated using Hamilton Rating Scale for Depression (HAM- D17) and QoL was assessed using Quality of life in epilepsy-31 inventory (QOLIE-31). Statistical analysis was done using statistical software IBM Corp. Released 2011. IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.

Results: The study included 108 patients (63% female, 37% male; mean age 39.54 ± 15.91 years) with epilepsy; 14.8% of patients had focal, 35.2% generalized and 40.7% both types of epilepsy. Majority of patients (65.74%) were on two and more AEDs and quarter were on monotherapy (25%). Regarding type of AEDs, 19% were on older, 42% on newer, and 39% were on both types of AEDs. Mean total score on HAM-D17 was 9.94 ± 8.18 (men - mean total score 10.16 ± 8.85, women - mean total score 9.81 ±7.84). There were no significant differences on HAM-D17 regarding gender and age. We didn't find statistically significant differences regarding AEDs (older vs. newer AEDs, or both types of AEDs) and results on HAM-D17, nor between the type of epilepsy and results on HAM-D17. We found strong negative correlation between the higher QoL and HAM-D17 (p=0.000).

Conclusion: Results of our study evaluating depressive symptoms in patients with epilepsy demonstrate that our group patients mainly experienced mild depressive symptoms, with no significant differences on HAM- D17 regarding gender and age. Patients with epilepsy with less pronounced depressive symptoms were found to have higher QoL. We did not find statistically significant differences regarding the type of epilepsy and results on HAM - D17, nor between the AEDs and results on HAM- D17.

Characteristics of a stroke in women treated during one year at the Osijek University Hospital Centre: a gender specific analysis

Tihana Gilman Kuric, Zvonimir Popović, Romana Perković, Vlatka Pečvarac, Dijana Rutnik Fot, Martina Hmura, Tanja Štulić, Hrvoje Bradvica, Robert Tusić, Mirjana Čubra, Ružica Palić Kramarić, Svetlana Tomić

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Characteristics of a stroke in women have been more intensively observed by experts in recent years, reporting a higher number of a stroke in female patients with a worse outcome.

We present a retrograde analysis of 913 patients treated during one year at the Osijek University Hospital Center showing the frequency and specificity of a stroke in women compared to men.

An equal number of men and women experienced ischemic stroke (91.3% m and 90.9% f), intracerebral hemorrhage (6.8% m and 7.2% f), and SAH (1.9% m and 1.9% f).

The number of deaths (9.9% of men and 10.5% of women) was the same as well as the number of thrombolytic treatment (4.7% of women and 3.7% of women) among both sexes. The difference in the severity of neurological deficits measured by the mRS scale in women ranged from 0.02 on admission to 0.018 on dismission, making a statistically significant difference between females and males. A stroke was more prevalent at a younger age (20-49 years) in men (3.9%) than in women (1.6%), while there was a statistically significant higher number of a stroke among women (72%) the age group of 70 and more compared to men (50.5%).

Our analysis did not show statistically significant differences between the type of a stroke, thrombolytic therapy or mortality by gender. A stroke was more prevalent at a younger age in men, while a statistically significant higher number of women with newly developed stroke aged 70 and over, having a worse outcome at discharge than men.

Isolated abducens palsy after lumbar puncture in patient with cavernous malformation and two developmental venous anomalies: a case report

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Isolated abducens palsy following lumbar puncture is its rare complication. It has been mostly described after performing spinal anesthesia in anesthesiologist literature rather than in neurologic literature. This complication usually occurs from one to three weeks after performing lumbar puncture. It is important to connect it with this procedure and exclude other possible etiologies.

In this case report we present a 32-year-old male patient who presented with unspecific headache. While searching for headache etiology a lumbar puncture was done. The brain magnetic resonance (MR) has shown a combination of cavernous malformation and developmental venous anomaly in the left insular region with developmental venous anomaly in the left frontal area. Two days after lumbar puncture a patient presented with isolated abducens palsy of a right eye. We hypothesized that this lesion was attributed to lumbar puncture and also that patient might have intracranial hypotension. Our planned diagnostic evaluation included measuring intracranial pressure by noninvasive methods and repeating brain MR. We also wanted to treat this patient with epidural blood patch which is usually successful when being performed as soon as the diagnosis is established. Unfortunately, patient refused diagnostic and therapeutic proposal so it was impossible to know the outcome. In conclusion, we wanted to highlight these complications, especially among young doctors who might see it rarely.

Case report: Sjögren's syndrome and antineuronal antibody to Purkinje cells?

Ivona Jerković, Nataša Milošević, Luka Miličević, Doroteja Lehpamer, Marina Roje Bedeković

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Cerebellar ataxia as a clinical manifestation of autoimmune encephalitis and paraneoplastic syndromes may be mediated by specific detectable antibodies but also by unknown onconeural antibodies. The latest research on patients with paraneoplastic cerebellar ataxia proposed that anti-Ro/SSA antibodies associated with Sjögren's syndrome (SjS) could be one of the yet unidentified paraneoplastic antibodies and its presence in cerebrospinal fluid could be used as a marker of cerebellar degeneration in SjS.

A 52-year-old patient presented with ataxia, dysarthria, and nystagmus three weeks prior to being admitted to our clinic. An extensive medical investigation into cerebrovascular, neurodegenerative, infectious, and autoimmune disorders was conducted. A lumbar puncture revealed an intrathecal synthesis of type 3 oligoclonal bands. Neuroimaging studies demonstrated atrophy of cerebellum and frontal lobes. Large-scale serum diagnostic tests for systemic autoimmune diseases found high antinuclear and anti-Ro/SSA antibodies. The detection of anti-Ro/SSA in cerebrospinal fluid was not performed in our patient. While all commercial line blots on specific cell-surface and paraneoplastic antibodies were negative, there was a positive fluorescence to cerebellar Purkinje brain cells which was consistent with the published research. Thoracic and abdominal computed tomography (CT) scans, as well as a whole-body position emission tomography (PET) scan, were performed to rule out malignancy. The patient was treated with intravenous immunoglobulin and cyclophosphamide with an incremental clinical response.

In conclusion, once infectious disorders have been ruled out as the cause of cerebellar ataxia, it is important to begin immediate immunomodulatory treatment. Even if commercial tests for specific paraneoplastic antibodies are negative, a comprehensive malignancy screening is required.

New material in medicine as a protector or possible cause of stroke: a case report

Kristina Kampić, Vladimira Vuletić, Ines Strenja, Melani Mamić, Anja Babić, Iva Milas, Dragan Mejakić, David Bonifačić

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World Health Organisation defines stroke as a "brain attack" caused by the interruption of the blood supply to the brain, usually because of a blood vessel bursts or is blocked by a clot. This cuts off the supply of oxygen and nutrients, causing damage to the brain tissue. Within minutes, brain cells begin to die.

