POSTERS

POSTERI

1

EPIDEMIOLOGY OF STROKE – HOSPITALIZED PATIENTS AT NAŠICE GENERAL COUNTY HOSPITAL 1997 – 2001

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The aim of the study was to analyze and present the pattern of hospitalization for stroke at the Division of Neurology, Department of Medicine, Našice General County Hospital, during the 1997 – 2001 period (926 patients in total). The results pointing to stroke as the most common discharge diagnosis in the hospital, and indicating that stroke accounted for 15.9% of all internal and neurologic patients treated at the Department of Medicine, point to the high epidemiologic relevance of stroke. The ratio of ischemic and hemorrhagic stroke was 85.8% *vs.* 14.2%, which is consistent with literature data. Arterial hypertension was most commonly recorded as a risk factor for both ischemic stroke (74.5%) and hemorrhagic stroke (88.6%). An increased prevalence of diabetes mellitus and atrial fibrillation was observed for ischemic stroke, as expected, whereas hypercholesterolemia was more commonly recorded in hemorrhagic stroke, i.e. in as many as 43.5% *vs.* 36.5% in ischemic stroke. Concerning mortality rates, clear association with aging was found in 29.3% of cases, with as many as 55.1% of deaths in the >81 age group. A departure from the trend was only observed in the youngest age group (<50 yrs), where an increased death rate could be attributed to the higher prevalence of intracerebral hemorrhage as compared to other age groups. Considering the significant role of neuroradiologic diagnosis for timely identification of the most appropriate therapeutic procedures, we are much less than satisifed with the relatively small number (14%) of brain computed tomography examinations in stroke patients.

1.

EPIDEMIOLOGIJA MOŽDANOG UDARA – HOSPITALNO LIJEČENI BOLESNICI U OŽB NAŠICE U RAZDOBLJU OD 1997. DO 2001. GODINE

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Istraživanje je provedeno u svrhu analize i prikaza hospitalno liječenih bolesnika oboljelih od moždanog udara (MU) u Općoj županijskoj bolnici Našice (Interni odjel - Neurološki pododjel) u petogodišnjem razdoblju od 1997. do 2001. godine (ukupno 926 bolesnika). Epidemiološko značenje MU se, uz podatak da je MU najzastupljenija otpusna dijagnoza iz naše bolnice, vidi i u podatku o značajnoj zastupljenosti od 15,9% u odnosu na sve ostale internističke i neurološke bolesnike liječene na Internom odjelu. Odnos ishemijskih cerebrovaskuarnih događaja u odnosu na hemoragijski MU (HMU) je u skladu s podacima iz drugih istraživanja - za naše balesnike iznosi 85,8% prema 14,2%. Arterijska hipertenzija je najčešće zabilježen čimbenik rizika za ishemijski tip MU (74,5%) i HMU (88,6%). Očekivano veću učestalost dijabetes melitusa i atrijske fibrilacije pronašli smo u ishemijskim MU, dok je hiperkolesterolemija češće zabilježena kod HMU (čak 43,5%, u odnosu na 36,5% u bolesnika s ishemijskim MU). Analizirajući podatak o ukupnoj smrtnosti od 29,3% utvrdili smo jasnu povezanost s porastom životne dobi, sve do visokih 55,1% umrlih u dobnoj skupini iznad 81 godine. Odstupanje se vidi jedino u najmlađoj dobnoj skupini do 50 godina, gdje se nešto veća smrtnost može objasniti značajno većom učestalošću intracerebralnih hemoragija nego u ostalim dobnim skupinama. Uvažavajući veliko značenje neuroradiološke dijagnostike u pravodobnom određivanju najprimjerenijih terapijskih postupaka ne možemo biti zadovoljni relativno manjim brojem učinjenih kompjutorskih tomografija mozga u bolesnika s MU, koji iznosi 14%.

2

MAIN EPIDEMIOLOGIC CHARACTERISTICS OF CEREBROVASCULAR DISEASES IN PATIENTS HOSPITALIZED AT TUZLA DEPARTMENT OF NEUROLOGY DURING A FIVE-YEAR POST-WAR PERIOD (1996 – 2000)

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The aim of the study was to assess the prevalence of cerebrovascular diseases (CVD) during the post-war period, their sex and age distribution, risk factors, and hospital mortality. The study included 2664 patients with a clinical picture of acute CVD hospitalized at the Tuzla Department of Neurology from January 1, 1996 till December 31, 2000. In all patients, the diagnosis of CVD was confirmed by computed tomography. Study results showed the diagnosis of ischemic stroke to have been made in 1722 (65.1%), of intracerebral hemorrhage (ICH) in 747 (28.3%), and of subarachnoid hemorrhage (SAH) in 175 (6.6%) patients, without a remarkable dynamics according to calendar years. Women predominated in all types of CVD, with a mean proportion of 55% (55% in ischemic stroke, 57% in ICH, and 61% in SAH). Female patients were significantly older than male patients: mean age 67±9.9 *vs.* 64±9.8 in ischemic stroke; 64±10.2 *vs.* 62±10.5 in ICH; and 57±12.3 *vs.* 52.5±11.2 years in SAH ($p<0.05$). Hypertension was by far the most common risk factor for stroke, present in 67%, 87% and 69% of patients with ischemic stroke, ICH and SAH, respectively, and followed by cardiac diseases (54% ischemic stroke, 33.5% ICH, 15% SAH) and diabetes mellitus (23% ischemic stroke, 11.5% ICH, 5% SAH). Total hospital mortality was 38% (1014 patients), and was highest among patients with ICH (55%), followed by those with SAH (39%) and ischemic stroke (31%). Accordingly, a higher prevalence of hemorrhagic CVD, first of all ICH, was recorded during the post-war period under study. Female patients predominated in all types of CVD and had older mean age. Arterial hypertension was the most common risk factor for CVD. Hospital mortality exceeded that reported from developed countries, especially among patients with ischemic stroke and ICH.

2.

OSNOVNE EPIDEMIOLOŠKE ZNAČAJKE CEREBROVASKULARNIH BOLESTI U BOLESNIKA HOSPITALIZIRANIH U NEUROLOŠKOJ KLINICI TUZLA U PETOGODIŠNJEM (1996.-2000.) POSLIJERATNOM RAZDOBLJU

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Cilj rada bio je ispitati učestalost cerebrovaskularnih bolesti (CVB) u poslijeratnom razdoblju, njihovu spolnu i dobnu distribuciju, čimbenike rizika i hospitalni mortalitet. U studiju su bila uključena 2664 bolesnika s kliničkom slikom akutne CVB hospitalizirana na Neurološkoj klinici Tuzla u razdoblju od 01.01.1996. do 31.12. 2000. godine. Svim analiziranim bolesnicima dijagnoza CVB je potvrđena kompjutoriziranom tomografijom. U analiziranom razdoblju dijagnoza ishemijskog moždanog udara (IMU) je postavljena u 1722 (65,1%), intracerebralne hemoragije (ICH) u 747 (28,3%) te subarahnoidne hemoragije (SAH) u 175 (6,6%) bolesnika, bez bitnije dinamike prema kalendarskim godinama. U svim tipovima CVB brojnije su bile žene, s prosječnom zastupljenošću od 55% (55% kod IMU, 57% ICH i 61% SAH), koje su bile i značajno starije od bolesnika muškog spola: 67 (±9,9) naspram 64 (±9,8) godine za IMU; 64 (±10,2) prema 62 (±10,5) za ICH i 57 (±12,3) prema 52,5 (±11,2) za SAH ($p<0,05$). Hipertenzija je bila daleko najčešći čimbenik rizika prisutna kod 67% bolesnika s IMU, 87% kod ICH te 69% kod SAH; potom srčane bolesti (54% IMU, 33,5% ICH, 15% SAH); i šećerna bolest (23% IMU, 11,5% ICH, 5% SAH). Sveukupni hospitalni mortalitet bio je 38% (1014 bolesnika), najviši među bolesnicima s ICH (55%), zatim SAH (39%) te IMU (31%). U promatranom poslijeratnom razdoblju uočena je veća učestalost hemoragijskih CVB, prvenstveno ICH. Zastupljenost bolesnika ženskog spola bila je veća za sve vrste CVB, kao i njihova prosječna životna dob. Arterijska hipertenzija bila je najčešći čimbenik rizika CVB. Hospitalni mortalitet bio je viši nego u drugim razvijenim zemljama, naročito kod bolesnika s IMU i ICH.

3

EPIDEMIOLOGY OF STROKE AT SLAVONSKI BROD GENERAL HOSPITAL 1996 – 2000

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The aim of the study was to investigate the epidemiologic data on stroke in the Slavonski Brod Hospital on the basis of medical records of the Department of Neurology during the 1996 – 2000 period. The General Hospital in Slavonski Brod has 550 beds and a catchment population of 120,000. Department of Neurology has 32 beds, with about 600 patients treated for cerebrovascular disease. During the study period, 2055 patients, 52.3% of them female, were hospitalized for stroke, and 383 (18.7%) of them died. There were 1828 ischemic strokes, with a female predominance (53.0%) and 294 (16.1%) deaths; and 227 hemorrhagic strokes, with a male predominance (53.3%) and 88 (39.2%) deaths. On an average, 1.12 patients were admitted for stroke and 0.21 patients died *per* day during the study period.

3.

EPIDEMIOLOGIJA MOŽDANOG UDARA U OPĆOJ BOLNICI U SLAVONSKOM BRODU OD 1996. DO 2000. GODINE

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Opća bolnica „Dr. Josip Benčević“, Slavonski Brod

Cilj rada je bio istražiti epidemiološke pokazatelje o moždanom udaru u slavonskobrodskoj bolnici na osnovi podataka s Neurološkog odjela za razdoblje od 1995. do 2000. godine. Opća bolnica u Slavonskom Brodu raspolaže s 550 kreveta, odnosno skrbi za 120 tisuća stanovnika. Na Neurološkom odjelu su 32 kreveta, a oko 600 bolesnika se liječi od cerbrovaskularne bolesti. U promatranom razdoblju je zbog moždanog udara bilo hospitalizirano ukupno 2055 bolesnika, češće žene (52,3%), a od toga je preminulo 383 (18,7%) bolesnika. Ishemijskih moždanih udara je bilo 1828, češće kod žena (53,0%), a preminulo je 294 (16,1%) bolesnika. Od hemoragijskog moždanog udara je oboljelo 227 bolesnika, češće muškarci (53,3%), a preminulo ih je 88 (39,2%). Tijekom promatranog razdoblja u prosjeku je u bolnicu zbog moždanog udara zaprimljen 1,12 bolesnik na dan, a preminuo je 0,21 bolesnik.

4

SECULAR TREND IN THE INCIDENCE OF HEMORRHAGIC STROKE IN THE OSIJEK AREA, EAST CROATIA, DURING THE 1988-2000 PERIOD: A HOSPITAL-BASED STUDY

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The purpose of the study was to establish the possible environmental influences in the peculiar rising and falling trends in the number of hemorrhagic stroke (HS) recorded in east Croatia (Osijek area) during the last thirteen-year period (1988-2000). In this period, 1222 HS were recorded and treated. A constant increase in the incidence of HS was observed, from 60 in 1988 to 139 in 1998, with a mean annual rate of 16.5% of all stroke cases. A sharp increase in the rate of HS in total stroke incidence was recorded during the war in Croatia (1991-1995), with a peak incidence of 27.4% in 1993. Typical hypertensive intracerebral hemorrhage (ICH) was most common (57.1%), followed by atypical ICH in 26.4% and subarachnoid hemorrhage (SAH) in 16.5% of cases. Analysis of the annual incidence of hypertensive ICH and SAH revealed peculiar rising and falling trends. These variations were in correlation with difficult living conditions. During the war

4.

SEKULARNO KRETANJE OBOLIJEVANJA OD HEMORAGIJSKOG MOŽDANOG UDARA NA PODRUČJU ŽUPANIJE OSJEČKO-BARANJSKE U RAZDOBLJU 1988. – 2000.: Studija na bolničkom materijalu

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Cilj istraživanja bio je utvrditi dugoročni trend obolijevanja i mogući utjecaj okolišnih, psiholoških i socioekonomskih čimbenika na incidenciju i značajke hemoragijskog moždanog udara (HMU) na području Osječko-baranjske županije. Na temelju medicinske dokumentacije i protokola liječenja oboljelih na Neurološkoj klinici Kliničke bolnice Osijek autori su analizirali epidemiološke značajke ove bolesti u trinaestgodišnjem razdoblju (1988.-2000.). U tom razdoblju na Klinici je registrirano 1222 HMU-a, što iznosi 16,5% svih MU-a. Zabilježen je stalan trend rasta incidencije HMU-a, od 60 (1988.) do 139 (1998.). Uočene su i značajne oscilacije udjela ove bolesti u ukupnom broju MU-a. Nagao porast udjela ove bolesti u ukupnom broju oboljelih od MU-a zabilježen je tijekom Domovinskog rata (1991.-1995.), uz najviši udjel od 27,6% u 1993. godini. Analizom zastupljenosti pojedinih podvrsta utvrđeno je da su najučestalije tipične intracerebralne hemoragije

period, the SAH incidence sharply rose. Immediately after the war it suddenly decreased. The authors named this phenomenon a 'pool depletion', supposing the relatively stable proportion of the those with aneurysms in the population. The observed variations seemed to be the consequence of war stress and other negative psychosocial and economic factors during the post-war period, which increased the risk of SAH and typical hypertensive ICH through complex pathophysiological mechanisms.

5

HOSPITAL MORTALITY CHARACTERISTICS IN PATIENTS HOSPITALIZED AT TUZLA DEPARTMENT OF NEUROLOGY 2000 – 2001

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Cerebrovascular diseases are known to be the third most common cause of morbidity and mortality, immediately following cardiac and malignant diseases, in the developed and moderately developed countries worldwide. In this retrospective study, hospital mortality at the Tuzla Department of Neurology during a two-year period (2000 – 2001) was analyzed. Stroke and stroke complications were found to be the leading cause of death. Of the total number of patients admitted in 2000 (N=734), lethal outcome was recorded in 314 (42.78%) cases. In 2001, the respective numbers were lower: 660 patients were admitted and lethal outcome was recorded in 213 (32.27%) cases. The mean age of the deceased was 67.25±9.708 and 68.54±9.797 years in 2000 and 2001, respectively. Stroke and stroke complications were the cause of death in 92.96% of all deaths. In 2000, there were 171 (54.46%) female and 143 (45.54%) male deaths, whereas the respective numbers in 2001 were 123 (57.75%) and 90 (42.25%). In 2000, in the majority of patients, i.e. in 248 (78.98%) of 314 deceased patients, the diagnosis of stroke was made on the basis of computed tomography (CT) of the brain, whereas in the remaining 66 (21.02%) death had occurred before brain CT could have been done, and the diagnosis was made on the basis of clinical criteria. In 2001, the diagnosis of stroke was also made on the basis of brain CT in the majority of patients, i.e. in 163 (76.53%) of 213 patients with lethal outcome, whereas brain CT was not performed in 50 (23.47%) cases. In 2000, of the total number of

(ICH) (56,9%), zatim slijede atipične ICH-e (26,4%), te subarahnoidne hemoragije (SAH) (16,7%). Godišnja incidencija hipertenzivnih ICH-a i SAH-a pokazivala je znakovite oscilacije. Ove varijacije bile su u korelaciji s određenim uvjetima življenja. Tijekom ratnog razdoblja incidencija SAH-a naglo je porasla, a nakon rata incidencija ove bolesti naglo opada. Autori su ovo okarakterizirali kao fenomen „*pool-depletion*". Uočene varijacije dovode se u vezu s ratnim stresom i drugim nepovoljnim psihološkim i socioekonomskim čimbenicima u ratnom i poslijeratnom razdoblju. Složeni i zasada nedovoljno poznati patofiziološki mehanizmi mogu biti odgovorni za uočeni porast incidencije SAH-a i tipičnih hipertenzivnih ICH-a.

5.

NEKE ZNAČAJKE SMRTNOSTI HOSPITALIZIRANIH BOLESNIKA NA NEUROLOŠKOJ KLINICI TUZLA U RAZDOBLJU 2000. – 2001.

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Poznato je da cerebrovaskularne bolesti predstavljaju treći po redu uzrok morbiditeta i mortaliteta, odmah poslije srčanih i malignih bolesti, u razvijenim i srednje razvijenim zemljama svijeta. U ovom radu izvršena je retrospektivna analiza mortaliteta svih umrlih na Neurološkoj klinici Tuzla u razdoblju od dvije godine (2000. – 2001.). Utvrđeno je da je vodeći uzrok smrti bio moždani udar i njegove komplikacije. Od ukupnog broja primljenih bolesnika u 2000. godini (N=734), 314 (42,78%) ih je imalo smrtni ishod, a u 2001. godini taj je broj bio manji (660 ukupno primljenih) i sa smrtnim ishodom u 213 (32,27%) bolesnika. Prosječna dob umrlih je u 2000. godini bila 67,25±9,708 godina, a u 2001. 68,54±9,797 godina. Od ukupnog broja umrlih moždani udar i njegove komplikacije su bile uzrok u 92,96% slučajeva. U 2000. godini među umrlima je bilo 171 ili 54,46% žena i 143 ili 45,54% muškaraca, dok su u 2001.godini umrle 123 ili 57,75% žene i 90 ili 42,25% muškaraca. Kod većine ispitanika u 2000. g. (248 od ukupno umrlih 314 ili 78,98%) dijagnoza moždanog udara je postavljena na osnovi kompjutorske tomografije (CT) mozga, dok je u preostalih 66 bolesnika (21,02%) smrtni ishod nastupio prije nego što se je mogao napraviti CT mozga pa je dijagnoza postavljena na osnovi kliničkih kriterija. U 2001. g. također je kod većine (163 od ukupno 213 umrlih ili 76,53%) dijagnoza postavljena na osnovi CT mozga, a u 50 (23,47%) bolesnika CT mozga nije napravljen. Među umrlima u 2000. g. od ishemije je umrlo 144 ili 45,86%, a od hemoragije 105 ili 33,44% bolesnika (intrac-

deaths, 144 (45.86%) patients died from ischemia; 105 (33.44%) patients from hemorrhage (intracerebral hemorrhage in 95 (30.25%) and subarachnoid hemorrhage in 10 (3.18%) patients); lesion in the anterior cerebral circulation was found in 196 (62.42%) and lesion in the posterior cerebral circulation in 43 (13.69%) patients. In 2001, out of 313 deaths, 92 (43.19%) patients died from ischemia and 74 (34.74%) patients from hemorrhage (intracerebral hemorrhage in 63 (29.58%) and subarachnoid hemorrhage in 11 (5.16%) patients); anterior cerebral circulation was involved in 150 (70.42%) and posterior cerebral circulation in 18 (8.45%) patients. Analysis of risk factors present in the deceased showed hypertension to be most common (in 2000 and 2001, hypertension was recorded in 184 (58.60%) and 175 (82.16%) deaths, respectively), followed by cardiac diseases (121 (38.53%) and 87 (40.85%) in 2000 and 2001, respectively), diabetes mellitus (54 (17.20%) and 56 (26.29%) in 2000 and 2001, respectively), cigarette smoking (48 (15.29%) and 50 (23.40%) in 2000 and 2001, respectively), and excess alcohol consumption (25 (7.96%) and 24 (11.27%) in 2000 and 2001, respectively).

6

CEREBROVASCULAR DISEASES IN THE ZAGREB HOSPITALS DURING THE 1997 – 2000 PERIOD

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Cerebrovascular diseases are a heterogeneous group of diseases characterized by brain injury, usually of sudden onset, caused by vascular disease. The two major categories are brain hemorrhage and brain ischemia. Brain hemorrhage can be subdivided into subarachnoid hemorrhage, i. e. bleeding into the spaces and spinal fluid around the brain, and intracerebral hemorrhage, i. e. bleeding directly into the brain. A majority of stroke deaths occur in individuals aged >65. In the Zagreb hospitals, about 4500-5800 cerebrovascular patients (I60-I69 ICD-10) with 58000-65000 bed/days are recorded *per* year. About 75% of all hospitalized cerebrovascular patients belong to the >65 age group. The rates dramatically increase after age 65. In 2000, 4399 patients with 57888 bed/days were discharged from the Zagreb hospitals. Stroke morbidity and mortality showed a male predominance in almost all age groups. More impressive than the mortality rates are the quality aspects of life after stroke, as many patients suffer impairments in their ability to walk, see, and feel.

erebralna hemoragija 95 ili 30,25%, subarahnoidna 10 ili 3,18%); u 196 ili 62,42% slučajeva lezija je bila lokalizirana u prednjoj moždanoj cirkulaciji, a u 43 ili 13,69% bolesnika u stražnjoj moždanoj cirkulaciji. U 2001. g. od ukupno umrlih (N=213) od ishemije je umrlo 92 ili 43,19%, a od hemoragije 74 ili 34,74% bolesnika (intracerebralna 63 ili 29,58%, subarahnoidna 11 ili 5,16%); prednja moždana cirkulacija bila je zastupljena kod 150 ili 70,42%, a stražnja u 18 ili 8,45% slučajeva. U analizi čimbenika rizika kod umrlih utvrđeno je da je hipertenzija na prvom mjestu (u 2000. g. od ukupno umrlih hipertenziju je imalo 184 ili 58,60% bolesnika, a u 2001. g. 175 ili 82,16% umrlih), potom srčane bolesti (u 2000. g. od ukupno umrlih 121 ili 38,54% su imali neku srčanu bolest, dok je u 2001. g. taj broj bio 87 ili 40,85%), šećerna bolest (u 2000. g. od ukupno umrlih 54 ili 17,20% je imalo šećernu bolest, a u 2001. g. 56 ili 26,29%), pušenje (u 2000. g. od ukupno umrlih pušači su bili 48 ili 15,29%, a u 2001. g. 50 ili 23,4%), alkohol (u 2000. g. od ukupno umrlih alkohol je konzumiralo 25 ili 7,96%, a u 2001. g. 24 ili 11,27%).

6.

CEREBROVASKULARNE BOLESTI U ZAGREBAČKIM BOLNICAMA U RAZDOBLJU 1997. – 2000.

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Cerebrovaskularne bolesti su heterogena skupina bolesti obilježenih oštećenjem mozga, obično iznenadnim, uzrokovanim vaskularnom bolešću. Dvije glavne kategorije su cerebralno krvarenje i cerebralna ishemija. Cerebralno krvarenje može se dalje podijeliti na subarahnoidno krvarenje, tj. krvarenje u prostore i likvor oko mozga, i intracerebralno krvarenje, tj. krvarenje izravno u mozak. Većina smrti od moždanog udara nastupa u osoba starijih od 65 godina. U zagrebačkim bolnicama na godinu se zabilježi oko 4500-5800 cerebrovaskularnih bolesnika (I60-I69 ICD-10) s 58000-65000 bolnoopskrbnih dana. Oko 75% svih hospitaliziranih bolesnika je u dobi iznad 60 godina. Ove se stope dramatično povećavaju nakon dobi od 65 godina. Godine 2000. u zagrebačkim je bolnicama otpušteno 4399 bolesnika s 57888 bolnoopskrbnih dana. U skoro svim su dobnim skupinama moždani udar, kao i smrt uzrokovana moždanim udarom, bili češći u muškaraca negoli u žena. Od stope smrtnosti još su dojmljiviji kvalitativni aspekti života nakon moždanog udara. U mnogih bolesnika zaostaju poremećaji u hodu, vidu i ostalim osjetima.