In this case, we present a 34-year-old woman who came to the Clinic with symptoms of speech difficulty and left side body weakness. She was presented as a developmental stroke. A brain magnetic resonance imaging (MRI) showed signs of cytotoxic edema caused by micro embolism which was evidence of a stroke. The new discovery was also the left ophthalmic artery occlusion.

From the history of the disease, we found out that she had surgery of stenosis of the aortic valve and ascending aortic aneurysm and also aortic valve replacement with a mechanical prothesis.

After surgery, the doctor determined the international normalized ratio (INR) values between 1.5 and 2.0 because this mechanical protesis is a new model of On-X Aortic Valve. The On-X Aortic Valve is a newer generation heart valve made of a unique material - pure pyrolytic carbon and design characteristics compared with earlier generations of mechanical heart valves. This material has anti-aggregation properties which prevent platelet adhesion. The On-X Aortic Valve is the only mechanical valve with FDA and CE approval as being clinically proven safe with significantly less blood thinner (warfarin) and lower values of INR. On-X Aortic Valve patients with a reduced blood thinner dose had > 60% fewer bleeding events without an increase in the risk of stroke.

In this case, the INR values and new modern unique material were not enough to prevent the occurrence of the thrombus and stroke. During the treatment of the patient, an INR was determined between 2.0 and 3.0. That was optimal INR for preventing a stroke or potential brain bleeding in this case.

Therapeutic monitoring of antiepileptic concentrations – experiences from our clinical practice

Marina Legac Škifić, Vladimira Vuletić, Olivio Perković, Ingrid Škarpa-Prpić, Sandra Graf Župčić

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We presented two cases in which therapeutic drug monitoring (TDM) was indicated; in pregnant woman with goal of maintenance of individual therapeutic range and in one woman where valproic acid (VPA) was added to her lamotrigine (LTG) regime. As we know VPA inhibition of lamotrigin clearance begins at very low dose, so we monitored serum levels of both drugs. The goal of treating epilepsy is to achieve complete seizure control with the lowest effective dose of well-tolerated antiepileptic drug. Therapeutic drug monitoring is useful in treatment planning and evaluation, and it is useful tool implemented in the monitoring of specific patient populations (elderly people, pregnant women, patients with significant morbidities). We distinguish between the reference range of drug concentration determined by the laboratory and the individual therapeutic range determined by the clinical response to the drug. Recommendation for monitoring therapeutic drug concentration after the initial prescription of the drugs is in cases of lack of clinical improvement after the recommended dose, relapse on maintenance dose, and new side effects on usual doses of drug. Special patient populations are routinely subjected to therapeutic drug monitoring (pregnant and breast-feeding women, adolescents, elderly patients, patients with comorbidities affecting pharmacokinetics). Determining the individual therapeutic range when the patient is clinically stable helps us in designing patient-specific dosage regimen. It is hypothesized that an individualized approach to treatment in the future will include implementation of pharmacogenomic testing.

Progressive encephalomyelitis with rigidity and myoclonism

Doroteja Lehpamer, Ivona Jerković, Nataša Milošević, Luka Miličević, Rafaela Vukasović, Lejla Ćorić, Marija Ivica, Marina Roje Bedeković

Department of Neurology, Sestre milosrdnice University Hospital Center, Zagreb, Croatia

Background: Progressive encephalomyelitis with rigidity and myoclonus (PERM) is a *stiff person* spectrum inflammatory disorder presented with axial and limb muscle rigidity, hyperekplexia attributable to brainstem dysfunction in many cases followed with respiratory insufficiency with myoclonus and autonomic dysfunction. Presence of specific autoantibodies (glutamic acid decarboxylase antibody, glycine receptor antibody, amphiphysin antibody, gephyrin antibody, dipeptidyl-peptidase-like protein-6, GABA-A receptor antibody) can make the diagnosis more likely but are not necessary. Most important diagnoses to rule out are central nervous system infections and malignant neuroleptic syndrome.

Case presentation: Our patient presented with fever, somnolence, rigidity of cervical musculature, and tetraparesis. During hospitalisation involuntary movement of extremities were observed. Prior to hospitalisation patient's family reported common falls, she became unable to walk and placed in a social care facility. The staff observed involuntary movements of extremities that were provoked by tactile stimulus.

Multiple diagnostics were proposed including a brain multi-slice computed tomography, brain magnetic resonance imaging, and cerebrospinal fluid analysis.

She was treated with benzodiazepines, valproic acid, pulse corticosteroid therapy, and intravenous immunoglobulins.

Conclusions: The PERM is a rare neurological disorder and the diagnosis is based mostly on clinical presentation. Treatment consists of pulse corticosteroid therapy, intravenous immunoglobulins, immunomodulation therapy, and long-term corticosteroid therapy.

Migraine, headache, and neurosonological findings in young female patients with hypertension

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Background and aims: Renal fibromuscular dysplasia (FMD) is mostly recognized in young female patients with hypertension. Most patients with neurologic FMD remain unrecognized due to unspecific symptoms and lack of recognition of characteristic changes on craniocervical arteries.

The aim of the study was to determine frequency of neurological symptoms and neurosonological findings in carotid and vertebral arteries in young hypertensive women.

Methods: The study included 48 females, BMI<25 with hypertension and no other vascular risk factors, referred to neurosonological testing. History of migraine, headache, pulsatile tinnitus, dizziness, vertigo, and weakness was obtained. Self-reported quality of life from 0-100 was assessed. Neurosonological findings were divided into four categories. 1. Carotid marker (diffuse or focal IMT increase); 2. Focal or multifocal carotid or vertebral stenosis, obvious or subtle with breaded appearance; 3. Tortuosity (S shape, kinking, coiling); 4. Carotid web. Frequency of findings are presented in percentages.

Results: Among 48 female patients (mean age 49 ±2 years) headache was present in 83%, migraine in 58%, pulsatile tinnitus in 54%, dizziness in 52%, vertigo in 56%, and weakness in 77%. Self-reported quality of life was 66%. Out of 48 patients, 44 had at least one vasculopathic findings on the carotid or vertebral artery.

Conclusion: Most young hypertensive females have nonspecific symptoms and neurosonological characteristics suggesting craniocervical FMD.

Stroke of medulla oblongata: a case report

Melani Mamić, Vladimira Vuletić, Ines Strenja, Dragan Mejakić, Iva Milas, Kristina Kampić, Anja Babić, David Bonifačić

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The brain stem is the distal part of the brain that is made up of the midbrain, pons, and medulla oblongata. Medulla oblongata is most caudal part of the brain stem that contains cardiovascular and respiratory system, the ascending sensory tract, the descending motoric tract and also the nuclei of four cranial nerve (n. IX, n. X, n. XI, n. XII). It controls autonomic functions such as breathing, heartbeat, blood pressure, etc. The aim is to show that although stroke of this part of the brain is not often, can lead to life threatening complications. A 74-year-old male, foreigner, with transient speech difficulty was admitted to the emergency room. On examination the patient presented a right-sided hemiparesis. Computed tomography (CT) was performed and it has not shown the signs of stroke. After the second day of hospitalization, the patient had difficulty with swallowing. Magnetic resonance (MR) of the brain was performed and showed stroke on the right side of medulla oblongata. On the eighth day of hospitalization, acute respiratory failure occurred and the patient was intubated and put on mechanical ventilation. After few days, the condition improved, so the patient was extubated and moved in home country for rehabilitation. Using neuroimaging and knowing the symptoms of stroke of medulla oblongata could possibly prevent the life threatening complications.