7

RISK FACTORS IN STROKE PATIENTS

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The prevalence and characteristics of risk factors were studied in stroke patients treated at the Osijek Department of Neurology, in order to assess the effect of individual risk factors and total score of risk factors on the development of stroke. The study included 67 stroke patients, mean age 68.24 years (34 women, mean age 71.41 years, and 33 men, mean age 64.85 years). Data from the patients' medical history and treatment protocol were thoroughly analyzed in search for the following risk factors: previous transient ischemic attack (TIA), heredity, arterial hypertension, diabetes mellitus, atrial fibrillation, other heart rate disorders, heart failure and artificial valves, cardiomyopathy, blood lipid increase, coagulation disorders, cigarette smoking, oral contraceptives, obesity, physical inactivity, and stress. The following risk factors were most commonly recorded: arterial hypertension in 77.6% (79.4% of women and 75.8% of men), elevated lipids in 62.7% (70.6% of women and 54.5% of men), cardiomyopathy in 43.3% (52.9% of women and 33.3% of men), adiposity in 38.8% (47.1% of women and 30.3% of men), cigarette smoking in 34.3% (17.6% of women and 51.5% of men), diabetes mellitus in 26.9%, physical inactivity in 25.4%, and atrial fibrillation in 22.4% of patients. Risk factor cumulation was also observed. So, there were 19.4% of patients with simultaneously present five or six risk factors, and 17.9% of patients with seven risk factors. Simultaneous presence of four to seven risk factors was recorded in as many as 72.9% of patients; arterial hypertension and hyperlipidemia were concurrently present in 21.7%, arterial hypertension, diabetes mellitus, hyperlipidemia and adiposity in 14.9%, and arterial hypertension, hyperlipidemia and adiposity in 13.4% of patients, classifying them into the group of subjects at a high risk of stroke. The cumulation of multiple risk factors was higher in women than in men. The study showed a high prevalence of stroke risk factors in the study group and a tendency of risk factor cumulation in individual patients. The data obtained point to the need of early detection, elimination, and treatment of the modifiable risk factors through primary and secondary prevention of cerebrovascular diseases.

7.

ČIMBENICI RIZIKA U BOLESNIKA S MOŽDANIM UDAROM

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Autori su istraživali zastupljenost i karakteristike rizičnih čimbenika u bolesnika s moždanim udarom (MU) liječenih na Neurološkoj klinici u Osijeku kako bi utvrdili utjecaj pojedinih čimbenika i ukupnog zbira rizičnih čimbenika na pojavnost cerebrovaskularne bolesti. Studijom je obuhvaćeno 67 bolesnika prosječne starosti 68,24 godina (34 žene prosječne starosti 71,41 godina i 33 muškarca prosječne starosti 64,85 godina). Detaljno su analizirani podaci iz povijesti bolesti i protokola liječenja i traženi slijedeći rizični čimbenici: prethodne tranzitome ishemijske atake (TIA), nasljeđivanje, arterijska hipertenzija, dijabetes mellitus, atrijska fibrilacija, drugi poremećaji srčanog ritma, srčane greške i umjetni zalisci, kardiomiopatija, povišeni lipidi, poremećaji koagulacije, pušenje, oralni kontraceptivi, debljina, tjelesna neaktivnost i stres. Utvrđeno je da su najzastupljeniji čimbenici rizika arterijska hipertenzija u 77,6% (79,4% žena i 75,8% muškaraca), povišeni lipidi u 62,7% (70,6% žena i 54,5% muškaraca), kardiomiopatija u 43,3% (52,9% žena i 33,3% muškaraca), pretilost u 38,8% (47,1% žena i 30,3% muškaraca), pušenje u 34,3% (17,6% žena i 51,5% muškaraca), dijabetes mellitus u 26,9%, tjelesna neaktivnost u 25,4%, atrijska fibrilacija u 22,4% itd. Zapažena je kumulacija rizičnih čimbenika: 19,4% oboljelih s pet ili šest čimbenika rizika istodobno, a 17,9% oboljelih sa sedam analiziranih čimbenika rizika istodobno. Između četiri i sedam čimbenika rizika istodobno imalo je čak 72,9% oboljelih; 21,7% ispitanika imalo je istodobno arterijsku hipertenziju i hiperlipidemiju, 14,9% arterijsku hipertenziju, dijabetes, hiperlipidemiju i adipozitet, a 13,4% oboljelih arterijsku hipertenziju, hiperlipidemiju i adipozitet, što ih sve svrstava u skupinu visokorizičnih osoba za MU. Kumulacija više čimbenika rizika bila je veća u žena negoli u muškaraca. Studija je pokazala visoku zastupljenost čimbenika rizika za MU u ispitivanoj skupini i tendenciju kumulacije više čimbenika rizika u istog bolesnika. Dobiveni pokazatelji upućuju na potrebu ranog otkrivanja, uklanjanja i liječenja čimbenika rizika na koje je moguće utjecati u primarnoj i sekundarnoj prevenciji cerebrovaskularnih poremećaja.

8

RISK FACTORS FOR CEREBROVASCULAR DISEASE IN PATIENTS BELOW SIXTY YEARS OF AGE

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The aim of the study was to analyze the risk factors for cerebrovascular diseases (CVD) in patients aged <60, and the prevalence of risk factors according to sex and type of CVD. The study included 200 patients (100 men and 100 women) aged <60, hospitalized at the Tuzla Department of Neurology from January 1, 2000 till December 31, 2001. Ischemic CVD was present in 155 (77.5%), hemorrhagic CVD in 30 (15%), and subarachnoid hemorrhage (SAH) in 15 (7.5%) patients. In all patients, the diagnosis of CVD was verified by clinical examination and computed tomography. Hypertension was the leading risk factor, found in 124 (62%) patients, followed by cigarette smoking in 99 (49.5%) patients, alcoholism (37.5%), cardiac diseases (25%), and diabetes mellitus (15%). According to sex, cigarette smoking was the most common risk factor in men (71%) and hypertension in women (67%). According to the type of CVD, hypertension was present in 86% of patients with intracerebral hemorrhage, 58% of patients with ischemia, and 57% of patients with SAH. Cigarette smoking was also recorded in all three CVD types in more than 40% of patients. Two or more risk factors were present in 66% of men, the most common association being hypertension and cigarette smoking. In women, multiple risk factors were found in 34% of cases, the most common association being hypertension and cardiac diseases. Accordingly, the leading risk factors for CVD in patients aged <60 are hypertension, cigarette smoking, and alcohol abuse. Cigarette smoking was found to be the most common risk factor for CVD in men, whereas in women it was secondary only to hypertension. The cumulation of risk factors in men was twofold that recorded in women.

8.

ČIMBENICI RIZIKA ZA CEREBROVASKULARNU BOLEST U BOLESNIKA MLAĐIH OD 60 GODINA

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Cilj rada je bio analizirati čimbenike rizika za cerebrovaskularne bolesti (CVB) u bolesnika mlađih od 60 godina, te zastupljenost čimbenika rizika u odnosu na spol i tip CVB. Analiza je obuhvatila 200 bolesnika (100 muškaraca i 100 žena) mlađih od 60 godina i hospitaliziranih na Neurološkoj klinici Tuzla u razdoblju od 1. siječnja 2000. do 31. prosinca 2001 godine. Ishemijski tip CVB je imalo 155 (77,5%), hemoragijski 30 (15%) i subarahnoidnu hemoragiju 15 (7,5%) ispitanika. U svih je ispitanika bolest utvrđena kliničkim pregledom i kompjutoriziranom tomografijom. Hipertenzija je bila vodeći čimbenik rizika prisutan u 124 (62%) bolesnika, a nakon toga pušenje kod 99 (49,5%) bolesnika. Potom su slijedili alkoholizam (37,5%), srčane bolesti (25%) i dijabetes mellitus (15%). U odnosu na spol kod muškaraca je pušenje bilo najčešći čimbenik rizika (71%), a kod žena hipertenzija (67%). U odnosu na tip CVB hipertenzija je bila prisutna kod 86% bolesnika s intracerebralnom hemoragijom, 58% bolesnika s ishemijom i 57% bolesnika sa subarahnoidnim krvarenjem. Pušenje se također pojavljuje u sva tri tipa CVB u više od 40% bolesnika. Dva ili više čimbenika rizika imalo je 66% muškaraca, a najčešće su bili udruženi hipertenzija i pušenje. Kod žena više od jednog čimbenika rizika imalo je 34% bolesnica, najčešće hipertenziju i srčane bolesti. Zaključeno je da su vodeći čimbenici rizika za CVB kod bolesnika mlađih od 60 godina hipertenzija, pušenje i alkoholizam. Pušenje je najčešći čimbenik rizika za CVB kod muškaraca, dok se kod žena nalazi na drugom mjestu, odmah nakon hipertenzije. Udruženost čimbenika rizika bilo je dva puta češća kod muškaraca nego kod žena.

9

METEOROLOGIC FACTORS, SEASON OF THE YEAR, AND ISCHEMIC STROKE – IS THERE A CORRELATION?

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Previous studies as well as daily clinical practice implicate that there is an association between weather and stroke incidence. The aim of the study was to analyze seasonal distribution of ischemic stroke (ISH), and to correlate ISH incidence with changes in meteorologic factors: outdoor temperature, pressure, and humidity. We analyzed data of all stroke patients admitted to the University Department of Neurology, Sestre milosrdnice University Hospital, from January 1, 2001 till December 31, 2001. Meteorologic data were obtained from the National Meteorological Institute. Meteorologic data for the day before and day of stroke onset were analyzed. The study included 845 ISH patients. We observed a significant increase in ISH during June and July, and in winter during January and March. According to weather changes, there was a higher incidence of ISH during the periods of increased humidity (51.4% of all ISH) and low pressure (38.2%). The incidence of ISH was also higher on days when a rapid increase in the outdoor temperature occurred. The incidence of ISH was higher during summer and winter months characterized by temperature extremes. A significant correlation was found between low pressure and increased humidity and stroke occurrence. Possible explanation for this phenomenon may be dysbalance in the blood rheology and coagulation system in response to heat or cold.

9.

METEOROLOŠKI PARAMETRI, GODIŠNJE DOBA I ISHEMIJSKI MOŽDANI UDAR – POSTOJI LI POVEZANOST?

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Prethodna istraživanja kao i svakodnevna klinička praksa govore o postojanju povezanosti vremenskih uvjeta i incidencije moždanog udara. Cilj ovoga istraživanja bio je utvrditi godišnju raspodjelu ishemijskih moždanih udara (ISH) i usporediti učestalost ISH s obzirom na promjene meteoroloških parametara: temperature zraka, tlaka zraka i vlažnosti zraka. Analizirani su podaci bolesnika hospitaliziranih na Klinici za neurologiju KB „Sestre milosrdnice" u razdoblju od 1. siječnja 2001. do 31. prosinca 2001. Meteorološki podaci svakodnevno su prikupljani od Državnoga hidrometeorološkog zavoda RH. Analizirani su meteorološki podaci za dan nastanka simptoma i za prethodni dan. U istraživanje je uključeno 845 bolesnika s ISH. Opazili smo značajan porast broja ISH bolesnika tijekom srpnja i lipnja, a tijekom zimskih mjeseci u siječnju i ožujku. S obzirom na promjenu meteoroloških parametara bilo je vidljivo povećanje incidencije ISH tijekom porasta vlažnosti zraka (51,4% svih ISH) i pada tlaka zraka (38,2%). Također, porast incidencije ISH bio je vidljiv u danima s naglim porastom temperature zraka. Opazili smo da je incidencija ISH bila viša tijekom ljetnih i zimskih mjeseci kada su prisutni vremenski ekstremi. Nađena je značajna korelacija pada tlaka zraka i porasta vlage u zraku s povećanom incidencijom moždanog udara. Moguća objašnjenja možda leže u poremećajima reologije krvi i poremećaju koagulacije kao odgovor na hladnoću i vrućinu.

10

CORRELATION BETWEEN BLOOD PRESSURE AND ACUTE STROKE SEVERITY

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The aim of the study was to establish changes of blood pressure (BP) in the early stage of acute stroke, especially

10.

POVEZANOST KRVNOG TLAKA I TEŽINE AKUTNOG MOŽDANOG UDARA

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Cilj ovoga istraživanja bio je ustanoviti promjene krvnog tlaka (RR) u ranoj fazi moždanog udara i njegov utjecaj na

considering differences between ischemic (ISH) and intracerebral hemorrhage (ICH). It was a prospective study including patients with severe stroke (ISH and ICH) admitted to intensive care unit within 6 hours of stroke onset. Previous normotensive and hypertensive patients were included. BP was measured every 2 hours during the first 72 hours of stroke onset. Antihypertensive therapy was administered as needed. Stroke severity was assessed using Scandinavian Stroke Scale (SSS) at admission and discharge from the hospital. All results are presented descriptively. The study included 114 stroke patients, 60 female and 54 male, mean age 73.1±12.9 years. There were 85 patients with ISH and 29 with ICH. Prior hypertension was present in 63% of all stroke patients, 55% in ISH and 87% in ICH group. The mean systolic arterial BP at admission was 157±16.8 mm Hg in ISH and 163.4±19.3 mm Hg in ICH patients. Follow-up of systolic BP changes during the first 72 hours showed a continuously higher BP in ICH than in ISH patients (162.6 and 146.5 mm Hg, respectively). During the first 72 hours, in ICH group BP was higher in patients who died than in survivors. Higher BP was present during the first 72 hours in patients with SSS ≤15 at admission, while BP gradually normalized in patients with SSS ≥16 at admission. SSS at admission was higher in ISH (>15) than in ICH patients (<15). In ICH group, 29% of patients died, but survivors had better SSS at discharge than survivors from ISH group. BP is a very important factor in the prognosis of stroke course and outcome. Hypertension is associated with poor outcome and higher mortality rate, especially in patients with ICH.

tijek i ishod bolesti, s naročitim osvrtom na razliku između ishemijskog (ISH) moždanog udara i intracerebralnog krvarenja (ICH). Prospektivno istraživanje uključilo je bolesnike s teškim moždanim udarom koji su primljeni u jedinicu intenzivne skrbi unutar 6 sati od početka simptoma. Uključeni su bolesnici s otprije poznatom hipertenzijom, kao i oni koji dotada nisu bolovali od hipertenzije. Krvni tlak je mjeren svaka 2 sata tijekom prva 72 sata od početka moždanog udara. Antihipertenzivna terapija primijenjena je samo u strogo indiciranim slučajevima. Težina moždanog udara procjenjivana je pomoću Skandinavske skale za moždani udar (SSS) kod prijma i pri otpustu bolesnika iz bolnice. Uključeno je 114 bolesnika s moždanim udarom, 60 žena i 54 muškaraca, srednja dob je bila 73,1±12,9 godine, 85 bolesnika s ISH i 29 bolesnika s ICH. Hipertenzija je bila prisutna u 63% svih bolesnika, 55% u skupini ISH i 87% u skupini ICH. Srednji sistolički tlak kod prijma bio je 157±16,8 mm Hg u skupini ISH i 163,4±19,3 mm Hg u skupini ICH. Praćenje promjena RR tijekom prva 72 sata pokazalo je da je u ICH bolesnika RR kontinuirano viši nego u ISH bolesnika (162,6 mm Hg prema 146,5 mm Hg). U ICH bolesnika RR tijekom prva 72 sata bio je viši u bolesnika sa smrtnim ishodom nego u preživjelih. Viši sistolički RR također je zabilježen tijekom prva 72 sata u bolesnika s nižim rezultatom SSS kod prijma (SSS £15), dok se u bolesnika sa SSS ³16 postupno normalizirao. SSS kod prijma bio je viši u ISH bolesnika (>15) nego u ICH bolesnika (<15). Od ICH bolesnika 29% imalo je smrtni ishod, ali su preživjeli imali bolji rezultat SSS pri otpustu iz bolnice nego preživjeli ISH bolesnici. RR je važan prognostički čimbenik za tijek i ishod moždanog udara. Hipertenzija je povezana s lošijim ishodom i višom stopom smrtnosti, naročito u bolesnika s ICH.

11

HYPOGLYCEMIA AS THE CAUSE OF FOCAL NEUROLOGIC EVENT: CASE REPORT

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A case is presented of a focal neurologic event associated with hypoglycemia in a 21-year-old patient with type 1 diabetes mellitus. The patient was hospitalized at the Department of Neurology for paresis of the right extremities. Patient history revealed the patient to have suffered transient weakness of the right extremities early in the morning on three consecutive days. During the previous two days, these disturbances had regressed spontaneously before he reached Ambulance Station (approximately 30 minutes from the onset of symptoms). On both occasions,

11.

HIPOGLIKEMIJA KAO UZROK ŽARIŠNOG NEUROLOŠKOG ISPADA – PRIKAZ BOLESNIKA

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Autori prikazuju 29-godišnjeg bolesnika oboljelog od šećerne bolesti tip 1 sa žarišnim neurološkim ispadom uz hipoglikemiju. Bolesnika je hospitaliziran na neurološkom odjelu zbog pareze desnih udova. Anamnestički se doznaje da je bolesnik tri dana uzastopce u ranim jutarnjim satima imao prolaznu slabost desnih udova. Smetnje su prethodna dva dana spontano regredirale do dolaska na Hitnu medicinsku pomoć (prosječno 30 minuta od početka simptoma). Oba je puta verificirana normoglikemija, uz uredan fizikalni status. Trećega dana prolongiran neurološki

normoglycemia and normal physical status were found. On the third day, however, prolonged neurologic deficit and hypoglycemia were recorded on admission. The presence of macrosubstrate in the central nervous system was ruled out by neuroradiologic examination. The neurologic deficit was caused by hypoglycemia, whereas counter-regulatory hormones led to normalization of the glycemia with a retarded recovery of the motor event.

12

CHOLESTEROL AND TRIGLYCERIDES – RISK FACTORS FOR STROKE

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Increased levels of cholesterol and triglycerides are known to be associated with the development of cerebrovascular atherosclerosis. An increased concentration of LDL-cholesterol and a decreased concentration of HDL-cholesterol ('protective') as well as their ratio play a decisive role in the genesis of atherosclerosis and, consequentially, of stroke. High triglyceride levels also lead to coagulation disorders and thrombogenesis, which is a risk event for the occurrence of stroke. The present study included 168 patients with acute ischemic stroke, 72 women and 96 men. The mean age was 75.4 years in women and 67.6 years in men, confirming the results of numerous studies showing that women suffer strokes at an older age than men. Forty-eight (28.6%) patients with ischemic stroke, i.e. 28 (16.7%) women and 20 (11.9%) men, had elevated levels of LDL-cholesterol (>5.7 mmol/L) and decreased levels of HDL-cholesterol (<0.9 mmol/L). There was no statistically significant sex difference in the prevalence of impaired LDL- to HDL-cholesterol ratio, however, women had a higher prevalence of increased LDL-cholesterol. Sixty-two (36.9%) patients with ischemic stroke, i.e. 22 (13.1%) women and as many as 40 (23.8%) men, had increased triglyceride levels. Obviously, elevated triglyceride levels (>1.9 mmol/L) were statistically significantly more common in men than in women. Considering the group of ischemic stroke patients as a whole, impaired cholesterol and triglyceride levels were found in 28.6% and 36.9% of patients, respectively. Age and sex correlation showed men to suffer ischemic stroke at a considerably younger age than women, and to have a higher prevalence of increased blood triglyceride levels.

12.

KOLESTEROL I TRIGLICERIDI – ČIMBENICI RIZIKA ZA MOŽDANI UDAR

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Poznato je da su povišene vrijednosti kolesterola i triglicerida povezane s nastankom ateroskleroze moždanih krvnih žila. Povišena koncentracija LDL-kolesterola i snižena koncentracija HDL-kolesterola („zaštitnog"), kao i njihov međusobni odnos presudni su u nastanku ateroskleroze i posljedično moždanog udara. Visoke vrijednosti triglicerida također izazivaju poremećaj koagulacije krvi i trombogenezu, što predstavlja rizični događaj u nastanku moždanog udara.

Naše istraživanje obuhvatilo je 168 bolesnika s akutnim ishemijskim moždanim udarom, od toga 72 žene i 96 muškaraca. Srednja životna dob oboljelih žena bila je 75,4 godine, a muškaraca 67,6 godina. Navedeno potvrđuje brojna istraživanja da žene obolijevaju u starijoj životnoj dobi. Četrdesetosmoro (28,6%) bolesnika s ishemijskim moždanim udarom imalo je povišene vrijednosti LDL-kolesterola iznad 5,7 mmol/L i istodobno snižene vrijednosti HDL-kolesterola ispod 0,9 mmol/L. Od toga je bilo 28 žena i 20 muškaraca (16.7% : 11.9%), dakle, bez statistički značajne razlike u učestalosti poremećenog omjera LDL-kolesterola i HDL-kolesterola među spolovima, ali uz nešto veću učestalost povišene razine LDL-kolesterola kod žena. Šezdesetdvoje (36,9%) bolesnika s ishemijskim moždanim udarom imalo je povišene vrijednosti triglicerida, od toga je bilo 22 žene i čak 40 muškaraca (13.1% : 23.8%). Navedeni omjer pokazuje statistički značajno češće povišene vrijednosti triglicerida (iznad 1,9 mmol/L) kod oboljelih muškaraca u odnosu prema ženama. U ispitivanoj skupini s akutnim ishemijskim moždanim udarom nađene su poremećene vrijednosti kolesterola u 28,6%, a triglicerida u 36,9% bolesnika. Korelirajući odnos spola i dobi uočavamo da muškarci znatno ranije obolijevaju od ishemijskog moždanog udara s učestalijim porastom triglicerida u krvi.

13

CEREBROVASCULAR DISEASE CHARACTERISTICS IN THE BJELOVAR – BILOGORA COUNTY

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The aim of this retrospective study was to analyze the prevalence of risk factors and outcome of treatment for cerebrovascular diseases (CVD) in the population of the Bjelovar – Bilogora County. Medical histories of all patients treated at the Department of Neurology, Bjelovar General Hospital, during 1999 were analyzed. The following data were considered for 490 patients treated for CVD: type of CVD; patient sex and age; presence of hypertension, diabetes mellitus, and atrial fibrillation; and history data on previous stroke. Data on treatment outcome in both sexes were compared by χ^2-test. In 490 CVD patients, there were 55% of women and 45% of men. Women were older than men (mean age ± SD: 71±8 in women and 67±9 in men). Ischemic stroke was recorded in 63%, hemorrhagic stroke in 14%, transient ischemic attack (TIA) in 8%, reversible ischemic neurologic deficit in 7%, subarachnoid hemorrhage (SAH) in 3%, and posterior cranial fossa syndrome in 5% of patients. Hypertension was present in 67%, diabetes mellitus in 23%, atrial fibrillation in 12%, and previous stroke in 26% of patients. Total mortality in patients with ischemic stroke was 25.8%, 31.5% in men and 21.0% in women (p=0.03). Total mortality in patients with hemorrhagic stroke was 54.3%, 60.0% in men and 48.6% in women (p=0.33). A 40% mortality was recorded in women with SAH, whereas none of the four men with SAH died. Considering the high prevalence of modifiable risk factors for CVD (i.e. hypertension and diabetes) in the population of the Bjelovar – Bilogora County, the incidence of CVD could be reduced by due lifestyle modifications and use of current therapies available.

13.