Cognitive outcomes of carotid endarterectomy

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Aim: The aim of this study was to analyze age-associated cognitive impact of carotid endarterectomy (CEA) in asymptomatic patients diagnosed with severe carotid disease. Our previous research showed that such patients often have subtle cognitive abnormalities detectable by Montreal Cognitive Assessment (MoCA).

Patients and methods: Baseline cognitive status 1-2 months before CEA and cognitive follow-up using MoCA was done in 47 patients 6-12 months after CEA and associations between total cognitive change presented as differences in total MoCA score were examined. Patients were classified as cognitively impaired at MoCA score ≤26. A Z test was used to test differences in proportions of cognitively impaired and normal participants in four age groups. Cognitive results for four age groups were examined and adjusted for baseline cognitive scores, age, gender, and vascular risk factors.

Results: Differences in total MoCA scores were significant in patients 60-69 years of age ($p<0,05$). Following CEA, proportions of cognitively impaired participants were significantly decreased in younger participants (from 45-59, 60-69 and 70-79 years). Variables associated with increased cognitive decline after CEA were older age (OR 0.71, CI 0.612 - 0.902), hypertension (OR 3.87, CI 0.734 – 27.332), and ever smoking (OR 3.94, CI 0.759 - 29.164).

Conclusion: Positive cognitive impact of CEA is not present in older patients. Besides older age, arterial hypertension, and ever smoking seem to be additional factors negatively influencing the cognitive benefit of CEA.

Sporadic Creutzfeldt-Jakob disease: A review of cases at the Department of Neurology, Osijek University Hospital Centre between 2014 and 2021

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Creutzfeldt-Jakob disease (CJD) is a rare, neurodegenerative, and fatal disease of the central nervous system. The purpose of this poster was to review five cases of probable sporadic CJD treated at the Osijek University Hospital Centre between 2014 and 2021. No clear gender or age predilection was established in presented cases, in line with most relevant studies' findings. All five patients were from rural areas, corroborating the slightly increased risk of CJD in people inhabiting rural areas established by a very small number of studies. The case with a longer course of the five presented clinically as dominated by cognitive impairment with a later occurrence of myoclonus; the electroencephalographic findings were without specific graphoelements for the sporadic form of the disease. The case may have involved a CJD-MM2 subtype (one of the six subtypes identified by several studies of traits in persons with CJD). While not all biochemical markers in the cerebrospinal fluid were analyzed in all five cases, most showed elevated values. One exception was the case with a negative protein 14-3-3 test. Given the marker's moderate diagnostic accuracy, a negative 14-3-3 protein finding is usually deemed a false negative where other diagnostic criteria are met. Importantly, the findings were likely affected by the storage of the sample and its transport to the laboratory in Zagreb.

Intracerebral hemorrhage in autoimmune disease: a case report

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We present a 65-year-old female patient admitted to the Emergency Room of the Rijeka Clinical Hospital Center for acute onset of left hemiplegia, left hypoesthesia, right forced gaze palsy, and left homonym hemianopsia. She suffered left parietal lobar hemorrhage two years ago and right occipital lobar hemorrhage four months ago. Her previous medical history included: systemic lupus erythematosus (SLE), antiphospholipid syndrome (APS), and atrial fibrillation.

Furthermore, she had atrial myxoma surgically removed and biological mitral valve implanted. Related to the mentioned diseases secondary thrombocytopenia was diagnosed and treated with mycophenolic acid, low molecular heparin, and oral corticosteroids. It is known that SLE alone, as well as APS can cause thrombocytopenia and in conjunction the risk is even higher. Mycophenolic acid can also cause thrombocytopenia. A computed tomography (CT) scan of brain performed upon admission exhibited intracerebral hemorrhage in right hemisphere of the brain.

Conclusion: Secondary thrombocytopenia caused by certain autoimmune diseases produces higher risk for intracerebral hemorrhage.

Refractory status epilepticus – convulsive, myoclonic and non-convulsive: a case report

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We present a 66-year-old female patient who was referred to our Department from Psychiatric Hospital (PH) where she was treated for schizophrenia and dementia. During her stay in PH she had a convulsive seizure with respiratory failure. Upon arrival to our Hospital she was unconscious following frequent generalized tonic–clonic seizures. A computed tomography (CT) scan of the brain showed no abnormalities, and electroencephalography (EEG) revealed findings typical for non-convulsive status epilepticus (NCSE). Brain magnetic resonance imaging (MRI) with contrast exhibited higher signal in DWI of parieto-occipital cortex and normal signal of deep gray mater suggesting autoimmune encephalitis (AE) or possible Creutzfeldt-Jakob disease (CJD). An AE was ruled out after cerebrospinal fluid (CSF) analysis as well as CJD since distinct PrPSc in CSF tested negative. After administration of antiepileptic therapy, further EEG findings where normal and the patient gradually regain consciousness. The treatment was further aggravated by critical illness polyneuropathy and myopathy. Neuropsychological test battery was implemented to evaluate the patient's cognitive status.

Bilateral third cranial nerve lesion being the only neurologic deficit after a successful recanalisation therapy of the basilar artery apex occlusion: a case report

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This is a case of an 85-year-old male patient who was admitted to our centre after he presented with a loss of consciousness and tetraplegia in the emergency department. Computed tomography angiography showed occlusion of the basilar artery apex. A mechanical thrombectomy with a good outcome was performed. On the day six after the mechanical thrombectomy the patient was alert, attentive, and oriented, the speech was clear and fluent, there was no motor deficit of the extremities, he had wide pupils, a bilateral blepharoptosis, and divergent bulbi. Magnetic resonance showed a little subacute ischemic lesion periaqueductally in mesencephalon. Since the bilateral blepharoptosis remained, Fox eye surgery was performed by ophthalmology. There have been several case reports of the third nerve lesions similar to this one. The third nerve nucleus is a paired nucleus in the midbrain tegmentum. It is irrigated by perforant arteries arising from basilar artery apex and P1 segment of posterior cerebral arteries. The described outcome can be explained by a thrombus that occluded the perforant arteries or by distal microemboli that occluded these arteries. Advances in recanalisation therapies will lead to more cases of such bizarre consequences of stroke and the ways to help these patients have to be found.

Anatomic variations in cerebral blood flow as an important factor in discovering the cause of an acute stroke: a case report

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The aim of this poster is to show how anatomical variations in cerebral blood flow can be an important factor in discovering the cause of an acute stroke.

We present a 92-year-old patient who was brought to our emergency room (ER) department with the plegia of the right side of the body, right-sided central lesion of n.VII, and sensorimotor aphasia. His NIHSS was 20 and mRS 0. Emergency neurological examination was performed and a computed tomography (CT) scan of the brain showed the loss of the differentiation of grey-white matter in left insula and globus pallidus while the CT angiography of the cerebral arteries showed occlusion of the M1 segment of the left ACM. In consultations with a neurointensivist and interventional neuroradiologist, an endovascular mechanical trombectomy procedure was performed, which actually showed the occlussion of the accessory M1. After neurointervention there was a successful recanalization with TICI 3 score. By the time the patient was ready to leave the hospital his neurological status improved to NIHSS 4 (mild paresis of the right side of the body, motor dysphasia and right-sided central lesion of n.VII).

The incidence of such anatomical variations is 0,3-2,7% and they are classified by Teal and Manelfe. In our patient there is a Manelfe type 2 variation where the accessory middle cerebral artery originates from the A1 segment of the anterior cerebral artery. It accompanies middle cerebral artery and supplies blood to a large part of the orbitofrontal, prefrontal and precentral area of the brain.

This case report wants to emphasize the importance of considering these anatomical variations because the CT angiography can show a normal finding.

Identification of a novel CACNA1A variant in a patient with myoclonic epilepsy

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The CACNA1A gene encodes the voltage-gated P/Q-type calcium channel that mediates neurotransmitter release by promoting the flow of calcium ions to stimulate the presynaptic membrane. Progressive myoclonic epilepsy (PME) represents distinct clinical entities characterized by substantial clinical and genetic variability. We report a 32-year-old patient with the myoclonic epilepsy, mild cognitive deterioration, nystagmus, intention and postural tremor, and gait disturbance. Due to neurological findings, we evaluated the patient as possible PME. During controls at our Referral Centre for Epilepsy, patient didn't show progression in neurological decline as would be expected in patients with PME, so we performed targeted next generation sequencing of 142 epilepsy genes. Sequencing revealed novel missense CACNA1A variant. Several neurological disorders are caused by pathogenic variants in CACNA1A including the familial hemiplegic migraine, spinocerebellar ataxia type 6, and episodic ataxia type 2. Patients with epilepsy due to pathogenic variants in CACNA1A have been previously described in literature. Epilepsy types were referred as generalized seizure (absence), while in some cases they were described as generalized, but it was not clearly defined whether they were myoclonic seizures. We believe that the clinical presentation of our patient may be related to the known clinical presentation of CACNA1A pathogenic variants, but at this point we cannot fully implement the patient`s symptoms into one of the three most reported CACNA1A related disorders or consider him as PME.

Diagnostics and therapy challenges in patients with brain tumor: a case report

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Tumor diseases of the central nervous system (CNS) in clinical practice can often cause challenges in diagnostic and further therapy approach because variety of clinical symptoms which depends on their size, position, and degree of malignancy.

Tumors of CNS we can divide to primary and secondary. In clinical practice we use WHO classification of brain tumors from 2016. To confirm the final diagnosis of CNS tumor we depend on clinical symptoms and neuroradiology diagnostic but sometimes we need pathohistology diagnostic so we can choose the best treatment possible for the patient. Pathohistology cannot be done in all patients because the tumor is often unapproachable by neurosurgical methods. Therefore, in some patients, the final diagnosis must be based on neuroradiological characteristics of the tumor, symptoms, and the epidemiological distribution of tumor types depending on patients age.

In this clinical case report we will show an 18-year-old patient that was admitted in neurology emergency room with headache and dysphagia. Further neuroradiology test results showed non operable tumor in cerebellum.

In this case report we will show challenges of diagnosis and further therapy possibilities in patients with the tumor of CNS – which is inaccessible by neurosurgical methods.

Role of a *smartphone video* in seizure evaluation

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The diagnosis of epilepsy is clinical diagnosis – it is based on the description of seizures by family members or caregivers who witnessed the seizure, which sometimes could be inaccurately described making difficult to establish a correct diagnosis. The accurate characterization of seizures is very important for establishing diagnosis of epilepsy, appropriate choice of treatment, and for prognosis. Smartphone videos are widespread, easy to create, and can be of diagnostic value in epilepsy diagnosis and management.

Functional movement disorders in two patients with Parkinson's disease and deep brain stimulation: a case report

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Functional (psychogenic) movement disorders are movement disorders with an underlying psychological cause. They mostly present as involuntary movements mimicking actual disorders and can have an organic disorder as a background, making their proper diagnosis especially challenging. Another challenge for diagnosis and treatment is an actual movement disorder underlying them, such as Parkinson's disease, making it even harder to discern whether the symptoms are caused by the disease itself or a psychological problem. However, there are certain signs that help distinguish them from actual movement disorders, such as the whack-a-mole phenomenon or the disappearance of the symptoms in distraction.

In line with this, we present two cases of Parkinson disease patients treated with deep brain stimulation who we suspected developed functional movement disorders, one presenting with a rough tremor of the right hand with extremely high amplitudes and the other presenting with symptoms such as excess "stiffness" but with no rigor. Both patients had a background of anxiety, with the other one also developing an addiction to levodopa, misusing the drug to the point of developing severe dyskinesias.

In both cases we combined suggestion with slight alterations to stimulation parameters and location of stimulation, ultimately leading to the reduction of symptoms with relatively low UPDRS scores upon discharge. We conclude that the approach to functional movement disorders that overlay actual organic disorders should include a combined neurological and psychological approach for best results.

Magnetic resonance guided focused ultrasound and deep brain stimulation: a case report

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Magnetic resonance guided ultrasound (MRgFUS) is a non-invasive technique recently established as a potential alternative to the already well known deep brain stimulation (DBS) in movement disorders such as essential tremor and Parkinson's disease. With the use of thermo-ablation, it creates an intracranial lesion through noninvasive ultrasound waves, relieving various symptoms. On the other hand, DBS has already proven to be a powerful, albeit an invasive tool in managing and treating Parkinson's disease. To the best of our knowledge, there are no reported cases of DBS following unsuccessful MRgFUS. We present the case of a Parkinson's disease patient who was treated both with MRgFUS and DBS with different results. Our patient first decided on MRgFUS because of diminishing results of his pharmacological therapy. Initially, he showed improvement, but only for a short period of time. Three years later, he decided on DBS implantation, after which his symptoms were greatly improved, eventually allowing him to return to work as a dentist.

We conclude that, even though it has shown promising results, MRgFUS still requires additional research to determine its long-term effects while DBS has already been proven and tested as a valid method for the treatment of Parkinson's disease both short-term and long-term.