OBILJEŽJA CEREBROVASKULARNIH BOLESTI U BJELOVARSKO-BILOGORSKOJ ŽUPANIJI

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Cilj rada bio je analizirati prisutnost rizičnih čimbenika i ishoda liječenja cerebrovaskularnih bolesti (CVB) u populaciji Bjelovarsko-bilogorske županije. Retrospektivnim istraživanjem analizirali smo povijesti bolesti svih bolesnika liječenih u Djelatnosti za neurologiju Opće bolnice Bjelovar tijekom 1999. godine. U 490 bolesnika liječenih zbog CVB utvrđeni su sljedeći podaci: vrst CVB, spol i dob bolesnika, prisutnost hipertenzije, dijabetesa, atrijske fibrilacije, anamnestički podaci o preboljelom moždanom udaru. Dobiveni podaci o ishodu liječenja u oba spola uspoređeni su χ^2 testom. Od 490 bolesnika s CVB 55% su bile žene, a 45% muškarci. Žene su bile nešto starije od muškaraca (srednja dob±SD; žene 71±8 : muškarci 67±9 godina). Ishemijski moždani udar (IMU) zabilježen je u 63% bolesnika, 14% bolesnika liječeno je zbog hemoragijskog moždanog udara (HMU), 8% zbog tranzitorne ishemijske atake (TIA), 7% zbog reverzibilnog ishemijskog neurološkog deficita, 3% zbog subarahnoidnog krvarenja (SAK), te 5% bolesnika zbog sindroma stražnje lubanjske jame. Prisutnost hipertenzije zabilježena je u 67%, dijabetesa u 23%, atrijske fibrilacije u 12%, te preboljeli moždani udar u 26% bolesnika. Ukupni mortalitet za bolesnike s IMU iznosio je 25,8%, i to u muškaraca 31,5%, a u žena 21% (p=0.03). U bolesnika s HMU ukupna smrtnost bila je 54,3%, i to u muškaraca 60%, a u žena 48,6% (p=0.33). Smrtnost u žena sa SK iznosila je 40%, dok smrtni ishod nije zabilježen ni u jednog od 4 muškarcca sa SK. S obzirom na visoku učestalost promjenjivih rizičnih čimbenika za CVB (hipertenzija i dijabetes) u populaciji Bjelovarsko-bilogorske županije, incidencija oboljelih od CVB može se smanjiti promjenom načina života uz primjenu suvremene terapije.

14

SURVEY OF PATIENTS WITH CLINICAL PICTURE OF CEREBROVASCULAR DISEASE EXAMINED AT THE BELI MANASTIR HEALTH CENTER EMERGENCY UNIT

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Emergency Unit of the Beli Manastir Health Center (BMHC) has a catchment area of 1148 sqkm (Baranya) with a population of 42,633 inhabitants living in the town of Beli Manastir and 45 surrounding villages. The nearest inpatient institution is Osijek University Hospital in Osijek, at a 33 km distance from Beli Manastir. The aim of the presentation is to provide a survey of patients with a clinical picture of cerebrovascular diseases (CVD) examined at BMHC Emergency Unit from November 1, 1997 (period of reintegration) till December 31, 2001. During the study period, 513 patients with CVD symptoms, 250 men and 263 women, mean age 69.46 (age range 25-100) years, were examined. A majority of patients belonged to the 61-70 (n=201) and 71-80 (n=176) age groups. The greatest number of patients (n=152) were examined during the year 1999. The following diseases were diagnosed in the study cohort: transient ischemic attack (TIA) in 36, ischemic stroke in 25, hemorrhagic stroke in 14, nonspecific stroke in 392, hypertensive encephalopathy in 22, and late stroke sequels in 24 patients. In the group of patients with the diagnosis of unspecific stroke (n=392), a female predominance was recorded (206 women *vs.* 188 men). Four hundred patients were referred to and 212 of them were hospitalized at the Department of Neurology, Osijek University Hospital. Ninety-five of 513 study patients died, 88 of them at the hospital, one during transport to the hospital, and 6 died at home (death confirmed by BMHC Emergency Unit physicians at patient's home). Of 88 CVD patients who died at Osijek University Hospital, 82 died from CVD and the remaining 6 from some other underlying disease.

14.

PRIKAZ BOLESNIKA S KLINIČKOM SLIKOM CEREBROVASKULARNE BOLESTI PREGLEDANIH U ODJELU HITNE MEDICINSKE POMOĆI DOMA ZDRAVLJA BELI MANASTIR

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Odjel Hitne medicinske pomoći Doma zdravlja (HMP DZ) Beli Manastir stacioniran je u Belom Manastiru i pokriva čitavo područje Baranje s površinom od 1.148 km^2 i 42.633 stanovnika, naseljenih u gradu Belom Manastiru i 45 okolnih naselja. Prvo mjesto stacioniranja bolesnika bolničkog tipa je Klinička bolnica Osijek, koja je udaljena od Belog Manastira 33 km. Cilj rada bio je dati prikaz bolesnika s kliničkom slikom cerebrovaskularnih bolesti pregledanih u Odjelu HMP DZ Beli Manastir u razdoblju od 1.11.1997. godine (vrijeme reintegracije) do 31.12.2001. godine.

U ovom razdoblju pregledano je 513 bolesnika sa simptomima cerebrovaskularne bolesti, srednje životne dobi 69,46 godina. Najmlađi ispitanik imao je 25 godina, a najstariji 100 godina. Najviše ispitanika bilo je u dobnoj skupini od 61 do 70 godina (n=201) i od 71 do 80 godina (n=176). U ispitanoj skupini bilo je 250 muškaraca i 263 žene. Najveći broj ispitanika pregledan je u 1999. godini (n=152). Kod ispitanika su dijagnosticirane sljedeće bolesti: tranzitorna ishemijska ataka (n=36), moždani udar ishemijskog tipa (n=25), moždani udar hemoragijskog tipa (n=14), moždani udar nespecificiranog tipa (n=392), hipertenzivna encefalopatija (n=22) i kasne posljedice moždanog udara (n=24). U skupini bolesnika kod kojih je dijagnosticiran moždani udar nespecificiranog tipa (n=392) bilo je nešto više žena (n=206) nego muškaraca (n=188). Na Kliniku za neurologiju Kliničke bolnice Osijek upućeno je 400 bolesnika, od kojih je na bolničkom liječenju zadržano 212 bolesnika. Od ukupnog broja bolesnika umrlo ih je 95, od toga u bolnici 88 bolesnika, a u transportu do bolnice jedan bolesnik, dok su u 6 slučajeva smrt ustanovili liječnici Odjela HMP DZ BM pregledom u kući. Od 88 bolesnika umrlih u Kliničkoj bolnici Osijek, 82 ih je umrlo zbog cerebrovaskularne bolesti, dok je preostalih 6 koji su imali cerebrovaskularnu bolest umrlo zbog neke druge osnovne bolesti.

15

STROKE IN DIABETIC PATIENTS FROM THE ZENICA-DOBOJ CANTON

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Diabetes is the most common endocrinologic disorder encountered in primary practice, and also a well known risk factor for stroke. In diabetic patients, the occurrence of stroke is based on macroangiopathy as a reason for heart attack and impaired blood circulation in peripheral arteries of lower extremities. The aim of the study was to get an insight into the rate of stroke in a population of diabetic patients treated through the network of counseling centers for patients with diabetes in the Zenica-Doboj Canton from January 1, 1999 until April 1, 2000. The study included all diabetic patients who entered it through counseling centers during the study period, performed within the scope of the Cantonal Program of Diabetic Patient Care in the Zenica-Doboj Canton. The study was performed in 8 counseling centers. Data on 3062 patients, i.e. 787 patients with type 1 diabetes (25.7%), 2119 with type 2 diabetes type (69.2%), 16 with undefined diabetes type (0.52%), and 140 others (gestational, secondary diabetes, etc.) (4.57%) were analyzed. In the sample as a whole there were 2050 femele and 1002 male patients (67.17% : 32.83%). Data on previous stroke were found for 117 (5.9%) of 1859 patients who filled-out the respective questionnaire. However, data on stroke that had occurred within 12 months before the study were found for 34.32% of patients with diabetes and stroke. Based on the study results, we conclude that the patients with diabetes included in this study for the Cantonal Program of in the Zenica-Doboj Canton had a significantly higher risk for the development of various types and subtypes of stroke.

15.

MOŽDANI UDAR MEĐU BOLESNICIMA SA ŠEĆERNOM BOLEŠĆU U ZENIČKO-DOBOJSKOM KANTONU

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Šećerna bolest je najčešći endokrinološki problem u primarnoj zdravstvenoj zaštiti, ali i vrlo poznat čimbenik rizika za moždani udar. U dijabetičnih bolesnika osnovu za moždani udar čine makroangiopatija kao uzrok srčanog napadaja, te poremećaj cirkulacije u perifernim arterijama donjih udova. Cilj ovoga istraživanja bio je steći uvid u učestalost moždanog udara u populaciji dijabetičnih bolesnika liječenih u savjetovalištima za bolesnike sa šećernom bolešću u Zeničko-dobojskom kantonu od 1.1.1999. do 1.4.2000. Istraživanjem su obuhvaćeni svi bolesnici sa šećernom bolešću koji su u navedenom razdoblju putem ovih savjetovališta time uključeni u provedbu jednoga od ciljeva Kantonalnog programa za zaštitu bolesnika sa šećernom bolešću u ovom kantonu. Studija je provedena u 8 savjetovališta. Ukupno je obrađeno 3062 bolesnika, i to 787 (25,7%) bolesnika sa šećernom bolešću tip 1, 2119 (69,2%) bolesnika sa šećernom bolešću tip 2, 16 (0,52%) bolesnika s nedefiniranim tipom šećerne bolesti i 140 (4,57%) bolesnika s drugim vrstama šećerne bolesti (gestacijski dijabetes, sekundarni dijabetes itd.). U ukupnom uzorku bilo je 2050 bolesnika ženskog spola i 1002 bolesnika muškog spola (67,17% prema 32,83%). Podaci o preboljelom moždanom udaru nađeni su u 117 od 1859 (5,9%) bolesnika koji su ispunili anketu s dotičnim pitanjem. Međutim, podaci o moždanom udaru unutar 12 mjeseci prije studije utvrđeni su u 34,32% bolesnika s dijabetesom i moždanim udarom. Na temelju našega istraživanja zaključujemo da bolesnici sa šećernom bolešću, uključeni u ovu studiju u okviru Kantonalnog programa za zaštitu bolesnika sa šećernom bolešću, imaju značajno veći rizik za razvoj različitih vrsta i podvrsta moždanog udara.

16

PREVALENCE OF PARTICULAR ZONES OF CEREBRAL ISCHEMIA IN PATIENTS WITH POST-STROKE EPILEPTIC SEIZURES

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The aim of the study was to analyze the prevalence of particular zones involved by stroke in patients with symptomatic, post-stroke epileptic seizures. The study included 30 patients, 17 men and 13 women, with epileptic seizures secondary to ischemic stroke. Control group consisted of 30 subjects, 17 men and 13 women, with at least two years elapsed from stroke and free from epileptic seizures. The zone of stroke was verified by computed tomography. The patients have been under regular control at the Outpatient Clinic for Cerebrovascular Diseases and Outpatient Clinic for Epilepsy of the Department of Neurology in Tuzla. The mean age was 62.8 and 54.9 years in the study group and control group, respectively. Stroke recurrence was recorded in 26.6% (n=8) of study group and 6.6% (n=2) of control group patients. Frontal zone was involved in 40% (n=12) and 13.3% (n=4); temporal zone in 20% (n=6) and 16.6% (n=5); and parietal zone in 16.6% (n=5) and 30% (n=9) of the study group and control group patients, respectively. Stroke in the occipital zone was recorded in none of study group patients but was found in 10% (n=3) of control group patients. Multiple lacunar ischemic lesions were found in 23.3% (n=7) and 30% (n=9); right hemisphere stroke in 73.4% (n=22) and 43.4% (n=13); and left hemisphere stroke in 26.6% (n=7) and 56.6% (n=17) of the study group and control group patients, respectively. It is concluded that elderly patients with recurrent ischemic stroke located frontally on the right require special observation for the detection, possible prevention, and therapy of post-stroke epileptic seizures.

16.

ZASTUPLJENOST POJEDINIH ZONA MOŽDANE ISHEMIJE U BOLESNIKA S POSLIJEINZULTNIM EPILEPTIČNIM NAPADAJIMA

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Cilj rada bio je analizirati zastupljenost pojedinih zona zahvaćenih moždanim udarom (MU) u bolesnika sa simptomatskim, „postinzultnim“ epileptičnim napadajima. Ispitivanu skupinu činilo je 30 bolesnika (17 muškaraca i 13 žena) s pojavom epileptičnih napadaja nakon ishemijskog MU. Kontrolnu skupinu činio je isti broj ispitanika (17 muškaraca i 13 žena) kod kojih nije došlo do pojave epileptičnih napadaja, a prošlo su najmanje dvije godine nakon MU. Zona MU verificirana je kompjutoriziranom tomografijom. Bolesnici se redovito kontroliraju u Ambulanti za cerebrovaskularne bolesti i Epileptološkoj ambulanti Neurološke klinike u Tuzli. Srednja starosna dob u ispitivanoj skupini bila je 62,8 godina, a u kontrolnoj skupini 54,9 godina. Recidiv MU imalo je 26,6% (n=8) bolesnika u ispitivanoj skupini prema 6,6% (n=2) bolesnika u kontrolnoj skupini. MU u frontalnoj zoni zabilježen je u 40% (n=12) bolesnika iz ispitivane skupine naspram 13,3% (n=4) bolesnika iz kontrolne skupine; u temporalnoj zoni u 20% (n=6) ispitivane i 16,6% (n=5) kontrolne skupine; u parijetalnoj zoni u 16,6% (n=5) ispitivane i 30% (n=9) kontrolne skupine; u ispitivanoj skupini okcipitalna zona nije bila zahvaćena ni u jednog bolesnika, a u kontrolnoj skupini je bilo 10% (n=3) bolesnika s MU u ovoj zoni. Višestruke lakunarne ishemijske lezije nađene su u 23,3% (n=7) bolesnika ispitivane i 30% (n=9) kontrolne skupine. MU u desnoj hemisferi imalo je 73,4% (n=22) bolesnika ispitivane naspram 43,4% (n=13) kontrolne skupine, a u lijevoj hemisferi 26,6% (n=7) bolesnika ispitivane naspram 56,6% (n=17) bolesnika kontrolne skupine. Zaključeno je da bolesnici starije životne dobi, s recidivirajućim ishemijskim MU lociranim desno frontalno zaslužuju posebno promatranje u cilju otkrivanja, eventualne prevencije i terapije „postinzultnih“ epileptičnih napadaja.

17

STROKE AS THE LEADING CAUSE OF EPILEPSY IN THE ELDERLY

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The aim of this presentation is to give an overview of the epidemiological data and pharmacological management of epilepsy in elderly patients. Data were collected from controlled clinical trials, case reports and original scientific articles retrieved using Medline as well as recently published textbooks on epilepsy. Seizures and epilepsy in the elderly present an important and common clinical problem. The increasing awareness of this phenomenon has led to better understanding of the etiology of seizures in the elderly, seizure types, their clinical manifestations, and treatment regimens. Cerebrovascular diseases are the most common cause of the new-onset seizures in these patients. Some relatively unique clinical presentations and differential diagnosis may complicate the recognition of seizures. Pharmacological treatment is complicated by age-related changes in pharmacokinetics and pharmacodynamics as well as by drug-drug and drug-disease interactions. The concomitant illness and sensitivity to drug effects narrow the therapeutic range and complicate the pharmacokinetics in elderly patients. Phenytoin and sodium valproate are the first choice agents for the generalized tonic-clonic seizures, with carbamazepine preferred for partial seizures. However, the newer antiepileptic drugs (AEDs), such as gabapentin and lamotrigin also warrant some consideration as the first-line agents because of their efficacy and favorable side effect profiles. There is a wide variety among current approaches to seizures in the elderly, which reflects the lack of established standards. To select an appropriate drug and dosage for each individual, many issues must be considered. The choice of antiepileptic drugs should be primarily based on the seizure type, other medication and diseases as well as on the understanding of the unique age-related changes in the pharmacokinetics and pharmacodynamics of AEDs. A total of 246 patients with epilepsy were admitted to the Department of Neurology during the year 2001, 43 of them older than 65 (17.4%); 20 M (62.5%) and 12 F (37.5%). Thirty-two patients had newly diagnosed epilepsy. In 22 (68.8%) patients, the etiology of seizures included cerebrovascular disease. Accompanying diseases were also analyzed. Initial AED was phenytoin in 15 (46.9%), carbamazepine in 14

17.

MOŽDANI UDAR KAO VODEĆI UZROK EPILEPSIJE U STARIJIH OSOBA

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Cilj rada je dati pregled epidemioloških podataka i farmakološkog liječenja epilepsije u starijih bolesnika. Podaci su prikupljeni iz kontroliranih ispitivanja, prikaza bolesnika i pregleda te originalnih članaka pronađenih uz pomoć Medline-a, kao i iz nedavno objavljenih standardnih udžbenika o epilepsiji. Napadaji i epilepsija u odraslih osoba su važan i čest klinički problem. Sve češće uočavanje ovoga fenomena dovelo je do boljeg razumijevanja etiologije napadaja u starijih, vrsta napadaja, njihovih kliničkih manifestacija i režima liječenja. Najčešći uzrok novih napadaja u takvih bolesnika su cerebrovaskularne bolesti. Prepoznavanje napadaja može biti kompliciranо nekim relativno jedinstvenim kliničkim pojavnostima i diferencijalnom dijagnozom. Farmakološko liječenje je kompliciranо promjenama farmakokinetike i farmakodinamike povezanima s dobi i interakcijama lijeka s lijekom i lijeka s bolešću. Prateća bolest i osjetljivost na učinke lijeka sužavaju terapijsku širinu i kompliciraju farmakokinetiku u starijih bolesnika. Fenitoin i natrijev valproat su sredstva prvog izbora za generalizirane kloničnо-tonične napadaje, dok se za djelomične napadaje prednost daje karbamazepinu. Međutim, novije antiepileptike kao što su gabapentin i lamotrigin, također treba uzeti u obzir kao sredstva prve linije zbog njihove učinkovitosti i neznatnih nuspojava. Velika je različitost današnjih pristupa napadajima u starijih osoba, što sve odražava nedostatak utvrđenih standarda. Za izbor odgovarajućeg lijeka i doziranja za svakog pojedinog čovjeka treaba uzeti u razmatranje različite čimbenike. Izbor antiepileptika mora u prvom redu ovisiti o vrsti napadaja, drugim lijekovima i bolestima, kao i o razumijevanju jedinstvenih farmakokinetskih i farmakodinamskih promjena antiepileptika koji ovise o dobi.

Tijekom 2001. godine u KB „Sestre milosrdnice“ u Zagrebu liječeno je 347 bolesnika s epilepsijom. Na Klinici za neurologiju liječeno je 246 bolesnika s epilepsijom. Četrdesettroje (17,4%) bolesnika bilo je starije od 65 godina; 20 M (62,5%), 12 Ž (37,5%). U 32 (74,4%) bolesnika radilo se o novodijagnosticiranoj epilepsiji. Etiologija epilepsije bila je cerebrovaskularna bolest u 22 (68,8%) bolesnika. Analizirane su i prateće bolesti. Kao početna terapija rabljen je karbamazepin u 14 (43,75%), fenitoin u 15

(43.75%), carbamazepine plus phenytoin in 2 (6.25%), valproic acid in one (3.1%), diazepam in 3 (9.4%) and oxazepam in 2 (6.25%) patients. Later during the follow-up, lamotrigin was introduced as add-on therapy in 4 patients and topiramate in one patient.

(46,9%), karbamazepin+fenitoin u 2 (6,25%), Na-valproat u 1 (3,1 %), diazepam u 3 (9,4%) i oksazepam u 2 (6,25%) bolesnika. Kod 4 bolesnika praćenih nakon bolničkog liječenja u ambulanti za epilepsije u terapiju je uveden lamotrigin (*add-on* i monoterapija). Kod 1 bolesnika u terapiju je uveden topiramat (*add-on* terapija).

18

ACTIVITIES OF THE OSIJEK AMBULANCE SERVICE IN THE MANAGEMENT OF STROKE PATIENTS

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According to the clinical guidelines of the Ministry of Health, successful management of stroke patients begins with the recognition of stroke as an emergency condition. The recommended principle enabling early treatment is to call an ambulance immediately to transfer the patient to a medical institution with specialized units capable and equipped to provide appropriate treatment. The Osijek Ambulance Service has a catchment area of the city of Osijek and its surroundings with about 165,000 inhabitants. In 2001, there were 558 interventions that were, according to the patient family member description or physican's diagnosis, related to cerebrovascular events and accounted for 4.5% of all field interventions. In 6.8% of cases, patient relatives described the condition as a stroke when calling an ambulance, whereas the condition was neither recognized nor described so as to indicate stroke by the patient family members on calling the ambulance in as many as 55.2% of cases. Although interventions for stroke patients (when stroke is being suggested on call, which occurred in 44.8% of cases) have not been classified as highest emergency, such as traffic accidents, severe injuries, myocardial infarction, pulmonary edema, etc., the first free ambulance is sent, so the mean time from the call to the Emergency Service team reaching the patient was 11.7 minutes, whereas the intervention was completed and the patient transferred to the Osijek University Hospital Department of Neurology in 32.7 minutes. Unfortunately, there are no definite data on the time elapsed from the onset of disease to the call to the Emergency Service, however, we believe that proper education of the population at large, and especially of the risk group families and relatives, would greatly help in the more accurate recognition of stroke, and thus in calling an ambulance and transporting the patient to the hospital earlier.

18.

RAD HITNE MEDICINSKE POMOĆI OSIJEK U ZBRINJAVANJU BOLESNIKA S CEREBROVASKULARNIM POREMEĆAJIMA

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Prema Kliničkim smjernicama Ministarstva zdravstva uspješna skrb bolesnika s moždanim udarom (MU) započinje prepoznavanjem MU kao hitnog medicinskog stanja. Preporučeni način da se omogući rana skrb bolesnika je odmah pozvati hitnu medicinsku pomoć (HMP) i bolesnika transportirati u zdravstvenu ustanovu sa specijaliziranim odjelima za pružanje odgovarajuće medicinske skrbi. Hitna medicinska pomoć Osijek pokriva područje grada Osijeka i okolice s oko 165.000 stanovnika. U 2001. godini je bilo 558 intervencija koje su po pozivu rodbine ili dijagnozi liječnika bile vezane za poremećaje moždanog krvotoka, što je bilo 4,5% svih intervencija na terenu. Pritom je u 6,8% slučajeva netko iz bolesnikove okoline dojavio da je riječ o MU, a čak u 55,2% okolina nije prepoznala da se radi o poremećaju moždanog krvotoka niti se po opisu simptoma dalo naslutiti o kakvoj se bolesti radi. Premda intervencije prema bolesnicima s MU (tj. kada se na osnovi poziva da naslutiti da je riječ o MU, što je 44,8%) nisu svrstane u one najveće hitnosti kao prometne nezgode, teže ozljede, infarkt miokarda, plućni edemi i sl., sustav rada službe je takav da se na intervenciju polazi čim je tim HMP slobodan, tako da je prosječno vrijeme od poziva do dolaska tima HMP k bolesniku iznosilo 11,7 minuta, a intervencija je bila završena i bolesnik dopremljen do neurološkog odjela KBO za 32,7 minuta u prosjeku. Nažalost, nemamo sigurnih podataka o vremenu proteklom od početka bolesti do poziva službi HMP, ali imamo dojam da bi se edukacijom stanovništva, pogotovo rodbine rizičnih skupina, postiglo puno u točnijem prepoznavanju MU i samim time i ranijem pozivanju HMP i smještanju u bolnicu.