Non-motor symptoms before and three months after deep brain stimulation and levodopa/carbidopa intestinal gel infusion in patients with an advanced form of Parkinson's disease

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The current treatment of Parkinson's disease (PD) is patient-oriented. Non-motor symptoms are the ones that affect the quality of life in advanced stages of PD the most. Due to this, we decided to test the effects of both deep brain stimulation (DBS) and levodopa/carbidopa intestinal gel (LCIG) infusion on non-motor symptoms in advanced PD.

We selected 50 patients before and three months after DBS and 15 patients before and three months after LCIG. Our examination was conducted through patient history and therapeutic data as well as the Non Motor Symptom Scale (NMSS), Non Motor Symptom Questionnaire (NMSQ), Unified Parkinson's Disease Rating Scale (part II; activities of daily living – ADL) and other relevant scales covering cognitive functioning and the quality of life.

We noticed a statistically significant improvement in non-motor symptoms and motor symptoms in both groups, as well as the improvement of the overall quality of life. Our study has shown that we must pay extra care to the assessment and control of non-motor symptoms and psychosocial factors linked to them due to their combined effect on the patient's ability to receive treatment. These findings could prove useful in future selection of advanced therapy for individual patients.

Specific lesion localisation in patients with dysphagia

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Dysphagia is a common symptom of stroke affecting more than 50% of stroke survivors. Patients with post-stroke dysphagia should be identified as soon as possible so that special measures can be taken to avoid secondary complications. Objectives of our study were to analyse the reliability of predicting risk factors for dysphagia and to determine the stroke locations and brain regions respectively connected with post-stroke dysphagia. We included 207 patients who presented with acute stroke and were admitted to Department of Neurology – Stroke Unit from September 2016 to September 2017. Forty-three percent of patients had post-stroke dysphagia. We investigated patient's age, gender, arterial hypertension, diabetes mellitus, atrial fibrillation, previous statin therapy, severity of stroke, and localisation of stroke as possible predicting factors for post-stroke dysphagia. Our results showed that the only reliable predicting factor for post-stroke dysphagia was the location of the brain lesion, which according to our study were Brodmann areas 4, 8, 24, 30 and pons lesions.

Recurrent spontaneous artery dissection: a case report

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Previous neurosonological study demonstrated the value of neurosonology in daily monitoring of the cervical artery dissection. This study showed rate of recurrence of 27% in unaffected arteries. There are two group of recurrences, early and late. Early spontaneous cervical artery dissection (sCAD) recurrences are not uncommon and usually involve arteries previously unaffected by dissection. They are oligosymptomatic (headache or neck pain) or asymptomatic and might be correlated with a transient arterial disorder. Late sCAD recurrences are rare and can occur at site of previous sCAD and might be indicative of an underlying persistent connective tissue weakness. In this case report we present a 31-year-old female patient who presented in emergency room because of headache and pain in the neck which started 3 days before. Initial brain computed tomography (CT) scan and CT- angiography were normal. Next day she became disoriented and complained of headache, vertigo, and nausea. Magnetic resonance of the brain showed little hematoma in quadrigeminal cistern and left vertebral artery dissection in V2 segment. Initial neurovascular ultrasound (nUS) showed dissection in V2 segment left vertebral artery. Next nUS after five days showed new dissection in V1 and V2 segment in right vertebral artery. Following nUS showed initial regression haematoma in both vertebral arteries. To conclude, early sCAD recurrences are not uncommon and usually involve arteries previously unaffected by dissection. Because of that daily neurosonology monitoring of the dissection is important.

Telephone based cross-sectional study on the impact of the COVID-19 pandemic on people with Parkinson's disease in Croatia

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Introduction: The COVID-19 disease pandemic began in December 2019 has completely changed many aspects of human daily life. Studies have shown that older adults and people with comorbidities have poorer outcomes and higher mortality rates. Higher levels of psychological stress can cause worsening of motor and non-motor symptoms of Parkinson's disease. The main objective of this study was to examine whether social isolation leads to deterioration of physical and mental health in Croatian Parkinson's disease patients.

Methods: This descriptive, observational, cross-sectional telephone study involved Parkinson's disease patients who had at least one control examination at Rijeka University Hospital Center in 2020 and were Croatian citizens. A questionnaire was used to obtain data on the socio-demographic characteristics and the severity of motor, anxiety, depression, and non-motor symptoms.

Results: The final sample included 87 patients. Most patients reported subjective worsening of motor symptoms. Patients who lived alone had worse motor scores than those not living alone. The majority of patients reported worsening of anxiety symptoms, especially in patients who lived alone, had a longer disease duration, and had avoided check-ups. Fewer patients had depression symptoms than motor and anxiety symptoms. Significant worsening of non-motor symptoms was identified in patients who lived alone, were less educated, had a longer disease duration, and had a higher Charlson comorbidity index.

Conclusion: Patients who live alone, have longer disease duration, are less educated, avoid check-ups, and have more comorbidities are more vulnerable to the negative effects of social isolation.

Successful three-year outcome of deep brain stimulation in Gaucher disease type 1 associated Parkinson's disease: A case report

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Introduction: Gaucher's disease type 1 (GD1) is an autosomal recessive disease caused by mutations in the glucocerebrosidase (GBA) gene. Parkinson's disease (PD) with GBA mutations is characterised by early fluctuations, motor complications, and cognitive decline, thus being specific and challenging to treat. The clinical standard of care for treating advanced PD is deep brain stimulation. To the best of our knowledge, only two cases of deep brain stimulation (DBS) treatment of PD in GD1 have been reported so far, both patients in their 50's and with successful and sustained results.

Case report: We present a case of a 43-year-old man who was diagnosed with GD1 in 2010, with following causative compound heterozygote mutations found: c.882T>G, p.H294Q, c.1226A>G, p.N409S, c.1342G>C, p.D448H. He had a rapid progression during five years to an advanced state of PD, with early fluctuations and dyskinesias. We proposed early DBS therapy to the patient due to severe motor fluctuations and side-effects, with prior neuropsychological testing. Patient's symptoms and quality of life improved significantly with STN-DBS due to greatly improved functioning with no dependence on help.

Conclusion: Deep brain stimulation should be considered in early on in GD1-PD patients who have a positive, but fluctuant response to levodopa therapy, as the potential benefits on the quality of life are significant. However, it is essential to give special care to proper cognitive screening before the procedure and continue to monitor cognitive performance regularly.

Worsening of dystonia due to COVID-19 in two patients treated with deep brain stimulation

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Background: Dystonia is a movement disorder characterized by sustained or intermittent muscle contractions, causing abnormal involuntary movements or postures. Coronavirus Disease 2019 (COVID-19), caused by the neurotropic SARS-CoV-2 virus, presents a great challenge to our whole society. Up to now, there has been one report published regarding the worsening of dystonia following a viral infection, which has resolved after lowering stimulation parameters. To the best of our knowledge, there are no published cases of dystonia worsening after SARS-CoV-2 infections in deep brain stimulation (DBS) treated patients.