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CHARACTERISTICS OF SOME DOPPLER SONOGRAPHY PARAMETERS BEFORE AND AFTER CORONARY ARTERIAL BYPASS

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The aim of the study was to investigate the parameters of transcranial Doppler sonography (mean blood flow velocity (MBFV), resistance index (RI), and pulse index (PI)) in the arteries of the circle of Willis and basilar artery in patients before and after coronary arterial bypass grafting. The study included 102 patients, 89 (87%) men, mean age 56±8.5 years. The patients underwent standard transcranial Doppler sonography (TCD) 3-5 days before and 5-7 days after operative procedure. The patients were divided into subgroups according to the ejection fraction (EF), operative technique (on-pump or off-pump), and number of coronary grafts implanted. Upon the operative procedure, MBFV increased significantly ($p<0.001$) in all arteries analyzed: middle cerebral artery (ACM) from 54 to 62 cm/s; anterior cerebral artery (ACA) from 38 to 43 cm/s; posterior cerebral artery (ACP) from 32.5 to 37 cm/s; and basilar artery (BA) from 34 to 39 cm/s. Postoperative RI showed no major changes from its preoperative values: 0.57 : 057 in ACM; 0.6 : 0.58 in ACA; 0.65 : 0.6 in ACP; and 0.59 : 0.59 in AB; $p>0.1$; the same held for PI: 0.95 : 0.93 in ACM; 1.0 : 1.0 in ACA; 1.02 : 1.05 in ACP; and 0.97 : 0.99 in AB, $p>0.1$. The postoperative MBFV increase was not statistically significant in patients with EF <40%: from 54 to 58 cm/s in ACM ($p=0.1$); and from 33 to 34 cm/s in AB ($p=0.09$), but was significant in patients with EF >40%: from 54 to 62 cm/s in ACM ($p=0.0002$) and from 34 to 39 cm/s in AB ($p=0.01$). In patients operated on by the on-pump method, there were no major changes in posterior circulation MBFV: from 33.5 to 35.5 cm/s in ACP ($p=0.07$); and from 33.5 to 36 cm/s in AB ($p=0.1$), however, significantly increased MBFV was postoperatively recorded in patients with two or more coronary grafts ($p\leq0.01$). It is concluded that MBFV in the arteries of the circle of Willis and basilar artery increases after coronary artery bypass grafting, whereas RI and PI show no substantial changes. The MBFV increase is less pronounced in patients with lower EF and in those operated on by the on-pump method, whereas the number of grafts appears to have no major impact on the MBFV increase.

19.

ZNAČAJKE NEKIH DOPLEROVIH SONOGRAFSKIH PARAMETARA PRIJE I NAKON UGRADNJE KORONARNE ARTERIJSKE PREMOSNICE

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Cilj rada bio je ispitati parametre transkranijske doplerove sonografije (srednju brzinu strujanja krvi (SBSK), indeks rezistencije (RI) i pulsni indeks (PI)) u arterijama Willisova arterijskog kruga i bazilarnoj arteriji kod bolesnika prije i nakon ugradnje koronarne arterijske premosnice. U studiju su bila uključena 102 bolesnika prosječne starosti 56 (±8.5) godina, od čega 89 (87%) muškaraca. U svih je bolesnika standardnim tehničkim postupkom učinjena transkranijska doplerova sonografija (TCD) 3-5 dana prije i 5-7 dana nakon operacijskog zahvata. Bolesnici su podijeljeni u nekoliko podskupina prema ejekcijskoj srčanoj frakciji (EF), operacijskoj tehnici („*on pump*“ ili „*off pump*“) i broju ugrađenih koronarnih graftova. Srednja brzina strujanja krvi bila je znatno povećana u svim analiziranim arterijama nakon učinjenog operacijskog zahvata ($p<0,001$): u srednjoj cerebralnoj arteriji (ACM) 54 cm/s prije i 62 cm/s nakon operacije; u prednjoj cerebralnoj arteriji (ACA) 38:43 cm/s; u stražnjoj cerebralnoj arteriji (ACP) 32,5:37 cm/s; i u bazilarnoj arteriji (AB) 34:39 cm/s. RI se nije bitnije mijenjao prije i nakon operacije (0,59 : 0,57 u ACM; 0,6 : 0,58 ACA; 0,65 : 0,6 ACP; i 0,59 : 0,59 u AB, $p>0,1$), kao ni PI (0,95 : 0,93 u ACM; 1,0 : 1,0 ACA; 1,02 : 1,05 ACP; i 0,97 : 0,99 AB, $p>0,1$). U bolesnika s EF nižom od 40% povećanje SBSK nakon operacije nije bilo značajno: u ACM 54 prije i 58 cm/s nakon operacije ($p=0,1$); u AB 33 : 34 cm/s ($p=0,09$), dok je SBSK značajno povećana kod bolesnika s EF većom od 40%: u ACM 54 : 62 cm/s ($p=0,0002$) i AB 34 : 39 cm/s ($p=0,01$). Kod bolesnika operiranih metodom „*on pump*“ nije bilo bitnije promjene SBSK u arterijama stražnje cirkulacije (33,5 : 35,5 cm/s u ACP, $p=0,07$; i 33,5 : 36 cm/s u AB, $p=0,1$), dok su SBSK bile značajno povišene nakon operacije i kod bolesnika s do dva i onih s više od dva koronarna grafta ($p\leq0,01$). Zaključeno je da se SBSK u arterijama Willisova kruga i bazilarnoj arteriji povećava nakon ugradnje koronarne arterijske premosnice, dok se RI i PI bitnije ne mijenjaju. Povećanje SBSK je manje u bolesnika s nižom EF i onih operiranih metodom „*on pump*“, dok broj učinjenih graftova nema bitniji utjecaj na povećanje SBSK.

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THE ROLE OF TRANSCRANIAL DOPPLER IN THE EVALUATION OF ARTERIAL OCCLUSIVE DISEASE IN APHASIC PATIENTS

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Aphasia is a sign of cortical involvement in stroke, affecting the dominant hemisphere irrigated by middle cerebral artery (MCA). MCA occlusion can be diagnosed angiographically. In order to evaluate the localization of arterial occlusive disease, we evaluated acute aphasic stroke patients by means of transcranial Doppler (TCD). The study included 30 ischemic stroke patients admitted within 24 hours from stroke onset. All patients except one were right-handed and fulfilled the criteria for aphasia according to the Boston Diagnostic Examination of Aphasia. TCD was performed bedside with a DWL Multi Dop XL, 2 MHz transducer. The Thrombolyses in Brain Ischemia (TIBI) criteria were applied for localization of MCA occlusion. Out of 30 patients, 6 had left M1 MCA occlusion, one right M1 MCA occlusion, 4 left M1 MCA stenosis, 6 left M2 or M3 occlusion, and 9 hypoperfusion. Early ischemic signs in left MCA territory were visible in 27 patients. Nine patients had left internal carotid artery (ICA) subtotal stenosis (3 intracranial, 6 extracranial), 7 left ICA occlusion (1 intracranial, 6 extracranial) and one right ICA occlusion. TCD is a useful and noninvasive method for bedside evaluation of MCA occlusive disease in stroke patients with aphasia.

20.

ULOGA TRANSKRANIJSKOG DOPLERA U PROCJENI OKLUZIJE INTRAKRANIJSKIH ARTERIJA U BOLESNIKA S AFAZIJOM

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Afazija je znak zahvaćenosti korteksa dominantne hemisfere koju opskrbljuje srednja moždana arterija (SMA). Okluzija SMA se može ustanoviti angiografski. Da bismo procijenili lokalizaciju arterijske okluzije, pregledavali smo bolesnike s afazijom pomoću transkranijskog doplera (TCD). Pregledali smo 30 bolesnika s ishemijskim moždanim udarom koji su zaprimljeni unutar 24 sata od njegovog nastanka. Svi osim jednog bili su dešnjaci zadovoljavali su kriterije za afaziju prema Bostonskom dijagnostičkom pregledu za afaziju. TCD je bio učinjen uz krevet bolesnika pomoću DWL MultiDop XL, sonde 2 MHz. Da bismo lokalizirali okluziju SMA upotrijebili smo kriterije Thrombolyses in Brain Ischemia (TIBI). Od 30 bolesnika 6 ih je imalo okluziju lijeve M1 SMA, jedan desne M1 SMA, 4 stenozu lijeve M1 SMA, 6 okluziju lijeve M2 ili M3 i devet hipoperfuziju. Rani znaci ishemije u teritoriju lijeve SMA su bili vidljivi u 27 bolesnika. Devetoro bolesnika je imalo subtotalnu stenozu lijeve interne karotidne arterije (ICA) (3 intrakranijsku, 6 ekstrakranijsku), 7 okluziju lijeve ICA (1 intrakranijsku, 6 ekstrakranijsku) i jedan okluziju desne ICA. TCD je korisna i neinvazivna metoda za procjenu okluzije srednje moždane arterije uz krevet bolesnika s moždanim udarom i afazijom.

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THREE-DIMENSIONAL ULTRASOUND OF INTRACRANIAL CEREBRAL HEMODYNAMICS

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Transcranial color-coded sonography (TCCS) is used for evaluation of intracranial hemodynamics. It rarely provides adequate information due to technical reasons. Free-handed non-contrast three-dimensional ultrasound (3D US) enables reconstructions from transcranial power Doppler (PD) imaging of the Willis circle and vertebrobasilar

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TRODIMENZIONALNI ULTRAZVUK INTRAKRANIJSKE MOŽDANE HEMODINAMIKE

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Transkranijska kolorom kodirana sonografija (TCCS) se upotrebljava u procjeni intrakranijske hemodinamike. Nerijetko pruža dovoljno informacija zbog tehničkih razloga. Trodimenzionalni ultrazvuk (3D UZV) učinjen "*free-handed*", bez kontrasta, omogućava rekonstrukciju iz transkranijskog prikaza "*power*" doplerom (PD) Willisova kru-

system (VBS). We tried to display 3D images of the Willis circle and VBS in 10 patients. Interactive 3D imaging software was integrated into an ultrasound platform (Aloka Prosound SSD-5500). Data aquisition was performed using a 2.5 MHz sector transducer, free-handed during 10 seconds, allowing PD sonography. The images were postprocessed (TomTec imaging systems). One patient was excluded due to inadequate bone window. TCCS enabled visualization of the color coded flow in all vessels of one side of the Willis circle in one patient, however, visualization of all three vessels of the VBS at the same time was not possible in any of the patients. Postprocessing and skilled rotation of 3D PD data sets enabled visualization of one side of the circle of Willis in all patients but two, where only part of one arterial segment could not be displayed. Visualization of the communicating arteries or collateral flow in patients with occlusive disease was good. Hemodynamic analysis in TCCS was indispensable for occlusive disease evaluation and collateral pathway interpretation. 3D PD enabled visualization of all three vessels of the VBS simultaneously, allowing for interpretation of the basilar artery origin (none of the patients had occlusive disease of this segment). Non-contrast 3D US enables display of one side of the Willis circle or VBS simultaneously in most patients. TCCS and hemodynamic analysis are needed for the evaluation of occlusive disease and interpretation of collateral pathways.

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THE ROLE OF THREE-DIMENSIONAL ULTRASOUND IN THE EVALUATION OF PLAQUE ULCERATION

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Controversy about diagnostic ability of the conventional two-dimensional ultrasound and contrast angiography still exists. Our aim was to display plaque ulcers with three-dimensional ultrasound and compare the images obtained with color Doppler flow imaging (CDFI), power Doppler (PD) and B mode ultrasound. We examined 3 patients with bilateral internal carotid artery stenosis and plaque ulcerations using conventional two-dimensional ultrasound Aloka Prosound SSD-5500 with 10 MHz linear array transducer. B mode was done, color Doppler was used for hemodynamic evaluation, and power Doppler for precision. Three-dimensional data sets were obtained using the same

ga i vertebrobazilarnog sustava (VBS). Pokušali smo prikazati 3D slike Willisova kruga i VBS u 10 ispitanika. Interaktivni program za 3D prikaz integriran je s ultrazvučnim aparatom (Aloka Prosound SSD-5500). Podaci su dobiveni upotrebom sonde od 2,5 MHz, slobodnim pomicanjem ruke tijekom 10 sekundi, upotrebom PD sonografije. Slike su postprocesirane sustavom TomTec. Jedan je ispitanik isključen zbog jačeg okoštanja kostiju glave. TCCS je omogućio istodoban prikaz kolorom kodiranog protoka u svim žilama jedne strane Willisova kruga u jednog bolesnika, dok istodobni prikaz svih triju žila VBS nije bio moguć ni u jednog ispitanika. Postprocesirana i vješta rotacija 3D PD setova podataka omogućila je prikazivanje jedne strane Willisova kruga u svih ispitanika osim u dvoje, gdje se samo jedan arterijski segment nije mogao prikazati. Vizualizacija komunikantnih arterija ili kolateralnog protoka u bolesnika s okluzivnom bolesti je bila dobra. Hemodinamska analiza u TCCS je bila nezamjenjiva u procjeni okluzivne bolesti i interpretaciji kolateralnih puteva. 3D PD je omogućio istodobno prikazivanje svih triju žila VBS, te točnu interpretaciju polazišta bazilarne arterije (niti jedan bolesnik nije imao okluzivnu bolest toga segmenta). Trodimenzionalni ultrazvuk bez kontrasta je omogućio istodobni prikaz žila jedne strane Willisova kruga ili VBS u većine ispitanika. TCCS i hemodinamska analiza je neophodna u procjeni okluzivne bolesti i intrerpretaciji kolateralnih puteva.

22.

ULOGA TRODIMENZIONALNOG ULTRAZVUKA U PROCJENI ULCERACIJE PLAKA

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Konvencionalni dvodimenzinalni ultrazvuk i kontrastna angiografija još uvijek nisu posve prihvaćene u dijagnostici. Naš cilj bio je prikazati ulceracije plakova trodimenzionalnim ultrazvukom i usporediti dobiveni prikaz s kolor kodiranim doplerom, osnaženim doplerom i B prikazom. Pregledali smo 3 bolesnika s obostranim stenozama unutarnjih karotidnih arterija i ulceracijama plakova. Rabili smo dvodimenzionalni ultrazvučni aparat Aloka Prosound SSD-5500 i linearnu sondu od 10 MHz. Pregledavali smo B prikazom, kolor kodiranim doplerom za hemodinamske parametre i osnaženim doplerom radi preciznosti. Trodimenzionalni prikaz je dobiven snimanjem tijekom 10 s, također pomoću linearne sonde. Podaci su kompjutorski

linear array transducer, free-handed during 10 seconds. The data were postprocessed and 3D reconstruction was evaluated. We measured diameter of ulceration, plaque area, and plaque volume by all five methods of examination. All patients were asymptomatic but with risk factors that included heart disease, elevated blood pressure, hyperlipoproteinemia, and diabetes mellitus. B mode examination was not useful at all. Diameter of ulceration varied from 2.2±4 to 2.92±1 mm, plaque area from 6.42±3 to 7.89±1 mm^2, and volume estimate on 2D ultrasound from 14.1±3 to 3D calculation of 23±1 mm^3. Three-dimensional ultrasound was found to be a sensitive method for detection of plaque irregularity.

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INTERNAL CAROTID ARTERY DOPPLER FINDING IN PATIENTS WITH ACUTE ISCHEMIC STROKE

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Extracranial Doppler of carotid arteries is currently the most widely used noninvasive diagnostic method for the evaluation of carotid arterial stenosis. The individuals with carotid stenosis >50% are at a high risk of stroke, and the risk rises significantly in carotid arterial stenosis >75%. The aim of the study was to assess the proportion of patients with acute ischemic stroke in whom the initial, moderate and significant stenoses of internal carotid arteries were verified by Doppler diagnosis. The study included 71 patients with acute stroke, 49 men and 22 women, mean age 64.8 and 68.0 years, respectively. The results showed 22 (31%) patients, 16 (22.5%) men and 6 (8.5%) women, to have the initial stenosing lesions of the internal carotid artery verified by Doppler. Six (8.5%) male patients had moderate stenosis of internal carotid artery verified by Doppler, whereas 7 (9.8%) patients, 3 (4.2%) men and 4 (5.6%) women, had significant internal carotid artery stenosis verified by Doppler. Doppler diagnosis indicated 35 (49.3%) of 71 patients with acute ischemic stroke to have stenosing lesions on the extracranial segment of internal carotid artery, which is consistent with literature reports. Considering the high prevalence of internal carotid arterial stenosis, these patients require efficient secondary prevention measures, by either medicamentous or possibly operative therapy.

postprocesirani, a 3D rekonstrukcija pregledana. Mjerili smo promjer udubljenja, površinu plaka i volumen plaka na 5 prikaza. Svi bolesnici bili su asimptomatski, ali su imali neke čimbenike rizika za moždani udar: srčanu bolest, povišen krvni tlak, hiperlipoproteinemiju i dijabetes mellitus. Prikaz B nismo uopće mogli rabiti za procjenu nepravilnosti plaka. Promjer udubljenja ulceracije bio je između 2,2±4 do 2,92±1 mm. Površina plaka bila je između 6,42±3 do 7,89±1 mm^2, a volumen plaka 23±1 mm^3. Trodimenzionalni ultrazvuk je osjetljiva metoda za procjenu nepravilnosti površine plaka.

23.

NALAZ DOPLERA UNUTARNJE KAROTIDNE ARTERIJE U BOLESNIKA S AKUTNIM ISHEMIJSKIM MOŽDANIM UDAROM

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Ekstrakranijski dopler karotidnih arterija danas je najčešće upotrebljavana neinvazivna dijagnostička metoda za procjenjivanje stenoze karotidnih arterija. Visok rizik za nastanak moždanog udara imaju osobe sa stenozom karotidne arterije iznad 50%, dok se taj rizik značajno povećava kod stenoze iznad 75%. Cilj našega istraživanja bio je procijeniti koliko bolesnika s akutnim ishemijskim moždanim udarom ima doplerskom dijagnostikom verificirane početne, umjerene i značajne stenoze unutarnje karotidne arterije. Istraživanje je obuhvatilo 71 bolesnika s akutnim moždanim udarom, od toga 49 muškaraca i 22 žene. Srednja životna dob oboljelih muškaraca bila je 64,8 godina, a oboljelih žena 68 godina. Analiza je pokazala da je 22 (31%) bolesnika imalo doplerom verificirane početne stenozirajuće promjene na unutarnjoj karotidnoj arteriji, od toga je bilo 16 (22,5%) muškaraca i 6 (8,5%) žena. Šestorica (8,5%) bolesnika imalo je doplerom verificiranu umjerenu stenozu unutarnje karotidne arterije, svi muškog spola, dok je 7 (9,8%) bolesnika imalo doplerom verificiranu značajnu stenozu unutarnje karotidne arterije, od toga 3 (4,2%) muškarca i 4 (5,6%) žene. Doplerskom dijagnostikom uočili smo da je u ispitivanoj skupini od 71 bolesnika s akutnim ishemijskim moždanim udarom njih 35 (49.3%) imalo stenozirajuće promjene na ekstrakranijskom dijelu unutarnje karotidne arterije, što odgovara dosadašnjim navodima u literaturi. S obzirom na visoku učestalost

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VERTIGO – ULTRASONOGRAPHIC EVALUATION OF THE CAROTID AND VERTEBROBASILAR SIPHON

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The aim of the study was to evaluate the usefulness of ultrasound (US) examination of the head and neck arteries in the differential diagnosis of outpatients with the referral diagnosis of vertigo. Hemodynamic parameters of the carotid and vertebrobasilar (VB) siphon arteries were analyzed by transcranial Doppler (TCD) in 300 patients, M/F ratio 37/63, mean age 59±15 years. In 48% of the study patients, the extracranial carotid and vertebral arteries were morphologically visualized by color Doppler (CD). The patients were allocated to the predominating cerebrovascular group (53%), so-called vertebrogenic-compressive group (34%), psychogenic group (8%), or others, including otogenic tumors, undefined (5%). In the cerebrovascular group, characterized by older mean age (64 years) and burdened with 1-5 risk factors, TCD findings indicated VB insufficiency (45%) and stenosis in intracranial vertebral arteries or basilar artery (15%), and CD pointed to hypoplasia (17%) of one or both vertebral arteries, stenoses/occlusions of extracranial carotid arteries (25%) and mild atheromatous lesions in the V1 segment of vertebral arteries (20%). The vertebrogenic-compressive group had younger mean age (52 years) and clinical findings characterized by limited movements, painful cervical spine syndrome and radiologic alterations of the cervical spine (88%). In this group, TCD findings pointed to impaired VB circulation, mostly arterial spasms, in 82% of patients. In the group of patients with so-called psychogenic vertigo, frequent spasms of vertebral arteries and mostly normal radiologic findings of the vertical spine were recorded. Accordingly, US patients revealed impairments in the arteries of the carotid and VB siphon in 83% of vertigo patients, thus it has proved a necessary and useful method in the differential diagnosis and evaluation of the etiology of vertigo.

24.

VRTOGLAVICE – ULTRAZVUČNA PROCJENA KAROTIDNOG I VERTEBROBAZILARNOG SLIVA

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Cilj ispitivanja bila je procjena koristi ultrazvučnog (HUZ) pregleda arterija vrata i glave u diferencijalnoj dijagnostici ambulantnih bolesnika s uputnom dijagnozom: vertigo. U 300 bolesnika prosječne dobi 59±15 godina, M/Ž indeksom 37/63, transkranijskim doplerom (TCD) analizirani su hemodinamski parametri arterija karotidnog i vertebrobazilarnog (VB) sliva u svih pacijenata, dok su u 48% bolesnika obojenim doplerom (CD) morfološki prikazane ekstrakranijske karotidne i vertebralne arterije. Temeljem kliničkih, laboratorijskih i radioloških nalaza ispitanici su svrstani u prevladavajuću cerebrovaskularnu skupinu (53%), tzv. vertebrogeno-kompresivnu skupinu (34%), psihogenu skupinu (8%) i ostale: otogeni, tumori, nejasni (5%). Cerebrovaskularna skupina je starije prosječne dobi (64 g.), opterećena s 1-5 čimbenika rizika, TCD nalazi upućuju na insuficijenciju VB (45%), stenozu u intrakranijskim vertebralnim arterijama ili bazilarnoj arteriji (15%), CD nalazi na hipoplaziju (17%) jedne ili obje vertebralne arterije, stenoze/okluzije u ekstrakranijskim karotidama (25%), lakše ateromatozne promjene u V1 segmentu vertebralnih arterija (20%). Vertebrogeno-kompresivna skupina je mlađe dobi (52 g.), u kliničkom nalazu obilježena ograničenim kretnjama, bolnim sindromom vratne kralješnice i radiološkim promjenama u vratnoj kralješnici (88%), a TCD nalazi upućuju u 82% ispitanika na poremećaje u VB krvotoku, uglavnom na spazme arterija. U skupini bolesnika s tzv. psihogenim vertigom nalaze se učestali spazmi u vertebralnim arterijama s uglavno urednim radiološkim nalazima u vratnoj kralješnici. HUZ analiza bolesnika s vrtoglavicama pokazala je poremećaje u arterijama karotidnog i VB sliva u 83% ispitanika i stoga je neophodna i korisna u diferencijalnoj dijagnostici i procjeni etiologije vrtoglavica.

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EFFECT OF THE INTERNAL CAROTID ARTERY TERMINAL SEGMENT BIFURCATION ON THE FORMATION OF HELICOID BLOOD FLOW IN DAUGHTER ARTERIES

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Helicoid blood flow has been ever more in the focus of hemodynamic studies because of its protective effect on the arterial wall structure and contribution to the energy flow savings. The complex system of cerebral arteries is abundant in curvatures and bifurcations, causing great losses in the flow of energy as well as the burden of stress against the arterial walls. According to the latest research, the anatomy of bifurcation has a major role in the formation of helicoid blood flow. The aim of the study was to try to analyze particular elements of this flow type in the internal carotid bifurcation. It was performed by targeted changing of the probe position over the right temporal window. The presumed central position yields a two-way spectrum, with a predominance of strong low-frequency and weak high-frequency signals. PSV was 2.23 and 1.83 kHz for MCA and ACA, respectively. Rostral position led to the loss of weak signals. PSV was 2.01 and 1.92 kHz for MC and ACA, respectively. The ventrocaudal shift led to the loss of strong signals and occurrence of a spectrum of weak signals. PSV was 1.96 and 1.54 kHz for MCA and ACA, respectively. The results confirmed the effect of the bifurcation under study on the formation of helicoid blood flow. Because of ethics reasons and need of precise measurements, the author performed the study on his own right bifurcation, using a low-frequency pulsating 2-MHz probe and Multi-Dop P (DWL-Elektronische Systeme GmbH) ultrasound device. The volume of sensitivity was 10 mm^3 and depth of testing 65 mm.