Case report: We present a report about two patients with generalized dystonia treated with DBS, who had peculiar worsening of symptoms in the early post-COVID-19 period. First patient is a 27-year-old female with GNB1 dystonia (c.352G>C, Asp118His), and the second patient is an 8-year-old male with DYT28 dystonia (KMT2B gene, c.5572dupC; p.Arg1858Profs*114), both treated with GPi-DBS. The course of COVID-19 was mild in both patients with headaches as a most prominent symptom, while dystonia worsening occurred roughly two weeks after acute COVID-19. Increasing stimulation parameters worsened symptoms and side effects even more. Rapid improvement occurred when the stimulation parameters were reduced compared to those that were present before the COVID-19 infection.

Conclusion: Headaches can indicate a SARS-CoV-2 invasion in the central nervous system, causing an inflammatory response that leads to neuronal hyperexcitability. We hypothesize that the possible changes in neuronal excitability caused the ineffectiveness of previous DBS stimulation parameters, which could be why lowering the stimulations helped and why the effect was not permanent.

Isolated cranial neuropathy in bilateral internal carotid artery dissection: a case report

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We present a case of 48-year-old female patient with sudden onset of dysphagia, dysphonia, and right sided facial pain. Patient was previously treated for arterial hypertension and was non-smoker. Neurologic exam revealed hypophonia, mild pharyngeal weakness, and mild weakness of shoulder abduction bilaterally. Brain computed tomography (CT) scan was normal, as well as initial ENT assessment. Brain magnetic resonance imaging (MRI) revealed nonspecific white matter hyperintensities in frontal lobes, with time-of-flight (TOF) MR angiography interpretation of anterior cerebral artery (ACA) A1 hypoplasia and lack of ACoP presentation. Work up included carotid artery ultrasound, serum and cerebrospinal fluid (CSF) analysis, which were unremarkable. A week later patient experienced clinical worsening with appearance of right sided tongue atrophy. Additional MRI analysis were interpreted as normal, but CT angiography revealed right internal carotid artery (ICA) dissection with significant stenosis in petrous segment. Additionally, there was post dissecting aneurysm at C1 segment of left ICA. Patient started recovering three weeks after symptom onset and was discharged with recommendation for anticoagulant therapy. At a check-up in three-month interval she reported occasional mild swallowing difficulties and mild dysphonia. New CT angiography presented non-significant stenosis at petrous segment of right ICA, without new white matter hyperintensity (WMH) on brain MRI. Carotid artery dissection may present with cranial nerve palsy in up to 10% of cases, therefore it should be observed in differential diagnosis of patients with bulbar symptoms.

Case report of a patient with chorea and vitamin B12 deficiency

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Vitamin B12 deficiency is associated with megaloblastic anemia and neurological changes, rarely present with movement disorders: chorea, tremor, myoclonus, parkinsonism, and dystonia.

We present a patient with chorea and vitamin B12 deficiency.

A 76-year-old patient was admitted to the Department of Neurology due to backward movement for a year: peroneal walking, involuntary chorea movement, tremor of the hands with occasional "pill-rolling", horizontal nystagmus with weakness, nausea, vomiting, epigastric pain, and loss of appetite. Blood analysis showed macrocytosis, deficiency of vitamin B12 (26 pmol / L) and vitamin D (20 nmol / L) with slightly elevated CEA 3.4 μg / L and NSE 13.9. Anti-Hu, -Yo, -Ri neuronal antibodies, and antibodies to autoimmune encephalitis were negative. Cerebrospinal fluid (CSF) analysis showed mild increase in protein (0.48 g / L). Serological tests confirm a positive IgG test for *Borrelia burgdorferi* and neurotropic virus, with no signs of acute inflammation. Magnetic resonance imaging (MRI) of the brain periventricular showed chronic cerebrovascular lesions. An electromyoneurography (EMNG) showed severe sensorimotor, distal, symmetrical mixed axonal polyneuropathy. Atrophic gastritis was confirmed by a gastroduodenoscopy and PHD.

The patient was treated with vitamin B12, folacin, haloperidol, vitamin D3, IPP, performed physical therapy, and consequently showed clinical improvement.

Patients with movement disorders, such as chorea, should be tested for vitamin B12 in addition to other tests. Vitamin B12 replacement therapy may lead to clinical improvement.

To be or not to be that is a Percheron artery question

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The thalamic paramedian artery infarct, also named after the neurology researcher who first described this artery as the artery of Percheron (AOP) infarct, is specific not only by clinical presentation but also by the outcome.

The AOP involves a small, bilateral, medial part of the thalamus, with or without the rostral part of the midbrain. Because of its anatomic complexity and diversity of nuclei which are involved, we do have such different neurological features.

First of all, it's hard to demonstrate such a minute variant of PCA (P1) irrigation occlusion. There is no gold standard to demonstrate such an occlusion, but, so far, digital subtraction angiography (DSA) and magnetic resonance imaging (MRI) angiography have more probability to prove such an occlusion. On the other side, territorial involvement is best shown by diffusion-weighted imaging (DWI)-MRI, but predicting AOP infarction only by territorial lesion may be uncertain.

There have been attempts, through past clinical experience, to determine the most common signs of the Percheron artery infarction. These are the three most common features: decreased level of consciousness, cognitive decline or behavioral manifestations, and abnormal eye movement disorders especially vertical gaze palsy. The first one apparently has a great impact on the outcome, and depends from location and dimensions of the lesion.

Our two cases had an opposite outcome, the fatal one we explained by the involvement of the rostral part of midbrain. Both were treated with recombinant tissue plasminogen activator (rt-PA), with difficulties in decision-making due to deterioration of consciousness.

Our goal was to emphasize the importance of early detection of AOP infarct. According to our experience the duration of consciousness deterioration may predict the outcome.

Paraparetic variant of Guillain-Barré syndrome within SARS-CoV-2 infection

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An increasing number of neurological complications are associated with COVID-19, including patients with Guillain-Barré syndrome (GBS). We will present a patient with a rare paraparetic variant of GBS (5–10%) and electrophysiological axonal features within SARS-CoV-2 infection.

A 64-year-old patient tested positive for SARS-CoV-2 virus infection on March 18, 2021. From March 24 to March 29, 2021 he was treated in Gospić General Hospital due to acute respiratory infection.

Due to the development of flabby lower extremities, he was transferred to the University Hospital for Infectious Diseases in Zagreb and then for further treatment and diagnostic processing to the Department of Neurology, Sestre milosrdnice University Hospital Center, Neurological Intensive Care Unit, where he was treated from April 15 to May 4, 2021. Upon arrival, he complained of motor weakness of the lower limbs with pain in the back and lower extremities. Family history is negative for neurological diseases.

In neurological status: flabby moderate paresis of the lower extremities, flexion of the lower legs 2-3/5 on both sides, extension of the upper legs 4/5 on both sides, extension of the lower legs 1-2/5 on both sides, flexion of the lower legs 2-3/5 on both sides, GMS feet 4/5 on both sides. MTR symmetrically reduced at the lower extremities, with no clear sensory outbursts or sensory levels.