25.

UTJECAJ RAČVIŠTA TERMINALNOG DIJELA UNUTARNJE KAROTIDNE ARTERIJE NA STVARANJE HELIKOIDNOG TIJEKA KRVI U ARTERIJAMA-KĆERIMA

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Zbog uočenog zaštitnog učinka na strukture arterijske stijenke i doprinosa uštedi energije protoka helikoidni tijek krvi sve više je predmet hemodinamskih studija. U složenom sustavu arterija mozga prisutan je velik broj zavoja i račvišta. To uvjetuje jake gubitke energije protoka i stresna opterećenja arterijskih zidova. Anatomija račvišta prema novijim istraživanjima ima veliku ulogu u stvaranju helikoidnog protoka. Cilj ovoga istraživanja bio je pokušaj analize elemenata ovoga tipa toka u račvištu unutarnje karotide. Ciljanim mijenjanjem položaja sonde nad desnim temporalnim prozorom to je i učinjeno. Pretpostavljeni središnji položaj daje dvosmjerni spektar uz prevagu jakih niskofrekventnih i slabijih visokofrekventnih signala. PSV za MCA iznosi 2,23 kHz, a za ACA 1,83 kHz. Rostralni položaj dovodi do gubitka slabijih signala. PSV za MC je 2,01 kHz, a za ACA 1,92 kHz. Ventro-kaudalni pomak dovodi do gubitka jakih signala i pojave spektra složenog iz slabih signala. PSV za MCA je 1,96 kHz, a za ACA 1,54 kHz. Rezultati daju potvrdu utjecaja ispitivanog račvišta na stvaranje helikoidnog protoka. Zbog etičkih norma i potrebe preciznih mjerenja autor je ispitivanje proveo na svom desnom račvištu. Pri ispitivanju rabljena je niskofrekventna pulzirajuća sonda od 2 MHz u sklopu ultrazvučnog uređaja Multi-Dop P (DWL-Elektronische Systeme GmbH). Osjetljivi volumen je 10 mm^3. Dubina ispitivanja bila je 65 mm.

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THE IMPACT OF TYPE AND DURATION OF DIABETES MELLITUS ON CHANGES IN CEREBRAL HEMODYNAMICS

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Transcranial Doppler sonography, the supreme diagnostic method for visualization of hemodynamic changes in basal cerebral arteries in real time, was used in 100 patients aged 48-67 years with the diagnosis of diabetes mellitus, and in a control group of 100 healthy subjects.

26.

UTJECAJ TIPA I TRAJANJA ŠEĆERNE BOLESTI NA PROMJENE U MOŽDANOJ HEMODINAMICI

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Transkranijska doplerska sonografija, vrhunska dijagnostička metoda za prikaz hemodinamskih promjena u bazalnim moždanim arterijama u stvarnom vremenu, primijenjena je u 100 bolesnika u dobi od 48 do 67 godina s dijagnozom šećerne bolesti, te u kontrolnoj skupini od 100 zdravih ispitanika. Cilj istraživanja bio je utvrditi hemodi-

The aim of the study was to identify hemodynamic changes in cerebral arteries of diabetic patients, and to assess the impact of type and duration of diabetes mellitus on the development of cerebrovascular disease. Study results showed a statistically significantly higher prevalence of pathologic findings of transcranial Doppler sonography in the group of diabetic patients as compared with the control group of healthy subjects ($p<0.05$). The duration and type of diabetes were found to influence the development of pathologic lesions of cerebral arteries. Hemodynamic changes were more common in patients with type 1 than in those with type 2 diabetes mellitus (72.5% *vs.* 43.3%). On the other hand, the study revealed the duration of diabetes to be a significant predictor of the development of cerebrovascular disease. Atherosclerotic changes were found in 34% of patients suffering from diabetes for <5 years and in 71.4% of those with diabetes duration of ≥5 years. In all diabetic patients, the signs of cerebral microangiopathy were considerably more commonly recorded than the signs of macroangiopathy.

27

THE ROLE OF VISUALLY EVOKED RESPONSE IN POSTERIOR CEREBRAL ARTERY IN PATIENTS WITH ADVANCED CAROTID STENOSIS OR OCCLUSION

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Up to now, vasoreactivity testing was almost always performed to investigate middle cerebral artery or rarely anterior cerebral artery, showing similar reactivity in both. Testing of posterior circulation using visual stimuli was only described in a few studies, mostly in healthy individuals, although visual stimulation is a noninvasive and most powerful stimulus of the visual cortex metabolism. The aim of the study was to investigate visual evoked response in posterior cerebral artery (PCA) in patients with carotid disease. Mean blood flow velocities (MBFV) of the PCA were investigated in patients with advanced carotid stenosis or occlusion by means of transcranial Doppler (TCD), 2 MHz probe MultiDop X4 DWL. Velocities were measured successively in the dark and during white light visual stimulation three times. Mean reaction changes in MBFV compared to dark in all stimulations were calculated. Mean reaction time (time to peak velocities) was measured. Data were compared with 8 healthy controls.

namske promjene u moždanim arterijama u dijabetičnih bolesnika te utjecaj trajanja i tipa šećerne bolesti na razvoj cerbrovaskularne bolesti. Nadena je statistički značajno veća zastupljenost patoloških nalaza transkranijske doplerske sonografije u dijabetičnoj skupini nego u kontrolnoj skupini ($p<0,05$). Utvrđeno je da trajanje i tip dijabetesa utječu na razvoj patoloških promjena na moždanim arterijama. Bolesnici s dijabetesom tip 1 češće su imali hemodinamske promjene negoli oni s dijabetesom tip 2 (72,5% prema 43,3%). S druge strane, istraživanje je pokazalo da je trajanje šećerne bolesti značajan predskazatelj razvoja cerebrovaskularne bolesti. Aterosklerotske promjene nađene su u 34% dijabetičara koji su bolovali od dijabetesa kraće od 5 godina, te u 71,4% onih koji su od dijabetesa bolovali 5 godina i duže. U svih dijabetičnih bolesnika znatno su češće nađeni znaci cerebralne mikroangiopatije negoli makroangiopatije.

27.

ULOGA VIDNOG EVOCIRANOG ODGOVORA STRAŽNJE MOŽDANE ARTERIJE BOLESNIKA S UZNAPREDOVALOM KAROTIDNOM STENOZOM ILI OKLUZIJOM

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Vazoreaktivnost se dosada gotovo uvijek ispitivala u srednjoj moždanoj arteriji i rjeđe u prednjoj moždanoj arteriji. Samo je u nekoliko studija ispitivana stražnja cirkulacija uporabom vidnog stimulusa, uglavnom kod zdravih pojedinaca. Vidna stimulacija je neinvazivan i najjači podražaj metabolizma vidnog korteksa. Cilj studije je bio ispitivanje vidnog evociranog odgovora stražnje moždane arterije (StMA) u bolesnika s karotidnom bolešću. Srednje brzine strujanja krvi (SBSK) StMA ispitivane su transkranijskim doplerom (TCD) MultiDop X4 DWL u bolesnika s uznapredovalom karotidnom stenozom ili okluzijom. Upotrebljena je sonda od 2MHz. Brzine su mjerene tri puta naizmjence u mraku i prilikom stimulacije bijelim svjetlom. Mjerene su srednje vrijednosti promjena SBSK i srednje vrijeme reakcije (vrijeme postizanja maksimalne BSK). Kontrolnu skupinu činilo je 8 zdravih ispitanika. Mjerenja su izvedena u 16 ispitanika muškog spola: 8 sa subtotalnom stenozom unutarnje karotidne

The study included 16 male patients: 8 with subtotal internal carotid artery (ICA) stenosis (5 right, 3 left), 5 with ICA occlusion (2 right, 3 left), and 3 with bilateral stenosis or occlusion. During light stimulation, the mean MBFV increase was 46.56±2.56% on the right and 44.13±3.01% on the left. In healthy controls, the mean right PCA MBFV increase was 44.71±6.5% and left 42.67±6.65%. The mean reaction time in patients with carotid disease was 26.79±6.72 s in the right PCA and 27.06±7.6 s in the left PCA. In healthy controls, the mean reaction time was 15±3.3 s in the right PCA and 15±3.3 s in the left PCA ($p<0.05$). TCD testing using visual stimuli showed prolonged visual evoked response in patients with carotid disease. TCD testing using visual stimuli is an useful method in the evaluation of vascular reserve capacity in patients with carotid disease.

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THE NEED OF CEREBRAL PROTECTION DEVICES DURING CAROTID ARTERY STENTIG: OUR EXPERIENCE

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The degree of embolization depends on plaque morphology. HDL and triglycerides are associated with an increased risk of having echolucent plaques. It is not clear whether LDL predicts echolucent plaques. The aim of the study was to evaluate the risk of developing lipid plaques and the need of protection devices during angioplasty. A total of 237 outpatients (171 men and 66 women, mean age 62.9±10.2 years) were enrolled in the study. One hundred and sixteen (61%) patients had stroke, and 69 (36%) patients had transient ischemic attack (TIA) or amaurosis fugax. All patients had undergone color-coded duplex sonography and power sonography examination of the carotid arteries in the previous year. Carotid arteries were scanned with color-coded duplex ultrasound equipment with multifrequency linear array transducer (5-10 MHz). Statistical analysis was done by SPSS statistical software. Cholesterol, HDL, LDL, triglycerides and LDL/HDL ratio showed significant differences between patients with plaques type I and IV. One-way ANOVA showed significant differences in cholesterol, LDL, triglycerides and LDL/HDL ratio between patients with plaques type I and type V. Multiple comparisons showed significant differences ($p<0.01$) in LDL and triglycerides between plaques type I and type III, type I and type IV, and type I and type V. We have concluded that LDL appears to be a risk factor for echolucent plaques. Both high levels of LDL and triglycerides predict for unstable plaques and need for protection devices.

28.

POTREBA ZA UREĐAJIMA ZA CEREBRALNU ZAŠTITU TIJEKOM POSTAVLJANJA STENTA KAROTIDNE ARTERIJE: VLASTITA ISKUSTVA

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Stupanj embolizacije ovisi o morfologiji plaka. HDL i trigliceridi povezani su s povećanim rizikom za razvoj eholucentnog plaka. Nije jasno predskazuje li LDL nastanak eholucentnih plakova. Cilj ovoga ispitivanja bio je procijeniti rizik za razvoj lipidnih plakova i potrebu za zaštitnim uređajima tijekom angioplastike. U ispitivanje je bilo uključeno 237 ambulantnih bolesnika (171 muškarac i 66 žena, srednja dob 62,9±10,2 godine). Od njih je 116 (61%) imalo moždani udar, a 69 (36%) prolazni ishemijski napadaj (TIA) ili *amaurosis fugax*. Svi su u prethodnoj godini bili podvrgnuti pregledu karotidnih arterija pomoću obojeno kodirane dupleks sonografije i ojačane (*power*) sonografije. Karotidne arterije skenirane su pomoću uređaja za obojeno kodirani dupleks ultrazvuk s višefrekventnim linearnim pretvaračem (5-10 MHz). Statistička analiza provedena je pomoću statističkog programa SPSS. Kolesterol, HDL, LDL, trigliceridi i omjer LDL/ HDL pokazali su značajne razlike između bolesnika s plakovima tipa I. i IV. Jednosmjerna ANOVA pokazala je značajne razlike u kolesterolu, LDL, trigliceridima i omjeru LDL/HDL između bolesnika s plakovima tipa I. do V. Višestruke usporedbe pokazale su značajne razlike ($p<0,01$) za LDL i trigliceride između plakova tipa I. i III., tipa I. i IV., te tipa I. i V. Zaključeno je kako se čini da je LDL čimbenik rizika za eholucentne plakove. I visoke razine LDL i triglicerida predskazuju nastanak nestabilnih plakova i potrebu za zaštitnim uređajima.

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THE MANAGEMENT OF PATIENTS WITH SUBARACHNOID HEMORRHAGE AT THE DEPARTMENT OF NEUROLOGY IN OSIJEK, CROATIA

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During a 6-year period, 102 patients (67 women and 35 men, mean age 52.7 years) with subarachnoid hemorrhage (SAH) were admitted to the Osijek Department of Neurology. The diagnosis of SAH was most commonly verified by computed tomography (CT) (78.43%), and in some cases by positive cerebrospinal fluid (CSF) finding (23.52%). Cerebral angiography was performed in 99% of the patients. A positive morphological substrate, mostly aneurysm of the left arteria cerebri media, was found in 68.3% of angiography findings. Blood flow was monitored by transcranial Doppler (TCD) in 33 patients, with the signs of vasospasm observed in 60.6% of them. The length of hospital stay at the Department varied from one to 82 days, depending on the SAH treatment. The patients with verified substrate and/or those with threatened vital functions were immediately transferred to the Department of Neurosurgery (69.6%), whereas all others were managed at our Department. A 30-day period of survival was achieved in 51.6% of non-operatively treated patients.

29.

OBRADA BOLESNIKA SA SUBARAHNOIDNIM KRVARENJEM NA NEUROLOŠKOJ KLINICI U OSIJEKU, HRVATSKA

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Tijekom 6 godina na Neurološku kliniku u Osijeku zaprimljeno je 102 bolesnika (67 žena i 35 muškaraca prosječne starosti 52,7 godina) sa subarahnoidnim krvarenjem (SAH). Dijagnoza je u ovih bolesnika najčešće potvrđena kompjutoriziranom tomografijom (CT) (78,43%), a u nekim slučajevima pozitivnim nalazom u cerebrospinalnom likvoru (23,52%). Cerebralna angiografija je učinjena u 99% naših bolesnika. Pozitivan morfološki supstrat je pronađen na 68,3% angiografskih nalaza, najčešće aneurizma lijeve arterije cerebri medije. U 33 naših bolesnika krvni je protok praćen TCD-om, a u 60,6% njih nađeni su znakovi vazospazma. Duljina hospitalizacije na našem odjelu varirala je od jednog do 82 dana, ovisno o liječenju SAH-a. Bolesnici s potvrđenim supstratom i/ili bolesnici s ugroženim životnim funkcijama odmah su premješteni na neurokirurški odjel (69,6%), a ostali su bolesnici liječeni na našoj klinici. Postigli smo 30-dnevno razdoblje preživljenja u 51,6% bolesnika koji nisu kirurški liječeni.

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NEUROSURGICAL MANAGEMENT OF INTRACRANIAL ANEURYSMS: OUR RESULTS

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Intracranial aneurysms and intracerebral hematomas are the most common substrate for neurosurgical management of cerebrovascular disorders. Intracranial aneurysms are baggy-like, saccular, elongated, fusiform or dissecting lesions of the cerebrovascular walls, which are caused by either structural changes of the vessel wall or by hemodynamic factors. Rupture of intracranial aneurysms causes subarachnoid hemorrhage, an emergency clinical condition characterized by specific clinical manifestations. The initial event, i.e. hemorrhage into the subarachnoid space, is followed by a cascade of pathophysiologic events that are responsible for the clinical picture and determine the outcome of the pathologic event. Patients with subarachnoid hemorrhage are pathophysiologically threatened not only by the initial hemorrhage but also by its complications such

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NEUROKIRURŠKO LIJEČENJE INTRAKRANIJSKIH ANEURIZAMA – NAŠI REZULTATI

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Najčešći supstrat neurokirurškog liječenja cerebrovaskularnih poremećaja su intrakranijske aneurizme i intracerebralni hematomi. Intrakranijske aneurizme su vrećaste – sakularne, izdužene – fuziformne ili disecirajuće promjene na stijenkama cerebralnih krvnih žila, koje su uzrokovane bilo strukturnim promjenama same stijenke krvnih žila bilo hemodinamskim čimbenicima. Ruptura intrakranijskih aneurizama uzrokuje subarahnoidnu hemoragiju, hitno kliničko stanje obilježeno specifičnom kliničkom pojavnošću. Nakon početnog zbivanja, krvarenja u subarahnoidni prostor, slijedi čitav niz patofizioloških zbivanja koja uzrokuju kliničku sliku i određuju ishod patološkog zbivanja. Bolesnici sa subarahnoidnim krvarenjem patofiziološki su ugroženi kako samom početnom hemo-

as recurrent hemorrhage, vasospasm, and hydrocephalus. From the neurosurgical point of view, the most important issue in treating the patient with subarachnoid hemorrhage is the timing of operation. The answer is almost never unambiguous and is influenced by severeal factors. Numerous factors have to be analyzed on making the decision on the timing of operation. Considering all these as well as our own 22-year clinical experience and a series of 932 intracranial aneurysms operated on, we have came to the conclusions that are elaborated in the guidelines for the management of these lesions (guidelines for operative treatment of patients with subarachnoid hemorrhage caused by rupture of intracranial aneurysm). Following recent trends in the management of intracranial aneurysms, in cooperation with neuroradiologists from the Department of Radiology of our hospital, we have introduced interventional-endovascular methods in the treatment of such lesions in our standard clinical practice. Gradually, with technology development, new techniques of selective endovascular obliteration of aneurysms by filling their lumen with various materials, usually 'coils', thereby preserving blood flow in the artery where the aneurysm is developing, have become available.

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NEUROSURGICAL TREATMENT OF SPONTANEOUS PRIMARY INTRACEREBRAL HEMATOMAS

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Spontaneous intracerebral hematomas are those that occur without previous trauma and are divided into primary (not associated with other morbidity except for hypertension) and secondary (caused by varous congenital and acquired conditions). Poor neurologic status is as a rule related to elevated intracranial pressure (ICP). Early neurosurgical treatment helps reduce ICP and improve the outcome, however, delayed treatment has no impact on the outcome. ICP monitoring ensures an optimal treatment. Operative management is not indicated in patients with irreversible neurologic deficit suggesting profoundly depressed state of consciousness, rapid clinical deterioration, or massive hematoma. The following guidelines for the neurosugical treatment of these hematomas, based on our own clinical experience, have been designed: neurosurgical intervention is not required in patients with a hematoma sized <4% of the hemisphere volume; operative treatment is performed in patients with hematomas sized 4% - 8% of hemisphere volume and exhibiting clinical deterioragijom, tako i njenim komplikacijama kao što su rehemoragija, vazospazam i hidrocefalus. S neurokirurškog stajališta, u liječenju bolesnika sa subarahnoidnim krvarenjem najvažnije je pitanje kada takvog bolesnika operirati. Odgovor gotovo nikada nije jednoznačan, a na njega utječu brojni čimbenici. Stoga pri donošenju odluke o vremenu operacije analiziramo brojne čimbenike. Uzimajući u obzir navedeno, kao i naše vlastito 22-godišnje iskustvo i nizu od 932 operirane intrakranijske aneurizme, došli smo do zaključaka koji su izneseni u smjernicama za liječenje ovih tvorbi (smjernice za operacijsko liječenje bolesnika sa subarahnoidnom hemoragijom uzrokovanom rupturom intrakranijske aneurizme). Prateći najnovije trendove u liječenju intrakranijskih aneurizama, u suradnji s neuroradiolozima Kliničkoga zavoda za radiologiju naše bolnice uveli smo u našu standardnu kliničku praksu i interventne - endovaskularne metode liječenja ovih tvorba. Naime, razvojem tehnologije postupno se razvijaju nove tehnike selektivne endovaskularne obliteracije samih aneurizmatskih tvorbi metodom njihovog punjenja različitim materijalima, najčešće zavojnicama (*coils*), uz očuvanje krvnog protoka u glavnoj arteriji na kojoj se aneurizma razvija.

31.

NEUROKIRURŠKO LIJEČENJE SPONTANIH PRIMARNIH INTRACEREBRALNIH HEMATOMA

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Spontani intracerebralni hematomi su oni koji nastaju bez prethodne traume. Dijelimo ih na primarne (nevezane na druge bolesti, s iznimkom hipertenzije) i sekundarne (uzrokovane različitim kongenitalnim i stečenim stanjima). Loš neurološki status u pravilu je povezan s povišenim intrakranijskim tlakom. Rano pristupanje neurokirurškom liječenju pomaže sniženju intrakranijskog tlaka i poboljšava ishod, međutim, zakašnjelo liječenje nema utjecaja na ishod. Praćenje ICP osigurava optimalno liječenje. Operacija nije indicirana kod bolesnika s ireverzibilnim neurološkim oštećenjem na koje upućuje duboko poremećeno stanje svijesti, brzo kliničko pogoršanje ili masivnost hematoma. Smjernice za neurokirurško liječenje: nije potrebna neurokirurška intervencija kod bolesnika s hematomom veličine ispod 4% volumena hemisfere; operacijski liječimo bolesnike s hematomima veličine od 4% do 8% volumena hemisfere čije je kliničko stanje u pogoršanju; treba operirati bolesnike s veličinom hematoma od 8%-12% volumena hemisfere; operacijsko i konzervativno liječenje daju podjednako loše rezultate u liječenju bolesni-

oration; operative treatment is required in patients with hematomas sized 8% - 12% of hemisphere volume; operative and conservative treatment yield comparably poor results in the management of patients with hematomas sized >12% of hemisphere volume; survivors with a hematoma in the brain stem and persisting symptoms without resorption or recurrent hemorrhage are candidates for neurosurgical evacuation; cerebellar hematomas of >3 cm in size should be operatively treated, and those of 2-3 cm in size depending on the patient's neurologic status; intraventricular drainage may prove useful in patients with symptomatic intraventricular hematoma, and such patients should preferably be operated on within 6 hours from the onset of symptoms, provided the above criteria are met. Patients can also be treated by stereotactic aspiration assisted with fibrinolysis or open evacuation, classically, or with the use of an endoscope with irrigation, suction, and laser coagulation. Intraoperative ultrasonography may also prove helpful.

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NEUROSURGICAL TREATMENT OF STROKE: YES OR NO, WHEN AND IN WHOM?

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Stroke is the leading cause of death and disability all over the world. Primary intracerebral hemorrhage accounts for 10% - 20% of all stroke cases, but is associated with the highest morbidity and mortality rates of all stroke subtypes. It is also the most common type of stroke in younger population (<50 years). In spite of all these facts, there are no literature data on a standardized or optimal mode of treatment, either operative or conservative. During a 4-year period, ten stroke patients were operated on at the Department of Neurosurgery, Dr. Josip Benčević General Hospital in Slavonski Brod. Three patients suffered isolated intraventricular hemorrhage, six patients had intracerebral hemorrhage, and one female patient had intracerebellar hemorrhage. The decision on operative treatment was made on the basis of computed tomography finding (size and seat of hematoma), patient clinical status, presumption that the operation would save the patient's life, improve his neurologic status, and reduce the length of hospital stay, all these with the consent obtained from the patient's family members. All patients were operated on within 36 hours, most of them (n=8) within 12 hours from the onset of hemorrhage. The results obtained by operative treatment were analyzed. It was concluded that each

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NEUROKIRURŠKO LIJEČENJE MOŽDANOG UDARA – DA ILI NE, KADA I U KOGA?

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Moždani udar je vodeći uzrok smrti i invalidnosti širom svijeta. Primarno intracerebralno krvarenje čini 10%-20% svih bolesnika s moždanim udarom, ali nosi najviši stupanj smrtnosti i pobola između svih podtipova moždanog udara. Također predstavlja i najčešći tip moždanog udara u mlađe populacije (<50 g.). Unatoč navedenom, ne postoje podaci u literaturi o standardiziranom ili optimalnom načinu liječenja, bilo kirurškom ili konzervativnom. Tijekom četiri godine u Neurokirurškom odjelu Opće bolnice u Slavonskom Brodu operirano je 10 bolesnika koji su pretrpjeli moždani udar. Troje bolesnika pretrpjelo je izolirano intraventrikularno krvarenje, šestoro bolesnika intracerebralno, a u jedne bolesnice krvarenje je nastalo u malom mozgu. Odluka o operaciji donesena je na osnovi nalaza kompjutorske tomografije (veličine i sijela hematoma), kliničkog statusa bolesnika, pretpostavke da će se bolesniku spasiti život, poboljšati neurološki status i skratiti boravak u bolnici, te uz pristanak rodbine. Svi su operirani unutar 36 sati od nastupa krvarenja, većina (n=8) unutar 12 sati. Analizirani su rezultati operacijskog liječenja. Zaključili smo da svakog pojedinog bolesnika treba pozorno uzeti u obzir za operaciju, vodeći se navedenim naputcima. Indicirano je operirati (drenaža) mlađe bolesnike s intraventrikularnim krvarenjem, iako je klinička slika teška

ka s hematomima veličine preko 12% volumena hemisfere; preživjeli bolesnici s hematomom u mozgovnom deblu kod kojih simptomi ustraju, a ne dolazi do resorpcije odnosno nastupi rekurentno krvarenje, kandidati su za neurokiruršku evakuaciju; cerebelarne hematome veličine preko 3 cm potrebno je operacijski liječiti; kod onih od 2-3 cm, ovisno o neurološkom stanju bolesnika sa simptomatskim intraventrikularnim hematomom, može se pomoći intraventrikularnom drenažom; preporučljivo je operirati bolesnika u prvih 6 sati od nastanka simptoma ako se zadovolje gore navedeni kriteriji. Bolesnike možemo liječiti stereotaksijskom aspiracijom s fibrinolitičnom asistencijom ili otvorenom evakuacijom, klasično, te uz uporabu endoskopa s irigacijom, sukcijom i laserskom koagulacijom. Moguća je i uporaba intraoperacijskog ultrazvuka.

individual patient should be carefully considered for operative procedure, based on the mentioned principles. An operation is indicated in younger patients (drainage) with intraventricular hemorrhage, although the clinical picture is severe and the probability of survival quite low, and in conscious patients with high Glasgow Coma Scale (GCS) score and developing complications (hydrocephalus). Patients with intracerebral hemorrhage in whom neurologic status is likely to recover (especially the elderly) should also be operated on. The considerably shortened hospital stay in the operatively treated patients should by no means be neglected, as it directly influences the financial aspects of treatment.

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ANTICOAGULANT THERAPY IN THE PREVENTION AND TREATMENT OF ISCHEMIC STROKE

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Ischemic stroke occurs due to occlusion of a cerebral blood vessel with a clot that can be thrombotic or embolic, and accounts for about 83% of all stroke cases. The use of anticoagulant therapy in the prevention and management of ischemic stroke may be limited by the possibility of intracranial hemorrhage that usually occurs due to anticoagulant therapy overdosage. From this point of view, anticoagulant therapy should be initiated when the cause of ischemic stroke has been identified (arteriosclerotic or cardioembolic) and verified by brain computed tomography (CT), with laboratory hemostasis tests. During a 6-month period, anticoagulant therapy was used in 46 ischemic stroke patients treated at the Osijek Department of Neurology. Anticoagulant therapy included low molecular heparin (nadroparin or reviparin), followed by warfarin in case of ischemic stroke due to cardioembolization (artificial valves in 5 and atrial fibrillation in 41 patients), hypercoagulability caused by septic states (n=3), hyperhomocysteinemia (n=8), and hereditary thrombophilia (n=3) with resistance to activated protein C due to the factor V Leiden gene mutation. In patients administered low molecular heparin, the dose was individually determined according to the hemostasis laboratory findings (platelets, PT, fibrinogen, APTT, antithrombin III, D-dimers, APC-resistance, homocysteine) and with weekly control platelet, antithrombin III and D-dimer determinations. The anticoagulant therapy with warfarin was also individualized, whereby PT was maintained at 1.5-2-2.5-

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ANTIKOAGULANTNA TERAPIJA U LIJEČENJU I PREVENCIJI ISHEMIJSKOG MOŽDANOG UDARA

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Ishemijski moždani udar nastaje zbog začepljenja krvne žile mozga ugruškom koji može biti trombotski ili embolijski, te čini oko 83% svih moždanih udara. Upotreba antikoagulantne terapije u prevenciji i liječenju ishemijskog moždanog udara može biti ograničena mogućnošću intrakranijskog krvarenja koje najčešće nastaje zbog predoziranosti antikoagulantnom terapijom. S tog aspekta, s antikoagulantnom terapijom neophodno je početi onda kada znamo uzrok ishemijskog moždanog udara (aterosklerotski ili kardioembolijski), koji je potvrđen kompjutorskom tomografijom mozga, uz laboratorijske testove hemostaze. Na Neurološkoj klinici KBO u razdoblju od 6 mjeseci provedena je antikoagulantna terapija kod 46 bolesnika oboljelih od ishemijskog moždanog udara. Antikoagulantna terapija provodila se niskomolekulanim heparinom (nadroparin ili reviparin) te u nastavku varfarinom kod ishemijskog moždanog udara uzrokovanog kardioembolizacijom (umjetni zalisci u 5 bolesnika, atrijska fibrilacija u 41 bolesnika), hiperkoagulabilnošću nastalom zbog septičnih stanja (3 bolesnika), hiperhomocisteinemijom (8 bolesnika), te hereditarnom trombofilijom u 3 bolesnika koji su imali otpornost na aktivirani protein C uzrokovan mutacijom gena za faktor V Leiden. Kod provođenja antikoagulantne terapije niskomolekularnim heparinom dozu smo određivali individualno prema laboratorijskim nalazima hemostaze (trombociti, PV, fibrinogen, APTV, AT III, D-dimeri, APC-rezistencija, homocistein) uz tjednu kontrolu trombocita, antitrombina III i D-dimera. Antikoagulantnu terapiju varfarinom također smo individualizirali, a pro-

3 INR, depending on the stroke etiology, patient age, polypragmasy, smoking habit, etc. No major hemorrhage, recurrent embolization or thrombus formation was recorded during the administration of anticoagulant therapy, because it was properly individualized and well titrated.

trombinsko vrijeme održavali smo od 1,5 –2 – 2,5-3 INR-a (ovisno o etiologiji moždanog udara, dobi bolesnika, polipragmaziji, pušenju i dr.). Zaključeno je da u tijeku provođenja antikoagulantne terapije nismo imali klinički značajnih krvarenja kao ni reembolizacija i retrombozacija, jer smo antikoagulantnu terapiju individualizirali i dobro istitrirali.

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INTERNAL CAROTID ARTERY OCCLUSION AND CLINICAL OUTCOME AFTER THROMBOLYSIS

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Early artery reperfusion of ischemic cerebral territory is critical for the clinical outcome of stroke. Internal artery occlusion can impair cerebral reperfusion. In our study, the relationship of internal carotid artery occlusion and clinical outcome as well as the efficacy of thrombolysis were demonstrated. Nineteen patients with ischemic stroke (mean age 56.6±11.9 years) were enrolled in the study. All of them underwent thrombolytic therapy (0.9 mg/kg of tissue plasminogen activator – rt-PA within 3 hours) and were evaluated according to the National Institute of Neurological Disorders and Stroke (NINDS) score before and 7 days after thombolysis. Color-coded duplex sonography and power sonography examination (Aloca 5500) of the carotid arteries were performed 24 hours after thrombolysis in all patients. Statistical analysis was done by SPSS statistical software. The mean initial NINDS score was 15.6±4.6, and mean outcome NINDS score was 4.1±4.5. Differences between the NINDS score before and 7 days after thrombolysis (11.5±4.9) were significant ($p<0.01$). The frequency of internal carotid occlusion (CO) was 28.6%. Linear regression showed significant association between CO and outcome NINDS score after 7 days ($p=0.034$, $r^2=0.21$). There was no significant association between initial NINDS score ($p=0.43$) and CO or between NINDS score differences (initial minus outcome NINDS score) and CO ($p=0.27$). We have concluded that color-duplex sonography in stroke patients with internal carotid occlusion could predict the outcome of thrombolytic therapy.

34.

OKLUZIJA UNUTARNJE KAROTIDNE ARTERIJE I KLINIČKI ISHOD NAKON TROMBOLIZE

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Rana arterijska reperfuzija ishemijskog cerebralnog područja kritična je za klinički ishod nakon moždanog udara. Okluzija unutarnje arterije može poremetiti cerebralnu reperfuziju. U našem smo ispitivanju ukazali na povezanost okluzije unutarnje karotidne arterije i kliničkog ishoda, kao i na učinkovitost trombolize. U ispitivanje je bilo uključeno 19 bolesnika s ishemijskim moždanim udarom (srednja dob 56,6±11,9 godina). Svi su oni podvrgnuti liječenju trombolizom (0,9 mg/kg aktivatora tkivnog plazminogena, rt-PA kroz 3 sata) i procijenjeni prema ljestvici Nacionalnog instituta za neurološke bolesti i moždani udar (NINDS) prije i 7 dana nakon trombolize. U svih je bolesnika provedena obojena dupleks sonografija (Aloca 5500) karotidnih arterija 24 sata nakon trombolize. Statistička analiza izvedena je pomoću statističkog programa SPSS. Srednji početni zbroj NINDS bio je 15,6±4,6, dok je zbroj NINDS za ishod iznosio 4,1±4,5. Razlike u zbroju NINDS prije i poslije trombolize (11,5±4,9) bile su značajne ($p<0,01$). Učestalost okluzije unutarnje karotidne arterije (OK) bila je 28,6%. Linearna regresija pokazala je značajnu povezanost između OK i zbroja NINDS za ishod nakon 7 dana ($p=0,034$, $r^2=0,21$). Nismo našli značajnu povezanost između početnog zbroja NINDS ($p=0,43$) i OK, kao ni između razlika u zbroju NINDS (početni minus ishodni zbroj NINDS) i OK ($p=0,27$). Zaključujemo kako se primjenom obojene dupleks sonografije u bolesnika s moždanim udarom s okluzijom unutarnje karotide može predvidjeti ishod liječenja trombolizom.

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STROKE RECURRENCES – QUALITY OF SECONDARY PREVENTION

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It is well known that, unfortunately, stroke is among the leading causes of death and ever more affecting younger age groups in Croatia, thus imposing the need of good prevention, i.e. of elimination and control of stroke risk factors. In this study, data obtained by the questionnaire for stroke patients, designed by the Croatian Society for Stroke Prevention, were analyzed to assess the success achieved in the Karlovac County. During the first 5 months of 2001, 238 stroke patients were treated at the Karlovac Department of Neurology, 65 of them with recurrent stroke, 53 with ischemic stroke, and 12 with hemorrhagic stroke. All but one had one or more risk factors. Comparison with previous data on 580 stroke cases throughout the year on an average revealed, unfortunately, a slight increase in the prevalence of stroke, pointing to the fact that we have yet been doing too little in the early detection, elimination and treatment of stroke risk factors.

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EVALUATION OF REHABILITATION OF NEUROLOGIC PATIENTS TREATED AT THE DEPARTMENT OF PHYSIATRY

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Rehabilitation of neurologic patients is an imperative for all those who can accept what they want and what is expected from them, with a clear objective to reduce the degree of disability and dependence on other people's help, and to improve their quality of life. The aim of the study was to comparatively evaluate rehabilitation in patients referred to the Institute of Physiatry and Rehabilitation upon their treatment at the Sarajevo Department of Neurology in 1997 and 2001. The study included 8 patients treated at these departments in 1997 and 78 patients treated in 2001. Considering pathology, patients with conditions following various types and subtypes of stroke, multiple sclerosis, and radicular painful syndromes were treated at the Department of Neurology and subsequently at the Institute of Physiatry and Rehabilitation. In 1997, the mean length of stay at Institute of Physiatry and Re-

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RECIDIVI MOŽDANOG UDARA – KVALITETA SEKUNDARNE PREVENCIJE

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Poznata je, nažalost, činjenica da je moždani udar u našoj zemlji još uvijek među vodećim uzrocima smrtnosti, da sve više obolijevaju mlađe dobne skupine, te da se stalno nameće potreba za dobrom prevencijom – otklanjanjem i kontroliranjem čimbenika rizika. U ovom radu željeli smo prikazati, analizirajući upitnike za bolesnike s moždanim udarom (što ih je sastavilo Hrvatsko društvo za prevenciju moždanog udara), koliko se u tome u našoj Karlovačkoj županiji uspjelo učiniti. U prvih 5 mjeseci prošle godine na Neurologiji OB Karlovac liječeno je 238 bolesnika s moždanim udarom, od toga 65 s recidivom – ishemija 53 i krvarenja 12. Svi bolesnici osim jednoga imali su jedan ili više rizičnih čimbenika. Uspoređujući sve podatke s ranijim godinama (kada smo imali prosječno 580 moždanih udara u cijeloj godini) vidimo, nažalost, da je broj oboljelih u laganom porastu, što ukazuje na činjenicu da još uvijek premalo radimo na ranom otkrivanju, uklanjanju i liječenju čimbenika rizika.

36.

EVALUACIJA REHABILITACIJE NEUROLOŠKIH BOLESNIKA LIJEČENIH NA INSTITUTU ZA FIZIJATRIJU

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Rehabilitacija neuroloških bolesnika je imeprativ za sve koji mogu prihvatiti što žele i što se od njih traži, s jasnim ciljem smanjenja stupnja onesposobljenosti, zavisnosti od drugih i poboljšanja kvalitete života. Cilj rada bio je usporedno procijeniti rehabilitaciju bolesnika tijekom 1997. i 2001. godine, koji su nakon liječenja na Neurološkoj klinici KCU Sarajevo premješteni u nastavku liječenja na Institut za fizijatriju i rehabilitaciju. U studiju je bilo uključeno 8 bolesnika koji su liječeni na klinikama tijekom 1997. i 78 bolesnika liječenih tijekom 2001.godine. Sa stajališta patologije, bolesnike smo u nastavku liječenja premještali s Neurološke klinike radi rehabilitacije nakon različitih tipova i podtipova moždanog udara, multiple skleroze i radikularnog bolnog sindroma. Prosječno trajanje hospitalizacije na Institutu za fizijatriju i rehabilitaciju za 1997.

habilitation and at Department of Neurology was 39.1 ± 28.58 and 25.4±14.07 days, respectively. In 2001, the respective figures were 30.3±23.81 and 21.8±4.02 days. In 1997, only one of six patients remained bed-ridden, whereas in 2001 there were nine of 34 bed-ridden patients after rehabilitation. It is concluded that collaboration between the Department of Neurology and Institute of Physiatry and Rehabilitation was considerably improved over the 5-year period. The multidisciplinary approach in the management of our patients is obviously an imperative for the future work.

godinu bilo je 39,1 dan (SD 28,58), a za Neurološku kliniku 25,4 dana (SD 14,07). Tijekom 2001. godine prosječno trajanje hospitalizacije na Neurološkoj klinici bilo je 21,8 dana (SD 4,02), a na Institutu za fizijatriju i rehabilitaciju 30,3 dana (SD 23,81). Od šest nepokretnih bolesnika 1997. godine nakon rehabilitacije ostao je samo jedan, a u 2001. godini od 34 bolesnika nepokretnih je ostalo 9. Možemo zaključiti da je suradnja Neurološke klinike Kliničkog centra Univerziteta u Sarajevu s Institutom za fizijatriju i rehabilitaciju tijekom petogodišnjeg razdoblja značajno poboljšana, te da je multidisciplinaran pristup liječenju naših bolesnika imperativ u budućem radu.

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EFFECT OF ANKLE ORTHOSIS ON THE PARETIC GAIT QUALITY IN STROKE PATIENTS

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The aim of rehabilitation in stroke patients is to achieve the highest possible degree of functional independence. A number of factors lead to motor dysfunction and reduce the ability to walk. These factors include the grade of motor deficit, patient motivation, presence of contractures, and pathologic position of paralyzed extremities. Pathologic positions can be prevented by appropriate care, early medical exercise, verticalization and mobilization. In some patients, pathologic positions develop due to the impaired strength ratio between the paralyzed extremity flexor and extensor, in spite of the proper use of all principles of treatment and rehabilitation. On lower extremities, these positions manifest as plantar flexion and foot inversion (talipes equinus). The walk with such a foot deformity is not only uncertain and slow but also requires considerably greater energy utilization and increases weariness, thus shortening the walking distance. With the early use of ankle orthosis made from light thermoplastic material, stability of the ankle joint is achieved and foot collapse is prevented in all phases of walking. Patients are presented in whom ankle orthosis was used in the early stage of rehabilitation. The effect of ankle orthosis on reducing the existing circumduction on stepping forward as well as on improving the quality and reliability of walking is analyzed and discussed.

37.

UTJECAJ GLEŽANJSKE ORTOZE NA KVALITETU PARETIČNOG HODA U BOLESNIKA NAKON MOŽDANOG UDARA

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Cilj rehabilitacije u bolesnika s preboljelim moždanim udarom usmjeren je na postizanje što većeg stupnja funkcionalne neovisnosti. Postoji niz čimbenika koji dovode do disfunkcije pokreta i umanjuju sposobnost kretanja: stupanj motoričkog deficita, motiviranost bolesnika, postojanje kontraktura te patološki položaji oduzetih ekstremiteta. Provođenjem pravilne njege, rane medicinske gimnastike, vertikalizacije i mobilizacije mogu se spriječiti patološki položaji. I uz primjenu svih načela liječenja i rehabilitacije u određenog se broja bolesnika uslijed poremećenog odnosa snage fleksora i ekstenzora plegičnih ekstremiteta ipak razvijaju patološki položaji koji se na donjem ekstremitetu očituju plantarnom fleksijom i inverzijom stopala (položaj ekvinus). Hod s ovakvim stopalom, usto što je nesiguran i usporen, zahtijeva i značajno veći utrošak energije, pojačava zamor, a time uzrokuje skraćenje hodne pruge. Ranom primjenom gležanjske ortoze izrađene od laganih termoplastičnih materijala postiže se stabilnost nožnoga zgloba i sprječava padanje stopala u svim fazama hoda. U radu se prikazuju bolesnici u kojih je primijenjena gležanjska ortoza u ranoj fazi rehabilitacije. Analizira se i komentira njezin utjecaj na smanjenje postojeće cirkumdukcije pri iskoraku te njezin utjecaj na poboljšanje kvalitete i sigurnosti hoda.

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CURRENT DIAGNOSIS AND TREATMENT OF URINATION DISTURBANCES AFTER STROKE

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Nowadays, cerebrovascular diseases are among the greatest problems of the modern mankind. Stroke as the terminal form of cerebrovascular disease is one of the best known and most common neurologic syndromes. Cerebrovascular diseases account for 10% to 15% of total mortality and are the third leading cause of death. Stroke also frequently entails severe sequels involving motor activities and mental functions in the survivors. Stroke is usually accompanied by the development of so-called neurogenic dysfunction of the urinary bladder, which may manifest as various forms of incontinence and urine retention. In contrast to previous concepts, now it is understood that neurogenic impairment of urination occurs as a phenomenon accompanying the lesions of the brain stem, cerebellum and cerebrum. The aim of the study was to objectify the type and grade of post-stroke urination impairment by use of urodynamic testing, and to prescribe the most appropriate therapeutic and rehabilitation procedures. The study included 148 stroke patients observed at the neurologic clinic over a 5-year period. During this period, all patients underwent urodynamic testing on at least three occasions, including synchronous cystometric imaging, mictiometric evaluation, and EMG of the closure mechanism. Medicamentous therapy was prescribed on the basis of the urodynamic parameter values obtained. Results of the study pointed to the need of urodynamic objectivization of the neurogenic bladder shape, because excellent results can be achieved in more than 70% of stroke patients and spare them from permanent catheter, diapers and persistent urinary infections.

38.

SUVREMENA DIJAGNOSTIKA I TERAPIJA POREMEĆAJA MOKRENJA NAKON PREBOLJELOG MOŽDANOG UDARA

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Cerebrovaskularne bolesti danas su među najvećim problemima suvremenog čovječanstva. Završni oblik cerebrovaskularne bolesti, moždani udar, među najpoznatijim je i najučestalijim neurološkim sindromima. Cerebrovaskularne bolesti u općoj smrtnosti pučanstva imaju udio od 10%-15%, pa se nalaze na trećem mjestu uzroka smrti. Istodobno, u preživjelih bolesnika moždani udar često ostavlja velike posljedice u području motoričke aktivnosti i duševnih funkcija. Moždani udara je najčešće praćen i razvojem tzv. neurogene disfunkcije mokraćnog mjehura, koja se može očitovati u vidu različitih oblika inkontinencije i retencije mokraće. Za razliku od ranijih shvaćanja, danas je poznato da se neurogeni poremećaj mokrenja javlja kao popratna pojava kod oštećenja moždanog debla, malog mozga te velikog mozga. Cilj ovoga rada bio je urodinamskom obradom objektivizirati oblik i stupanj poremećaja mokrenja nakon preboljelog moždanog udara te ordinirati najprimjereniji oblik liječenja i rehabilitacije. Radom je obuhvaćeno 148 bolesnika s preboljelim moždanim udarom koji su tijekom 5 godina praćeni u neurološkoj ambulanti. Svim bolesnicima je u navedenom razdoblju učinjena urodinamska obrada najmanje u tri navrata, s tim da je ista uključivala sinkrono cistometrijsko snimanje, mikciometrijsku evaluaciju te EMG zapornog mehanizma. Temeljem dobivenih urodinamskih parametara ordinirana je medikamentna terapija. Rezultati našega istraživanja ukazuju na nužnost urodinamske objektivizacije oblika neurogenog mjehura, jer se u preko 70% bolesnika s moždanim udarom može postići odličan rezultat te ih poštedjeti trajnog katetera, pelena i upornih uroinfekata.

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MUSIC THERAPY OF APHASIA

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Music and speech are not the same function – they are different in the majority of their elements. Neither is the localization of the two functions identical. Speech is always centered in the dominant hemisphere, whereas music

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GLAZBENA TERAPIJA AFAZIJE

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Glazba i govor ne predstavljaju jednu te istu funkciju; one se razlikuju u većini svojih elemenata. Ove dvije funkcije razlikuju se i po svojoj lokalizaciji. Govor je uvijek smješten u dominantnoj polutki. Glazbena funkcija smješ-

function is centered in the dominant hemisphere only in musically educated and sophisticated people. Since these people are quite rare, it is an exception rather than the rule – so music function is mostly centered in the nondominant hemisphere. The amusic impairment does not always go with aphasia. Music abilities of an aphasic patient are retained to a greater extent than speaking abilities. Music is one of the most favorable means of approaching aphasic patients. A good effect on an aphasic patient is obtained by a generally favorable atmosphere, which means light music as a background. In the active approach, it is necessary to find out the favorite kind of music and songs the aphasic patient likes, however, to sing or whistle, not just listen to it. After finding out the right approach to the aphasic patient by music therapy, any even slightly better success in singing than the one shown as being the standard for speech will give the aphasic patient enormous support, encouragement and hope for further recovery, thereby making him exercise more. Furthermore, we discuss the neurologic interpretation of music skills, i.e. the music components of the singing and speaking voice. We compare speech and singing, especially concerning their biological and sociological similarity and differences. It is necessary to estimate the psychological profile of the aphasic patient, with emphasis on the importance of the psychological approach that has to be individual. On the basis of literature data and our own experience, we emphasize the importance of methodology (the length of séance and the whole treatment, music tempo, song themes, etc.) as well as the complexity of music therapy (together with pictures, written text, etc.).

tena je u dominantnoj polutki samo u glazbeno obrazovanih i sofisticiranih osoba. Kako su takvi ljudi rijetki, to je zapravo više iznimka negoli pravilo, pa se središte za glazbenu funkciju većinom nalazi u nedominantnoj polutki. Amuzičan poremećaj nije uvijek udružen s afazijom. U afazičnog bolesnika glazbene sposobnosti zadržane su u većoj mjeri od govornih sposobnosti. Glazba je jedno od najpogodnijih sredstava za pristupanje afazičnim bolesnicima. Dobar učinak na afazičnog bolesnika postiže se u povoljnom ozračju, što znači lagana glazba u pozadini. U aktivnom pristupu treba pronaći onu vrst glazbe i pjesme što ih dotičan afazični bolesnik voli, ali ih on treba pjevušiti ili zviždati, a ne samo slušati. Nakon iznalaženja ispravnog pristupa liječenju glazbom u afazičnog bolesnika, svaki i najmanji uspjeh u pjevanju, što se tada iskazuje kao standard govora, daje afazičnom bolesniku golemu potporu, ohrabrenje i nadu u daljnji oporavak, što ga opet potiče da još više vježba. Nadalje, raspravlja se o neurološkom tumačenju glazbenih vještina, tj. o glazbenim sastavnicama glasa koji pjeva i govori. Uspoređuju se govor i pjevanje, poglavito u smislu njihove biološke i sociološke sličnosti i razlika. Potrebno je procijeniti psihološki profil afazičnog bolesnika s naglaskom na važnosti psihološkog pristupa koji pak mora biti individualan. Na osnovi literaturnih podataka i našega vlastitog iskustva naglašavamo važnost metodologije (trajanje seanse i cijeloga postupka, muzički tempo, tematika pjesama itd.), kao i svu složenost liječenja glazbenom terapijom (zajedno sa slikama, pisanim tekstom itd.).