Brain and spine magnetic resonance imaging (MRI) were normal. An electromyoneurography (EMNG) showed acute acquired motor neuropathy of the lower limbs, which led to extensive diagnostic processing of blood and cerebrospinal fluid. All received findings were normal. The lumbar puncture verifies the normal finding of cells with slightly elevated proteins. Due to respiratory insufficiency, the patient was on HFNC. He was treated with pulse corticosteroid therapy for 5 days and due to an unsatisfactory neurological response, he received intravenous immunoglobulins for 5 days. Neurological status improves during hospitalization. The patient verticalizes and walks with the help of a walker. After discharge, the patient was referred to physical rehabilitation.

At the control check-up in September 2021 the neurological status was normal. Control EMNG showed motor polyneuropathy on the lower limbs, which was in a significant improvement compared to the previous finding.

Previous infection, monophasic course of the disease, the presence of albuminocytological dissociation, and clinical presentation with the exclusion of other diseases that give a similar clinical picture suggested the diagnosis of paraparetic variant GBS. Electrophysiological findings suggest that patients with paraparetic variants of GBS have axonal neuropathy limited to the lower limbs.

Posttraumatic carotid-cavernous fistula: a case report

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The patient was admitted for a craniocerebral injury sustained when falling off a bicycle on the day of admission. Neuroradiological imaging confirmed neurocranium and viscerocranium fractures without displacement with minor subarachnoid hemorrhaging and a brain contusion zone with intracontusion bleeding. No neurological abnormalities presented when admitted. On the fourth day of hospitalization, there was an increase in the hematoma of the left periorbital region, with proptosis of the left eye, chemosis, and hyperemia of the left eye joint, as well as ophthalmoplegia and elevated intraocular pressure. Initially treated with antiedematous therapy, corticosteroids and acetazolamide. A magnetic resonance imaging (MRI) of the orbit confirmed carotid cavernous fistula. The patient was transferred to the Zagreb University Hospital Centre, where a digital subtraction angiography (DSA) was performed, followed by an embolization of the direct carotid-cavernous (CC) fistula using 10 coils with no angiographic or clinical complications.

Carotid-cavernous fistulas represent a pathological communication between the carotid artery and the cavernous sinus. They can be idiopathic or secondary and are classified as direct or indirect. Direct CCFs occur most often after head trauma or an aneurysm rupture and are usually high-flow fistulas. Indirect CCFs are dural arteriovenous fistulas and are usually low-flow CCFs. Causes of dural CCFs include hypertension, venous sinus thrombosis, and internal carotid artery (ICA) dissection. Symptoms include chemosis and subconjunctival hemorrhaging of the affected eye, a pulsating exophthalmos, progressive vision loss, double vision, ophthalmoplegia, and pulsatile tinnitus. The diagnostic gold standard is digital subtraction angiography. The goal of the treatment is to completely exclude the CC fistula from circulation.

Quality of life in patients with painful and painless diabetic polyneuropathy correlated with vitamin D values

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Vitamin D deficiency is common in people with diabetes, indicating possible association between vitamin D and the development of neuropathic pain.

The aim of this study was to compare the estimated health-related quality of life (HRQOL) and vitamin D values in patients with painful (PDPN) and painless sensorimotor diabetic polyneuropathy (DPN).

Subjects and methods: Twenty-nine subjects, mean age of 63.00 with a clinical diagnosis of PDPN and twenty-eight subjects with a clinical diagnosis of DPN with a mean age of 63.29 were included in the study. The Pain Detect questionnaire was used to assess the existence of neuropathic pain. 25-hydroxy vitamin D values were measured by liquid chromatography, and the assessment of HRQOL by SF-36 questionnaire.

Results: In the PDPN group 89.66% of respondents have reduced values of vitamin D, in contrast to 69.00% in the DPN group. Both examined variables, neuropathic pain and vitamin D value, differed statistically significantly between groups. In this study, we did not demonstrate a statistically significant association between vitamin D and neuropathic pain. We found a statistically significant association between vitamin D and the SF domain of physical functioning, role physical, and general health perceptions in the PDPN group of men. In all categories measured by the SF-36, the DPN group has a higher index compared to the PDPN group. HRQOL of respondents with PDPN was most reduced in the categories of body pain, vitality, and health transition.

Cerebrovascular accident as the first manifestation of hematologic disease

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Introduction: Hematologic illnesses are very rarely a cause of stroke, but patients with hematologic illnesses often have cerebrovascular accidents. The JAK2 V617F mutation is found in more than 95% of patients with polycythemia rubra vera and in around 50% of patients with essential thrombocythemia.

Case report: A sixty-seven-year-old male patient has been admitted to our department because of a stroke. Brain magnetic resonance imaging (MRI) has revealed multiple microembolic acute-subacute infarcts of the right hemisphere of the cerebrum. Laboratory results showed thrombocytosis and leukocytosis. The JAK2 V617F mutation was detected. He has started treatment with hydroxyurea, acetylsalicylic acid, and allopurinol which has led to normalization of laboratory results.

Discussion and conclusion: Differential diagnosis of this patient included secondary thrombocytosis, chronic myeloproliferative disorder, atrial fibrillation, atrial septal defect, patent foramen ovale, and embolic stroke of undetermined source.

Due to proven JAK2 mutation, we have come to a conclusion that this patient has chronic myeloproliferative disorder (essential thrombocythemia, polycythemia rubra vera, or primary myelofibrosis). A bone biopsy is planned so the exact diagnosis is to be determined.

The risk of thrombotic accidents with these illnesses depends on whether the patient has had previous thromboembolic accidents, and on their comorbidities and age.

When a patient has embolic stroke or cerebral venous sinus thrombosis of undetermined cause, with persistent thrombocytosis and polycythemia but without confirmed diagnosis of myeloproliferative neoplasm, it is reasonable to do a screening for JAK2 mutation in order to prevent recurrent thrombotic cerebrovascular accidents.

Cerebral venous thrombosis: a case report

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A 36-year-old female patient presented to the emergency department with headache, nausea, vomiting, fever, and confusion. The patient did not have any history of previous chronic illness. A month earlier, she gave birth to a male newborn. During her pregnancy, she was exclusively at rest due to two previous miscarriages. On the neurological examination she was confused and disoriented. Contrast-enhanced brain computed tomography (CT) cast suspicion on cerebral venous thrombosis. Magnetic resonance imaging (MRI) of the brain showed vasogenic edema in both thalami, and 2D time-of-flight (TOF) MR venography showed no left jugular vein nor left sigmoid and transverse sinuses. A therapeutic dose of LMWH was started immediately. Drowsiness, disorientation, and amnesia for recent events persisted throughout the hospitalization. An electroencephalography (EEG) recordings on several occasion showed subclinical epileptic attacks, and AET was started. Regression of edematous and hemorrhagic changes of the thalami, and significant regression of thrombotic formations with signs of gradual cerebral vein sinuses recanalization were shown on brain MRI which was done before the patient was discharged. Extensive hematological and immunological workup was done, and diagnosis of hereditary thrombophilia (mutated heterozygote for factor V, MTHFR and PAI-1) was made. On the last neurologist check-up, the patient reported no epileptic seizures and that she occasionally still forgets what she wants to say and feels tired and drowsy.