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PREVALENCE AND CHARACTERISTICS OF EMOTIONAL DISTURBANCES IN ISCHEMIC STROKE PATIENTS

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Emotional disturbances in stroke patients may unfavorably affect the process of rehabilitation and longterm outcome of the disease. The aim of the study was to assess the prevalence of emotional disturbances and their characteristics in our stroke patients, according to hemispheric lateralization of the cerebral lesion (as recorded by computed tomography), patient sex, and grade of neurologic deficit (as assessed by Rankin scale). The study included 50 patients (29 men and 21 women, mean age

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UČESTALOST I ZNAČAJKE EMOCIONALNIH POREMEĆAJA U BOLESNIKA NAKON ISHEMIJSKOG MOŽDANOG UDARA

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Emocionalni poremećaji u bolesnika s moždanim udarom mogu imati negativan utjecaj na proces rehabilitacije i dugoročni ishod ove bolesti. Cilj istraživanja bio je utvrditi učestalost emocionalnih poremećaja u naših bolesnika i njihove značajke ovisno o: hemisfernoj lateralizaciji moždane lezije (utvrđeno snimanjem pomoću kompjutorizirane tomografije); spolu bolesnika; stupnju neurološkog deficita (procijenjeno Rankinovom ljestvicom). Ispitana je skupina od 50 bolesnika (29 muškaraca prosječne dobi

62.52±7.07 and 64.62±11.83 years, respectively) who had suffered ischemic stroke 3 weeks to 6 months before the study. The Crown-Crisp experience index including six scales: scales of anxiety, phobia, obsession, somatization, depression and hysteria, was used for detection of emotional disturbances. Results showed a high prevalence of emotional disturbances in the study group. Depression was most common (72% of study patients), followed by generalized anxiety (58%) and phobic disturbances (66%). According to hemispheric lateralization of the cerebral lesion, a more intense emotional response was found in case of right hemisphere lesions, however, the difference was statistically significant only on the scale of obsession ($p<0.05$). According to sex, a more intensive emotional response was recorded in women, the difference being statistically significant on the scales of anxiety ($p<0.05$), depression ($p<0.05$) and phobia ($p<0.01$). According to the neurologic deficit severity, an increasing tendency in the prevalence of emotional disturbances was observed with the increasing severity of neurologic deficit. Study results showed a high prevalence of emotional disturbances after stroke, suggesting a hypothesis on their combined etiology.

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MODES OF FACING STRESS IN THE PREVENTION OF STROKE

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On exposure to stress, a series of biochemical reactions occur in the body: release of the hormones adrenaline and noradrenaline, acceleration of the heart rate, elevation of blood pressure, increase in the glucose and cholesterol levels, however, the reaction is not a single, programmed response. A particular stressor can be responded to in different ways, and the level of response depends on our perception of various stresses. If it is an important situation or event, the reaction will be strong. If, however, the situation or event does not appear much to us, we will stay relatively calm in response to it. Stress is a part of life, and may our daily duties and demands be resolved properly and well, our response to stress is favorable. When the problem cannot be solved properly, the body stays in the state of alarm, known as distress. The state of distress causes immune system impairments, and the subject becomes more prone to cold, viroses, and other infectons. Also, the

62,52±7,07 godina i 21 žena prosječne dobi 64,62±11.83 godine) koji su preboljeli moždani udar ishemijskog tipa od kojega su prošla najmanje 3 tjedna, a najviše 6 mjeseci. Za otkrivanje emocionalnih poremećaja primijenjen je Crown-Crispov indeks iskustava koji obuhvaća šest ljestvica: anksioznosti, fobije, opsesije, somatizacije, depresije i histerije. Rezultati su pokazali visoku zastupljenost emocionalnih poremećaja u ispitanoj skupini. Najčešće se radilo o depresiji (u 72% ispitanika), generaliziranoj anksioznosti (u 58% ispitanika) i fobičnim smetnjama (u 66% ispitanika). S obzirom na hemisfernu lateralizaciju moždane lezije, intenzivniji je emocionalni odgovor nađen kod lezije desne hemisfere, međutim, statistički značajno samo na ljestvici opsesivnosti ($p<0,05$). Prema spolu bolesnika intenzivniji je emocionalni odgovor kod žena, statistički značajno na ljestvicama anksioznosti ($p<0,05$), depresivnosti ($p<0,05$) i fobičnosti ($p<0,01$). S obzirom na intenzitet neurološkog deficita zabilježena je tendencija porasta učestalosti emocionalnih smetnja s porastom izraženosti neurološkog oštećenja. Rezultati pokazuju visoku zastupljenost emocionalnih poremećaja nakon ishemijskog moždanog udara i upućuju na pretpostavku o njihovoj kombiniranoj etiologiji.

41.

NAČINI SUOČAVANJA SA STRESOM U PREVENCIJI MOŽDANOG UDARA

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U organizmu se pri stresu automatski odvija niz biokemijskih reakcija, oslobađaju se hormoni adrenalin i noradrenalin, ubrzava se rad srca, raste krvni tlak, podižu se razine šećera i kolesterola, ali nije riječ samo o jednom programiranom odgovoru. Na određeni stresor možemo različito reagirati, a razina odgovora ovisi o našoj percepciji stresora. Ako je riječ o važnoj situaciji ili događaju, reakcija će biti jaka. Ne pridajemo li događaju ili situaciji koja je dovela do stresa veću važnost, reagirati ćemo razmjerno mirno. Stres je normalan dio života, pa ako svakodnevne zahtjeve rješavamo dobro, odgovor na stres je pozitivan. Kad ne možemo ispravno riješiti problem, tijelo ostaje u stanju alarma. Riječ je o takozvanom distresu. Stanje distresa oštećuje imuni sustav, pa postajemo skloniji prehladama, virozama i drugim infekcijama. Povećava se mogućnost nastanka srčanog i moždanog udara, te maligne bolesti. U takvom stanju se smanjuje i mentalni kapacitet pojedin-

possibility of myocardial infarction and stroke as well as of malignancies increases. In such a condition, the mental capacity of the individual is reduced. How will an individual face stress, depends on his/her temperament, energy reserve, physical health, shape, and support from the family and working environment, as well as on the awareness of one's own behavior and knowledge about the modes of facing stress. Besides the mechanism of suppressing negative emotions on facing the conflicting, stress situations, the strategy of attacking or of making compromise, and a considerably more successful strategy of experiencing a conflict as a challenge for enriching and improving mutual relationships can be employed. In addition to elimination of so-called removable risk factors, the prevention of stroke includes offering the stroke patients and potential stroke patients an opportunity to participate in the motivational-educational seminars about the modes of facing stress, to allow them to get an insight into their own behavior and to use when needed the new, more efficient techniques in generally unavoidable situations to which we all are daily exposed. The Center for the Quality of Life Improvement has been established at the Sestre milosrdnice University Hospital, where one of the seminars for inpatients and outpatients, dedicated to the issue of facing stress situations has been organized.

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USE OF ALCOHOL IN STROKE PREVENTION: PROS AND CONS

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Stroke ranks high on the scale of morbidity and mortality. Numerous studies have recently been conducted trying to identify the factors that contribute to the genesis of stroke as well as the factors that might prevent or delay the occurrence of stroke. There are data suggesting that moderate alcohol consumption prevents myocardial infarction and stroke by increasing the level of angioprotective HDL cholesterol and decreasing the level of atherogenic LDL cholesterol, reducing the rate of platelet aggregation, decreasing fibrinogen, and lowering blood pressure. The use of alcohol is widely spread all over the world, and so is its abuse, which is considered one of the leading causes of reduced or lost productivity, suffering, diseases, and death. According to its properties, alcohol belongs to the category of addictive substances. In addition to psychologca. Kako ćemo se suočiti sa stresom ovisi o temperamentu, količini pričuvne energije, tjelesnom zdravlju, kondiciji i potpori onih s kojima živimo i radimo, ali i o uvidu u vlastito ponašanje i poznavanju načina suočavanja sa stresom. U suočavanju s konfliktnim stresogenim situacijama može se uz mehanizam potiskivanja negativnih emocija rabiti i strategija napadanja, strategija stvaranja kompromisa i znatno uspješnija strategija u kojoj se sukob doživljava kao izazov za rastenje i poboljšanje međusobnih odnosa. Prevencija moždanog udara uključuje, uz eliminaciju takozvanih uklonjivih rizičnih čimbenika, omogućavanje bolesnicima s preboljelim moždanim udarom kao i potencijalnim bolesnicima sudjelovanje u motivacijskoedukacijskim seminarima o načinima suočavanja sa stresom, kako bi stekli uvid u osobno ponašanje i prema potrebi primijenili nove uspješnije tehnike u neizbježnim stresogenim situacijama kojima smo svi izloženi. U KB „Sestre milosrdnice" u Zagrebu organiziran je Centar za poboljšanje kvalitete života, u okviru kojega je jedan od seminara za bolničke i ambulantne pacijente bolnice posvećen upravo problematici suočavanja sa stresogenim situacijama.

42.

ALKOHOLOM PREVENIRATI MOŽDANI UDAR – RAZLOZI ZA I PROTIV

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Moždani udar zauzima visoko mjesto na ljestvici morbiditeta i mortaliteta. Posljednjih godina proveden je niz istraživanja kojima se nastoji utvrditi čimbenike koji doprinose razvoju moždanog udara, kao i čimbenike kojima se moždani udar može spriječiti ili odgoditi. Postoje podaci da umjereno pijenje alkohola sprječava srčani i moždani udar, jer dovodi do povišenja angioprotektivnog HDL kolesterola i sniženja aterogenog LDL kolesterola, smanjenja agregacije trombocita, sniženja fibrinogena i sniženja krvnog tlaka. Uporaba alkohola je široko rasprostranjena kao i njegova zlouporaba za koju se može reći da predstavlja jedan od vodećih uzroka smanjenja i gubitka produktivnosti ljudi, patnje, bolesti i smrti. Alkohol prema svojim obilježjima spada u kategoriju droga. Uz psihološku ovisnost kod mnogih se tijekom vremena razvije metabolična ovis-

ical dependence on alcohol, in many individuals metabolic alcohol dependence develops with time. On their way from so-called moderate, socially acceptable drinking to alcohol dependence, most alcoholics pass through seven stages: 1) controlled, so-called social drinking; 2) occasional drinking on facing problems and to reduce increased tension; 3) frequent problem solving and tension relief by alcohol consumption, which leads to gradually rising alcohol tolerance; 4) early stage of alcoholic disease with first amnesia; 5) progressive preoccupation with alcohol; 6) complete alcohol dependence and abstinence symptoms; and 7) ever growing physical and mental complications, eventually leading to death if left without strong support and help (medical, social, and spiritual). In the young who are still in the process of development, metabolism is considerably more sensitive to alcohol, and they will develop metabolic alcohol dependence much easier than adults. Most experts in the field of alcoholism emphasize the permanent vulnerability of alcoholics, meaning that once the dependence has developed, it is not possible to return to the social form of drinking even after years of withdrawal. That is why the term 'treated alcoholics' rather than 'cured alcoholics' is used when referring to those who have abandoned drinking. When speaking about the protective effect of small amounts of alcohol beverages, it should always be borne in mind that alcohol is an addictive substance, that it is not the best agent, and that even small amounts of alcohol can at a given moment cause great, irremediable damage, and that many have fallen into a trap of dependence by using alcohol as a 'medicine', thus having become alcoholics. The potential advantages and risks of using alcohol are emphasized and discussed, with a critical reference to the term of 'moderation', which is difficult to define.

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SECULAR MORTALITY TRENDS OF CEREBROVASCULAR DISEASES IN CROATIA: 1958 – 1997

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Neuroepidemiological studies of stroke are very important for correct programming and planning of health service and its specific organization. The research included all deaths from cerebrovascular diseases (CVD) in Croatia between 35 and 74 years of age over the 1958 – 1997 period. The total number of deaths during the study peri-

nost o alkoholu. Većina alkoholičara na svom putu od tzv. umjerenog, društveno prihvaćenog pijenja do ovisnosti o alkoholu prolazi kroz sedam faza: 1. kontrolirano, tzv. društveno pijenje; 2. povremeno pijenje zbog problema i smanjenja pojačane napetosti; 3. učestalo rješavanje problema i napetosti pijenjem alkohola, što dovodi do postupnog porasta tolerancije prema alkoholu; 4. rana faza alkoholne bolesti s prvom amnezijom;5. progresivna preokupacija alkoholom; 6. potpuna ovisnost o alkoholu, apstinencijske poteškoće; 7. bez snažne potpore i pomoći (medicinske, društvene, duhovne) nastaju sve veće fizičke i psihičke komplikacije i nastupa smrt. Metabolizam mladih koji su u fazi razvoja mnogo je osjetljiviji na alkohol, pa oni mogu puno brže razviti metaboličnu ovisnost o alkoholu nego odrasli. Većina stručnjaka s područja alkoholizma ističe trajnu osjetljivost alkoholičara, što znači da kad su jednom razvili ovisnost, više se ni nakon višegodišnje apstinencije ne mogu vratiti društvenom pijenju. Zbog toga se i upotrebljava termin liječeni, a ne izliječeni alkoholičar za one koji su prestali piti. Pri isticanju zaštitnog djelovanja uporabe malih količina alkoholnih pića treba svakako imati na umu da se radi o adiktivnom sredstvu, da alkohol nije najbolji lijek, da i male količine alkohola u datom trenutku mogu uzrokovati velike, nenadoknadive štete, te da su mnogi rabeći alkohol kao „lijek" upali u zamku ovisnosti i postali alkoholičari. Autori u radu ističu potencijalne prednosti i opasnosti uzimanja alkohola i kritički se osvrću na pojam umjerenosti koji je teško definirati.

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SEKULARNO KRETANJE SMRTI OD CEREBROVASKULARNE BOLESTI U HRVATSKOJ: 1958. – 1997.

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Epidemiološke studije cerebrovaskularne bolesti (CVB) od posebnog su značenja za ispravno programiranje i planiranje neurološke službe i njezine specifične organizacije. Istraživanjem su obuhvaćeni svi umrli od CVB u Hrvatskoj u dobi od 35-74 godine u četrdesetgodišnjem razdoblju od 1958. do 1997. godine. Broj umrlih u tom se vremenskom razdoblju povećao za 40%, a broj umrlih od

od increased by 40%, and the number of deaths from CVD by 264%. At the same time, the rates standardized for age and sex increased by 62%. The proportional mortality rate from this disease increased from 7.1% in the year 1958 to 14.8% in 1997. The specific mortality rates over 5-year periods showed a trend of increase in all male age groups, and of stagnation or decrease in females. The cohort data analysis showed that, although the mortality trends of CVD stagnated or even declined in some communities during the recent years, the secular trend for the entire country had a tendency of constant rise throughout the study period. Therefore, the short-term prognosis predicts further increase in both the number and rates of deaths from CVD in Croatia.

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DISSECTIONS OF THE CRANIOCERVICAL ARTERIES

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Dissections of the craniocervical arteries (carotid and vertebral) are sudden lesions of the arterial wall. They are an infrequent cause of stroke (0.4% - 2.5% in the general population), more often in younger age (5% - 20%) and in women. In the majority of cases, the cause and pathogenesis of dissections remain obscure. Dissections are divided into traumatic (head and neck trauma with concomitant lesions of the arteries) and spontaneous. The most common disorders that predispose to dissection are fibromuscular dysplasia, cystic medial necrosis, and Marfan's syndrome. Increased predisposition to dissection was found in patients with a decreased level of alpha 1 antitrypsin. In some subjects, dissections were repeated and in others there was a familial predisposition. Even some insignificant, 'trivial' traumas (coughing, sneezing, vomiting, excessive exercise, sudden rotation of the head and neck, awkward sleeping position, chiropractic grips) could result in spontaneous dissection of arteries. In 1/3 of patients, dissections could be multiple involving more than one artery. About 20% of dissections are asymptomatic. Eight patients (4 male and 4 female) aged 41-66 years with dissection of craniocervical arteries (internal carotid and vertebral) admitted to the Department of Neurology, Sestre milosrdnice University Hospital, Zagreb, between May

CVB za 264%. Istodobno su stope standardizirane po dobi i spolu porasle za 62%. Proporcionalna stopa smrtnosti od ove bolesti narasla je od 7,1% 1958. na 14,8% 1997. godine. Specifične stope mortaliteta po petogodištima pokazuju u svim dobnim skupinama trend porasta u muških, a trend stagnacije ili snižavanja u žena. Kohortna analiza podataka upućuje na periodične, a ne kohortne učinke na krivulju umiranja tijekom istraživanog razdoblja. Istraživanje pokazuje da, iako trend mortaliteta od CVB zadnjih godina na području pojedinih općina stagnira ili se čak snižava, sekularno kretanje za cijelu zemlju ima tendenciju porasta kroz čitavo ispitivano razdoblje. Zbog toga kratkoročna prognoza predviđa daljnje povećanje broja umrlih i stope umrlih od CVB u nas.

44.

DISEKCIJE KRANIOCERVIKALNIH ARTERIJA

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Disekcije kraniocervikalnih (karotidnih i vertebralnih) arterija nagla su oštećenja arterijske stijenke. Rijedak su uzrok moždanog udara u općoj populaciji (0,4%-2,5 %), ali češći u bolesnika mlađe dobi (5%-20%), nešto više u žena. U najvećem broju slučajeva uzrok i patogeneza disekcije nisu razjašnjeni, ali se općenito dijele na dvije skupine: traumatske (nakon povrede glave i vrata s posljedičnom ozljedom arterije) i spontane. Prema lokalizaciji su intra- i ekstrakranijske. Različite arteriopatije čine predispoziciju za spontano oštećenje žile (fibromuskularna displazija, cistična nekroza medije, Marfanov sindrom), a opisana je i sklonost disekcijama kod ljudi sa sniženim vrijednostima alfa 1 antitripsina, recidivi disekcija u istih bolesnika te obiteljska predispozicija. I beznačajne, tzv. trivijalne traume (kašalj, snažno povraćanje, kihanje, naporno vježbanje, pokret glave i vrata, kiropraktički zahvati, nezgodan položaj kod spavanja) mogu rezultirati spontanim disekcijama arterija. U do 1/3 bolesnika disekcije mogu biti višestruke, tj. istodobno zahvaćati više od jedne krvne žile. Oko 20% disekcija je asimptomatsko. Obradili smo 8 bolesnika (4 žene i 4 muškarca) u dobi od 41 do 66 godina kod kojih je bila dokazana disekcija unutarnje karotidne arterije ili vertebralne arterije. Svi su liječeni na Klinici za neurologiju KB „Sestre milosrdnice" u Zagrebu u razdoblju od jedne godine (od svibnja 1998. do lipnja 1999. godine). Praćeni su klinička slika (anamnestički podaci, sim-

1998 and June 1999 are reported. Patient history was taken and clinical neurologic examinations were performed immediately upon admission. Diagnostic procedures included ultrasound (CDFI extracranial color Doppler of carotid and vertebral arteries) and radiologic (CT and DSA) examinations. Risk factors, treatment and outcome of the disease were analyzed. Spontaneous dissections were found in 6 and posttraumatic in 2 subjects. Dissections involved internal carotid artery in 4, and vertebral artery in 2 patients. One patient had dissections of both internal carotid and vertebral arteries on the ipsilateral side, and one patient had intracranial aneurysm along with internal carotid artery dissection. The leading symptoms were focal neurologic defects, and head- and neck ache. CDFI of the carotid and vertebral arteries was positive for vessel dissection in 7 and negative in only one patient. DSA was consistent with dissection in 5 patients, negative in one, while in 2 patients the examination was not performed for the known allergy to contrast medium. Ischemic lesion on CT was reported in 5 patients, subarachnoid hemorrhage in one, atrophy in one, while in one patient CT finding was normal. When risk factors were examined, hypertension was found in 7, hyperlipidemia and/or cardiac disease in 3, and diabetes mellitus and smoking in 2 patients. Two patients were operated on, 5 were treated with anticoagulants, and one with suppressors of platelet aggregation. Following treatment, 6 patients (one operated on and five treated with anticoagulants) showed partial recovery of the neurologic defects together with improvement of ultrasound finding of dissected arteries. In one patient, following operation, stroke developed with deterioration of the motor deficit. The last patient, treated only with suppressors of platelet aggregation, was readmitted three months later for a newly developed stroke and died soon thereafter. It is a prerequisite to recognize this disease by clinical examination, to perform non-aggressive ultrasound and then radiologic examinations to verify the clinical diagnosis. Risk factors should be minimized, and anticoagulant treatment should be started as soon as possible in order to decrease the chance of severe stroke and lethal outcome.

ptomi bolesti i neurološki nalaz), čimbenici rizika, obilježja ultrazvučnih nalaza (ekstrakranijski obojeni dopler karotidnih i vertebralnih arterija), nalazi radioloških pretraga (kompjutorizirana tomografija mozga i digitalna subtrakcijska angiografija (DSA)), terapija i rezultati liječenja, tj. ishod bolesti. Disekcije su bile spontane u 6, a posttraumatske u 2 bolesnika. U 5 bolesnika dokazana je disekcija unutarnje karotidne, u 2 vertebralne arterije, a jedan je imao istostranu disekciju vertebralne i unutarnje karotidne arterije. U jednom je slučaju uz disekciju unutarnje karotidne arterije ustanovljena intrakranijska aneurizma. U kliničkoj slici prevladavali su znakovi žarišnog neurološkog ispada, bol u vratu i glavobolja. U 7 slučajeva CDFI karotidnih i vertebralnih arterija pokazao je pozitivan nalaz disekcije žile, u jednom negativan. Petoro bolesnika je imalo pozitivan nalaz DSA, jedan negativan, a u dvoje bolesnika pretraga nije učinjena zbog alergije na kontrast. Od čimbenika rizika najzastupljenija je hipertonija, potom povišene vrijednosti lipida u krvi, srčane tegobe, dijabetes i pušenje. Petoro bolesnika liječeno je antikoagulansima, 2 operacijski i jedan antiagregacijskom terapijom. Kod 6 bolesnika je nakon terapije došlo do djelomičnog kliničkog oporavka i poboljšanja UZV nalaza na diseciranim krvnim žilama, jedan je poslijeoperacijski doživio moždani udar uz pogoršanje neurološkog deficita, a jedan je za tri mjeseca doživio recidiv moždanog udara sa smrtnim ishodom. Neophodno je klinički prepoznati i što ranije dokazati neagresivnim ultrazvučnim pretragama te potom i radiološkim metodama disekciju kraniocervikalnih arterija, kako bi se moglo brzo reagirati i započeti s antikoagulantnom terapijom da bi se smanjio rizik težeg moždanog udara i neurološkog deficita te eventualno smrtnog ishoda.

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FUNCTIONAL RECOVERY AS A MEASURE OF REHABILITATION SUCCESS AFTER STROKE

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Stroke is among the most common causes of functional disability in adult population. The concept of rehabilitation, based on the International Classification of Impairments, Disabilities and Handicaps (World Health Organization, 1980) emphasizes the individual approach to the designing of rehabilitation programs for individuals with high-grade disability, in order to achieve their highest possible integration in the community. The concept of rehabilitation is focused on the restitution of functional abilities, thus standardized protocols for evaluation of the patient functional capacity such as Bartel's protocol have become a valuable tool not only in the follow-up of functional recovery but also in assessing the rehabilitation procedure outcome. In the present study, 100 consecutive patients admitted to the Department of Physical Medicine and Rehabilitation with the diagnosis of stroke during 2001 and 2002 were retrospectively analyzed. The majority of patients were directly transferred from the Osijek Department of Neurology, and only some of them as outpatients. There were 55 men and 45 women, mean age 65 years. Diagnostic examinations (computed tomography or magnetic resonance) revealed 84 and 16 patients to have suffered ischemic and hemorrhagic stroke, respectively. Motor deficit lateralization – side of hemiparesis, functional testing on admission and discharge, and type and place of discharge were analyzed. The mean length of treatment was 15 days. Functional capacity of each patient included in the study was assessed by use of Bartel's protocol. The degree of functional disability on admission and age group showed high correlation with functional capacity improvement and recovery success. The complex relationship between the recovery of all variables observed allows for the groups of subjects of different characteristics but identical rehabilitation outcome to form. This in turn allows for the degree of functional recovery in an individual subject or group of subjects to be predicted with high certainty, on the basis of the parameters available on admission and discharge from inpatient rehabilitation. Thus, the type and extent of further rehabilitation can be reliably planned, thereby considering the prognosis of functional recovery in stroke disabled persons.

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PRIKAZ FUNKCIJSKOG OPORAVKA KAO MJERA USPJEŠNOSTI REHABILITACIJE NAKON PREBOLJELOG MOŽDANOG UDARA

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Moždani udar je među najučestalijim uzrocima kronične funkcijske onesposobljenosti u odrasloj populaciji. Koncept rehabilitacijske skrbi koji se oslanja na Međunarodnu klasifikaciju oštećenja, onesposobljenja i hendikepa (SZO, 1980.) naglašava individualni pristup stvaranju programa rehabilitacijske skrbi za osobe s težim stupnjem onesposobljenosti u cilju što potpunije integracije osoba s onesposobljenjem u zajednicu. Težište rehabilitacije je na funkcionalnom osposobljavanju, pa su standardizirani protokoli za evaluaciju funkcijskog kapaciteta bolesnika, poput Bartelova protokola, postali važno oruđe ne samo u praćenju funkcijskog oporavka, nego sve više i u procjeni ishoda rehabilitacijskog tretmana. Učinili smo retrospektivnu analizu 100 uzastopno primljenih bolesnika na Odjel za fizikalnu medicinu i rehabilitaciju s dijgnozom moždanog udara tijekom 2001. i 2002. godine. Bolesnici su bili zaprimljeni izravnim premještajem s Klinike za neurologiju, a manji dio ambulantno. Srednja životna dob bolesnika bila je 65 godina. Od ukupno 100 bolesnika 55 ih je bilo muškog, a 45 ženskog spola. Dijagnostičkom obradom (kompjutorska tomografija ili magnetska rezonanca) utvrđeno je da je 84 bolesnika imalo moždani udar ishemijskog tipa, a 16 hemoragijskog tipa. Analizirani su i lateralizacija motoričkog deficita - strana hemipareze, funkcijsko testiranje pri prijmu i otpustu bolesnika s Odjela, kao i način i mjesto otpusta. Prosječna dužina liječenja je bila 15 dana. Procjena funkcionalnosti svakog bolesnika uključenog u studiju učinjena je Bartelovim protokolom. Stupanj funkcijske onesposobljenosti pri prijmu na Odjel, kao i dobna skupina bolesnika ukazali su na visok stupanj korelacije s poboljšanjem funkcijskog kapaciteta i uspješnošću oporavka. Složen odnos između oporavka svih ispitivanih varijabla omogućuje formiranje skupina rehabilitanata različitih osobina, a ujednačenih ishoda rehabilitacije.

To otvara mogućnost da se sa značajnim stupnjem sigurnosti predvidi stupanj funkcijskog oporavka pojedinog rehabilitanta ili skupine, a na osnovi dostupnih pokazatelja pri prijmu i otpustu sa stacionarnog rehabilitacijskog liječenja, kako bi se što pouzdanije mogla planirati vrsta i obim daljnje rehabilitacijske skrbi, u što većoj mogućoj mjeri poštujući prognozu funkcijskog oporavka onesposobljenih osoba poslije preboljelog moždanog udara.

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NEUROREHABILITATION IN STROKE PATIENTS

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The prognosis in patients treated and rehabilitated after a stroke is never certain. From January 1, 1997 till December 31, 2001, the process of rehabilitation was followed up in 487 patients with a clinical picture of post-stroke sequels, with a total of 506 hospitalizations at the Department of Physical Medicine and Rehabilitation of the Osijek University Hospital in Bizovac. There were 220 men and 267 women, mean age 66.01 (range 34-91) years. The majority of patients were in the 61-70 (n=213) and 71-80 (n=141) age groups. The highest number of patients (n=122) were hospitalized in 2001. The mean length of hospital stay was 19.88 days, ranging from 4 to 60 days. The majority of patients (n=353) were transferred from the Osijek Department of Neurology, and 143 patients came for treatment from their homes. Computed tomography showed normal findings in 23, ischemic stroke in 395, hemorrhagic stroke in 62, and brain atrophy in 7 patients. Motor neurologic deficit manifested as right-sided and left-sided hemiparesis in 247 and 240 patients, respectively. Diabetes mellitus was present in 119 and hypertension in 416 patients, whereas cardiac disorders in terms of myocardiopathy, arrhythmia, atrial fibrillation, angina pectoris or their combinations were recorded in 112 patients. Upon the completion of rehabilitation, 120 patients walked independently, 98 patients remained bedridden, and 266 patients moved with help of some aid (crutches, walker). Three patients died during the treatment. Evaluation of the impact of age on the success of rehabilitation showed a higher percentage of those able to walk independently in younger age groups, while the percentage of bed-ridden or mobile with some aid was greater in older age groups.

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NEUROREHABILITACIJA BOLESNIKA NAKON MOŽDANOG UDARA

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Prognoza bolesnika liječenih i rehabilitiranih nakon moždanog udara nikada nije sigurna. Na Odjelu za fizikalnu medicinu i rehabilitaciju Kliničke bolnice Osijek u Bizovcu pratili smo tijekom petogodišnjeg razdoblja od 1.1.1997. do 31.12.2001. godine rehabilitacijski tretman 487 bolesnika s kliničkom slikom posljedica moždanog udara, koji su ostvarili ukupno 506 boravaka na Odjelu. Od 487 bolesnika bilo je 220 muškaraca i 267 žena. Najmlađi bolesnik imao je 34 godine, a najstariji 91 godinu. Srednja životna dob bila je 66,01 godina. Najviše ispitanika bilo je u dobnim skupinama od 61 do 70 godina (n=213) i od 71 do 80 godina (n=141). Najveći broj ispitanika hospitaliziran je u 2001. godini (n=122). Srednja dužina liječenja bila je 19,88 dana; najkraće liječenje je trajalo 4 dana, a najduže 60 dana. Veći dio bolesnika (n=353) premješten je s Klinike za neurologiju, a 143 su došli na liječenje od kuće. Uredan nalaz kompjutorske tomografije zabilježen je u 23 bolesnika; u 395 bolesnika utvrđen je ishemijski tip moždanog udara, u 62 hemoragijski tip moždanog udara, a kod 7 je nađena atrofija mozga. Motorički neurološki deficit u smislu hemipareze bolesnici su iskazali kao desnostranu hemipareza (n=247) ili lijevostranu hemiparezu (n=240). Od ukupnog broja bolesnka 119 ih je imalo dijabetes melitus, a 416 hipertenziju. Srčane poteškoće u smislu miokardiopatije, aritmije, atrijske fibrilacije, angine pektoris ili njihovih kombinacija imalo je 112 bolesnika. Nakon završetka liječenja 120 bolesnika je hodalo samostalno, 98 ih je ostalo nepokretano, a 266 ih se je kretalo uz pomoć pomagala (štake, četveronošca, hodalice), dok je troje bolesnika umrlo tijekom liječenja. Procjenjujući utjecaj dobi bolesnika na uspješnost rehabilitacije utvrdili smo da je u mlađim dobnim skupinama veći postotak samostalno pokretnih, dok je veći postotak nepokretnih ili pokretnih uz pomagalo vezan uz stariju dobnu skupinu.

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DEATHS IN PATIENTS WITH A CLINICAL PICTURE OF CEREBROVASCULAR DISEASE REFERRED TO THE OSIJEK UNIVERSITY HOSPITAL FROM BARANYA

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This retrospective study was undertaken to identify the cause of death in patients hospitalized at the Osijek University Hospital, referred by the physicians from the Beli Manastir Health Center Emergency Service to the Osijek Department of Neurology for a clinical picture of cerebrovascular disease. From November 1, 1997 (period of reintegration) till December 31, 2001, 212 patients with symptoms of cerebrovascular disease were referred to the Osijek University Hospital from Baranya. Eighty-eight patients died at the University Department of Neurology, Department of Neurosurgery, University Department of Medicine, Department of Anesthesiology, University Department of Surgery, University Department of Infectious Diseases, Department of Pulmonology, and Department of Hemodialysis, Osijek University Hospital. Among these 88 patients, there were 53 men and 35 women, mean age 68.56 (range 25-88) years. The majority of patients were in the 61-70 (n=34) and 71-80 (n=34) age groups. The cause of death was determined on the basis of clinical diagnosis, computed tomography finding, and autopsy finding. Stroke as the cause of death was identified in 82 deceased patients, whereas the remaining 6 deceased patients with the symptoms of cerebrovascular disease died from some other disease (plasmocytoma, glioblastoma, cerebral metastases from laryngeal carcinoma, fracture of the first cervical vertebra with spinal cord lesion, acute myocardial infarction, and acute appendicitis with consequential peritonitis). Of the 82 stroke patients, ischemic stroke was diagnosed in 60 and hemorrhagic stroke in 22 patients. Comparison of the referral diagnoses and causes of death showed that of 72 patients referred with a diagnosis of nonspecific stroke, 49 died from ischemic stroke, 18 from hemorrhagic stroke, and 5 from other diseases. Of the six patients referred as ischemic stroke, ischemic stroke was the cause of death in 5 and hemorrhagic stroke in one patient. Of the five patients referred as hemorrhagic stroke, this type of stroke was the cause of death in 3, ischemic stroke in one, and other disease in one patient. In the patients referred with the diagnosis of transient ischemic attack (n=1), hypertensive encephalopathy (n=2) and

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PRIKAZ BOLESNIKA UMRLIH U KLINIČKOJ BOLNICI OSIJEK, UPUĆENIH S PODRUČJA BARANJE POD SLIKOM CEREBROVASKULARNE BOLESTI

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Cilj ove retrospektivne studije bio je utvrditi uzrok smrti hospitaliziranih bolesnika u Kliničkoj bolnici Osijek, koje su liječnici Odjela hitne medicinske pomoći Doma zdravlja Beli Manastir uputili na Kliniku za neurologiju pod kliničkom slikom cerebrovaskularne bolesti. U razdoblju od 1.11.1997. (vrijeme reintegracije) do 31.12.2001. godine u Kliničku bolnicu Osijek primljeno je 212 bolesnika iz Baranje sa simptomima cerebrovaskularne bolesti, od kojih je 88 umrlo na Klinici za neurologiju, Odjelu za neurokirurgiju, Internoj klinici, Odjelu za anesteziju, Kirurškoj klinici, Klinici za infektivne bolesti, Plućnom odjelu i na Odjelu za hemodijalizu. Od ukupnog broja umrlih bolesnika bila su 53 muškarca i 35 žena. Njihova srednja životna dob bila je 68,56 godina. Najmlađi umrli bolesnik imao je 25 godina, a najstariji 88 godina. Najveći broj ispitanika pripadao dobnim skupinama od 61 do 70 (n=34) i od 71 do 80 (n=34) godina. Uzrok smrti određen je na osnovi kliničke dijagnoze, nalaza kompjutorske tomografije, te obdukcije. Kod 82 umrlih bolesnika kao uzrok smrti utvrđen je moždani udar, a preostalih 6 koji su imali simptome cerebrovaskularne bolesti umrlo je zbog neke druge bolesti (plazmocitom, glioblastom, moždane metastaze karcinoma grkljana, prijelom prvog vratnog kralješka s lezijom leđne moždine, akutni infarkt miokarda, te akutna upala slijepog crijeva s posljedičnim peritonitisom). Od 82 bolesnika s moždanim udarom 60 ih je imalo moždani udar ishemijskog tipa, a 22 hemoragijskog tipa. U studiji smo usporedili odnos uputnih dijagnoza i uzroka smrti. Od 72 bolesnika upućenih pod dijagnozom nespecificiranog moždanog udara 49 ih je umrlo od moždanog udara ishemijskog tipa, 18 od moždanog udara hemoragijskog tipa, a 5 od nekih drugih bolesti. Od ukupno 6 bolesnika upućenih kao moždani udar ishemijskog tipa, kod 5 je kao uzrok smrti utvrđen moždani udar ishemijskog tipa, a kod jednog hemoragijskog tipa. Petoro bolesnika imalo je uputnu dijagnozu moždanog udara hemoragijskog tipa, što je kao uzrok smrti kod 3 potvrđeno, dok je jedan umro od ishemijskog moždanog udara, a jedan od druge bolesti. U bolesnika koji su upućeni pod dijagnozom prolaznog ishemijskog napadaja (TIA) (n=1), hipertenzivne encefalo-

late stroke sequel (n=2), the cause of death was ischemic stroke.

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COMPUTED TOMOGRAPHY OF THE BRAIN AT EMERGENCY SERVICE: A RADIOLOGICAL – CLINICAL CORRELATION

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The aim of the study was to perform evaluation and radiological – clinical correlation of the computed tomography (CT) examinations of the brain at emergency service. The ratio of emergency and total CT examinations was analyzed for a one-year period (January 1 – December 31, 2001). Emergency CT examinations of the brain were analyzed according to clinical indications, referral from particular clinical specialties, and need of anesthesiologic assistance. CT findings were correlated with clinical requests and diagnoses, and compared with literature data. During the year 2001, 8118 CT examinations were performed at the Institute of Radiology, 1379 (17.21%) of them at emergency service (777 men and 620 women); 1154 (82.61%) of all CT examinations referred to brain CT. The analysis yielded the following distribution of emergency brain CT examinations according to hospital departments: neurology 597 (51.73%), neurosurgery 302 (26.17%), internal medicine 87 (7.57%), surgery 58 (5.03%), other departments 85 (7.37%), and other institutions 25 (2.17%). Brain CT was performed for the following clinical indications: stroke 430 (37.26%), trauma 297 (25.74%), consciousness disorders and seizures 189 (16.38%), intracranial expansion 116 (10.05%), infection 26 (2.25%), headache and/or vertigo 70 (6.07%), metabolic disturbances 2 (0.17%), and unavailable data 24 (2.08%). Anesthesiologic assistance on emergency CT of the brain was required in 109 (9.4%) cases. Correlation of CT findings with clinical diagnoses (clinical requests) yielded the following data: 835 (72.36%) positive CT findings in total; acute lesions 578 (50.09%) and chronic lesions 257 (22.27%). Accordingly, there was a large number of emergency CT examinations of the brain, with a tendency of constant rise (traumatism, cerebrovascular diseases, therapeutic approach). Difficult performance of the examination due to the serious state of these patients and delicacy of urgent interpretation of the finding impose the need of greater availability of neuroradiologists, respecting the algorithm of examinations in emergency states.

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KOMPJUTORSKA TOMOGRAFIJA MOZGA U HITNOJ SLUŽBI: RADIOLOŠKO – KLINIČKA KORELACIJA

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Cilj rada bila je procjena i radiološko - klinička korelacija kompjutorske tomografije (CT) mozga u hitnoj službi. U jednogodišnjem razdoblju (1.1.2001. - 31.12.2001.) analiziran je odnos hitnih i sveukupnih CT pretraga. Posebno su obrađeni hitni CT pregledi mozga prema kliničkim indikacijama, zastupljenosti pojedinih kliničkih struka i potrebi anesteziološke asistencije. CT nalazi su korelirani s kliničkim upitima i dijagnozama te uspoređeni s podacima iz literature. Tijekom 2001. godine na našem je Zavodu za radiologiju izvršeno 8118 CT pretraga, od čega 1379 (17,21%) u hitnoj službi (777 muškaraca i 620 žena), a 1154 (82,61%) svih hitnih CT pretraga odnosilo se na CT mozga. Distribucija hitnih CT mozga prema Klinikama: neurologija 597 (5l,73%), neurokirurgija 302 (26,17%), interna 87 (7,57%), kirurgija 58 (5,03%), ostale klinike 85 (7,37%), vanjske ustanove 25 (2,17%). Kliničke indikacije za hitni CT mozga: moždani udar 430 (37,26%), traume 297 (25,74%), poremećaji svijesti i konvulzije 189 (16,38%), intrakranijska ekspanzija 116 (10,05%), infekcije 26 (2,25%), glavobolja i/ili vrtoglavica 70 (6,07%), metabolični poremećaji 2 (0,17%), nedostupni. podaci 24 (2,08%). Potreba anesteziološke asistencije pri hitnom CT pregledu mozga 109 (9,4%). Korelacija CT nalaza s kliničkom dijagnozom (kliničkim upitom): ukupno pozitivnih CT nalaza 835 (72,36%); akutne promjene 578 (50,09%), kronične promjene 257 (22,27 %). Dakle, velik je broj hitnih CT pretraga mozga s tendencijom stalnog porasta (traumatizam, cerebrovaskularne bolesti, terapijski pristup). Otežano izvođenje pretrage zbog teškog stanja bolesnika i delikatnost hitne interpretacije nalaza nameću potrebu veće dostupnosti neuroradiologa uz pridržavanje algoritma pretraga u hitnim stanjima.

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A QUESTIONNAIRE ON STROKE PATIENTS

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The Croatian Society for Stroke Prevention designed an original questionnaire on stroke patients, which was distributed to all university departments and departments of neurology in Croatia. Results of the analysis of data collected from the filled-out questionnaires are presented. During 2001, 1150 questionnaires on stroke patients were returned: 332 from Čakovec, 227 from Karlovac, 163 from Dubrovnik, 162 from Sisak, 100 from Osijek, 93 from Nova Gradiška, 47 from Slavonski Brod, and 26 from Zabok. There were 515 (44.8%) men and 627 (54.5%) women, whereas sex was not specified in 8 (0.7%) questionnaires. The most common factors for the occurrence of stroke were: hypertension (recorded in 79.7% of patients), cardiac diseases (37.3%), increased cholesterol (31.3%), diabetes mellitus (30.9%), atrial fibrillation (27.7%), previous transient ischemic attack (16.1%), increased triglycerides (16.1%), obesity (15.2%), other heart rate disorders (12.4%), physical inactivity (12.1%), stroke in family history (10.7%), cigarette smoking (8.2%), stress (6.9%), coagulation disorders (4.9%), and heart valve diseases (2.6%). Of all, 792 (69%) patients were treated for the first ever stroke and 288 (25%) for recurrent stroke, whereas 69 (6%) questionnaires did not specify whether it was first ever or recurrent stroke. The type of stroke was not specified in 153 (13.3%) questionnaires, 145 (12.6%) patients had hemorrhagic stroke, and 852 (74.1%) patients had ischemic stroke. The time elapsed from stroke onset to hospital admission was not specified in 38 (3.2%) questionnaires; 325 (28.3%) patients were admitted to hospital within the first 3 hours, 235 (20.4%) in 3-6 hours, 162 (14.1%) in 6-12 hours, 111 (9.7%) in 12-24 hours, and 279 (24.3%) patients >24 hours from stroke onset. The most common complications encountered during the treatment of stroke patients were: urinary infection in 195 (17.0%), consciousness disturbances in 177 (15.4%), pneumonia in 68 (5.9%), thromboembolism in 19 (1.7%), and decubitus in 11 (1.0%) patients. Thirty (2.6%) questionnaires did not specify where patients were referred to after the treatment; 55 (4.8%) patients were transferred to other hospital departments, 564 (49.0%) patients were discharged for home care, 170 (14.8%) patients were referred to rehabilitation institutions, and 59 (5.1%) patients were trans-

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UPITNIK O BOLESNICIMA S PREBOLJELIM MOŽDANIM UDAROM

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Hrvatsko društvo za prevenciju moždanog udara sastavilo je originalni upitnik o bolesnicima koji su zadobili moždani udar, koji je poslan svim klinikama i odjelima za neurologiju svih bolnica u Hrvatskoj. Prikazana je analiza sakupljenih podataka iz ispunjenih upitnika. Tijekom 2001. godine sakupljeno je 1150 upitnika o bolesnicima s moždanim udarom: 332 iz Čakovca, 227 iz Karlovca, 163 iz Dubrovnika, 162 iz Siska, 100 iz Osijeka, 93 iz Nove Gradiške, 47 iz Slavonskog Broda i 26 iz Zaboka; bilo je 515 (44,8%) muškaraca i 627 (54,5%) žena, a u 8 (0,7%) upitnika nije naveden spol. Najčešći čimbenici rizika za nastanak moždanog udara bili su: hipertenzija (zabilježena u 79,7% bolesnika), srčane bolesti (37,3%), povišeni kolesterol (31,3%), dijabetes melitus (30,9%), atrijska fibrilacija (27,7%); prethodne TIA (16,1%), povišeni trigliceridi (16,1%), debljina (15,2%); drugi poremećaji srčanog ritma (12,4%), tjelesna neaktivnost (12,1%), moždani udar u obiteljskoj anamnezi (10,7%), pušenje (8,2%), stres (6,9%), poremećaji koagulacije (4,9%) i bolesti srčanih zalistaka (2,6%). Ukupno je 792 (69%) bolesnika liječeno zbog prvog moždanog udara, 288 (25%) zbog recidiva moždanog udara, a u 69 (6%) upitnika nije navedeno je li se radilo o prvom ili o recidivu moždanog udara. U 153 (13,3%) upitnika nije naveden tip moždanog udara, 145 (12,6%) bolesnika imalo je hemoragijski moždani udar, a 852 (74,1%) bolesnika imalo je ishemijski moždani udar. U 38 (3,2%) upitnika nije navedeno vrijeme proteklo od nastanka moždanog udara do prijma u bolnicu, 325 (28,3%) bolesnika primljeno je u bolnicu unutar prva tri sata nakon moždanog udara, dok je 235 (20,4%) bolesnika primljeno je 3-6 sati nakon moždanog udara, 162 (14,1%) bolesnika između 6-12 sati, 111 (9,7%) između 12-24 sata, a 279 (24,3%) bolesnika primljeno je više od 24 sata nakon moždanog udara. Najčešće komplikacije do kojih je došlo tijekom liječenja bolesnika s moždanim udarom bile su: uroinfekt u 195 (17,0%), poremećaji svijesti u 177 (15,4%), pneumonija u 68 (5,9%), tromboembolije u 19 (1,7%) i dekubitusi u 11 (1,0%) bolesnika. U 30 (2,6%) upitnika nije navedeno kamo su bolesnici otpušteni nakon liječenja, 55 (4,8%) bolesnika premješteno je na druge odjele, 564 (49,0%) bolesnika otpušteno je kući, 170 (14,8%) bolesnika