Risk factors for development of intracranial venous thrombosis include pregnancy, long-term rest, contraceptive use, dehydration, some infections, and hereditary thrombophilia. The diagnosis must be confirmed by an MRI of the brain with MRI venography. The gold standard in treatment is anticoagulant therapy.

Transorbital sonography in the evaluation of optic nerve diameter and optic nerve sheath in relation to demographic indicators

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Introduction: Transorbital sonography is a reliable method for evaluation of the size of the optic nerve diameter (OND) and the optic nerve sheath (ONSD) which may be useful in the noninvasive evaluation of patients with elevated intracranial pressure. Wide ranges of regular ONSD values have been reported in the literature. The aim of this study is to establish values of OND and ONSD in a healthy population, also, if there are differences between OND and ONSD considering gender, age, BMI, and the correlation of testing within and between examiners.

Methods: One hundred healthy subjects (without intracranial pathology), aged between 22 - 87 years, were included. Each subject underwent transbulbar sonography, on each eye each examiner measured OND and ONSD on two occasions at a depth of 3 mm behind the papilla of the optic nerve.

Results: Measurement and analysis of OND and ONSD values were possible in all 100 subjects. There was a statistically significant difference between OND values in men and women ($p = 0,42$), but there was no statistically significant difference between ONSD values between the sexes. Also, results showed that there was not statistically significant correlation between the age of the subjects and the values of OND and ONSD ($p > 0.01$), while a statistically significant difference was found in the values of OND, considering the BMI, but not in the values of ONSD. Pearson's coefficient showed a positive correlation within and between examiner measurements ($p < 0.01$).

Conclusion: Men have wider OND compared to the women, while there is no difference in the width of ONSD between the sexes. There is a positive correlation between OND and BMI values, but not with ONSD values. There is a positive correlation in measurements between examiners and between individual measurements of examiners.

Two patients with multiple, unruptured intracranial aneurysms as a presentation of fibromuscular dysplasia: a case report

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Introduction: Fibromuscular dysplasia (FMD) is a rare, non-inflammatory, non-atherosclerotic disease of medium and large blood vessels which is associated with an increased risk of anterior and posterior intracranial aneurysms, as well as an increased risk of their rupture.

Case report: The first case is a 60-year-old patient who has had hypertension for about 20 years and who presented in our emergency department because of diplopia and a lesion of the right abducens nerve. Neuroradiological examination revealed multiple, unruptured intracranial aneurysms - four of the right ACI, three of the left ACI and one of the AB. In the second case, patient was a 46-year-old patient who had hypertension from a young age and who was diagnosed with one aneurysm and 50% stenosis of the left ACI and with the one aneurysm of the left ACM as a part of the diagnostic work up of frequent headaches. Neurosonological examination revealed the suspicion of FMD in both patients. The neurovascular council in both patients decided that the aneurysms would be treated with endovascular procedures. In the case of the first patient during three procedures (aneurysms of the right ACI and of the left ACI were embolized with flow diverters in two separated procedures, while aneurysm of the AB was embolized with coils) and in the case of the second patient during one procedure aneurysms of the left ACI and the left ACM were embolized with two flow diverters with coils. All endovascular procedures passed without complications and control neuroradiological examination performed several times with an interval of 6 months in both patients showed the exclusion of the aneurysms from the circulation without the formation of new ones.

Conclusion: In patients with multiple intracranial aneurysms, it is important to suspect of FMD. Endovascular procedures in the treatment of multiple, non-ruptured intracranial aneurysms are an effective method of treatment that significantly reduces mortality and morbidity in this rare group of patients.

Headache as a symptom of blood vessel disease: a case report

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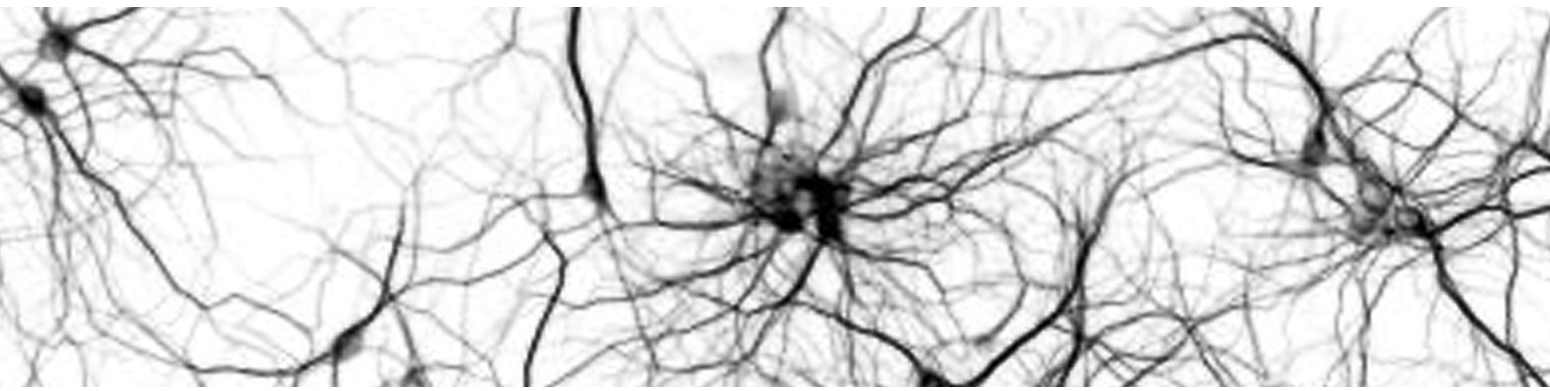
Headache is a frequent symptom in emergency department (ED), especially in patients with hypertension. Carotid web, also known as the carotid intimate variant of fibromuscular dysplasia (FMD), is a rare disorder, found in only 1-1.2% of patients undergoing angiography, and it should be searched for in patients with cryptogenic stroke. We present a female hypertensive patient presented to ED with headache and visual symptoms, in whom further work-up revealed carotid web. A 46-year-old female patient presented to the ED with headache occurring few days before the examination. It was a constant left temporal headache accompanied with flashes in the right half of the visual field. History taking revealed well-controlled hypertension with calcium channel antagonists. Hypertension has been known since pregnancy when it manifested as eclampsia. In ED normal neurologic status was obtained, BP 180/100 mm Hg. Brain computed tomography (CT) scan was normal. Neurosonological testing revealed right carotid web, confirmed by multi-slice computed tomography (MSCT) angiography. Neurosonological testing may reveal carotid web, important cause of ischemic stroke or amaurosis fugax.



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