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Intima-media thickness - why it is necessary to do it?

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Thickening of the artery wall is a hallmark of atherosclerosis. Intima-media thickness (IMT) can be measured by ultrasound, where the distance between a double-line reflex pattern representing the luminal-intimal and the medial-adventitial interfaces corresponds well with IMT measured in histological specimens [1]. IMT is a measure of early atherosclerosis and vascular remodeling that can be assessed quickly, non-invasively, and cheaply with high-resolution ultrasound. It is correlated with all traditional vascular risk factors and regarded as an 'intermediate phenotype' of atherosclerosis or a marker of subclinical organ damage. Carotid IMT independently predicts cardiovascular events [2]. It has thus been theorized that IMT measurements could aid in the prediction of cardiovascular disease (CVD) and thereby improve CVD prediction by traditional risk factors alone. However, recommendations regarding the use of carotid IMT for CVD risk prediction are conflicting. It has often been proposed that IMT be used as a screening tool to identify subjects at high vascular risk who need intensive risk factor management. New methods have recently been proposed to evaluate and compare predictive risk models [3-7], such as eTRACKING. Usefulness of eTRACKING is early detection of atherosclerosis, there is possibility to evaluate atherosclerosis before wall thickening and plaque appear, useful for assessment of the effect after treatment, but usefulness is expected for assessment of the effect after medication and removal of risk factors. eTRACKING is believed to have a very promising feature and perspectives for detecting cardiovascular disease in the early stages, not only in research facilities but also in clinical sites. Measured IMT and with use of eTRACKING we can predict which patient will get the symptomatic atherosclerosis, that is the reason why it necessary to do it.

Key words: intima-media thickness (IMT), eTracking

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Application of CHA2DS2-VAS and HAS-BLED scores in patients with stroke as well as screening of patients over 65 of age for atrial fibrillation

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Introduction. The CHADS2 score is a clinical prediction rule for estimating the risk of:

- stroke in patients with non-rheumatic atrial fibrillation (AF),
- a common and serious heart arrhythmia associated with thromb embolic stroke.

Screening study of patients older than 65 years was undertaken with the aim to examine how to determine whether the treatment with anticoagulation therapy or anti-platelet therapy is required.

Methods. Screening the patient older than 65 years with risk factors for atrial fibrillation.

Results. Screening included 1883 patients, 864 males and 1010 females. Atrial fibrilation was diagnosed in 151 patients, 85 males and 66 females. Among them 82% had hypertensio and atrial fibrilation and 17.2% diabetes mellitus. ICV and atiral fibrilation had 5,9% patients and chronic heart failure 10,6% patients.

Conclusion. There are clear recommendations for use CHA2DS2-VAS-Score and HAS-BLED-Scores in everyday praxis. The scores are simple and all doctors in the treatment chain make it easier to work and to determine whether or not treatment with anticoagulant therapy or anti-aggregation therapy is required.

Keywords: CHA2DS2-VAS-Score, HAS-BLED-Score, atrial fibrillation, anticoagulant therapy

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Uticaji hipokinetičkog sindroma na tendenciju razvoja individualnosti kod osoba sa prolaznim i hroničnim zdravstvenim problemima

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Uvod. Bez obzira na ubrzani tehnološki razvoj u svetu komfora života i mogućnost komunikacije, savremeni čovek je izložen sve više riziku navika, potreba i sopstvenog izbora načina života. Hipokinetički sindrom u vremenskom intervalu od 3 do 5 godina, bez obzira na zdravstveno stanje (prolazna i hronična), utiče na razvoj osnovnih nemogućnosti funkcionisanja organizma. Bez obzira da li je u pitanju funkcionalni ili motorički deficit, procenat mogućnosti praktičnog u odnosu na očekivano je sve veći

Metode. Uzorak ispitanika sačinjavaju odrasle osobe iz urbane sredine, koje imaju potrebu za telesnim vežbanjem, bilo da se radi o početnicima u rekreaciji, rekreativcima ili profesionalnim grupama. Ispitivanjem je obuhvaćeno 90 ispitanika, od čega je 55 žena i 35 muškaraca, uzrasta između 24 i 44 godine. Od morfoloških karakteristika merene su: telesna visina, telesna masa, obim grudnog koša, obim struka, obim kukova, obim bokova, obim nadlaktice, obim podlaktice, obim natkolenice, obim potkolenice. Navedene karakteristike su merene po standardnoj metodologiji Internacionalnog biološkog programa – IBP. Kardio test je rađen na nivou 3 na 65 – 70 obrtaja pedala u minuti. Puls je uziman kao inicijalni, u miru, u toku svaka 2 minuta rada na trenažeru i kao krajnji. Meren je i prosečan, kao i maksimalni puls u toku vožnje od 12 minuta i posle oporavka. Merenje je sprovedeno u Studiju No1 u zatvorenom prostoru. Za potrebe istraživanja merena je i sila i snaga muskulature. Posturalni status je utvrđen sistematskim lekarskim pregledom koji je realizovala ekipa lekara različitih specijalnosti (lekar opšte prakse, fizijatar, ortoped, hirurg).

Rezultati i zaključak. U analizi dobijenih podataka istraživanja koje smo sprovodili poslednjih 20 godina, kao i ovim istraživanjem, ukazuje se na značaj fizičkog statusa u odnosu na stepen invalidnosti i radne sposobnosti. Za očekivanje je da u narednom periodu hipokinetički sindrom značajno utiče na formiranje invalidnosti i njegovom progresivnom uvećanju. Kinetički programi se koriste kao dijagnostika, prevencija, a značajnija uloga je terapija. Nezamisliv je bilo kakav oblik lečenja bez prisustva kinetičkih programa što ima za cilj smanjenje stepena invalidnosti, usporenje progresije degenerativnih procesa i održavanje vitalnosti organizma u što dužem vremenskom intervalu. Jedini način da se to postigne jesu trenažne tehnologije koje imaju utemeljenu naučnu doktrinu, merljivu primenjenost i jasan rezultat. S obzirom na upozorenje Svetske zdravstvene organizacije i rezultate dobijene u neposrednoj praksi, svaka improvizacija, bez obzira na postignuti rezultat, je neprihvatljiva. Improvizovanim radom se dobijaju improvizovani rezultati. Utvrdili smo, posmatrajući kroz duži vremenski interval, precizan tehnološki proces koji podjednako tretira i funkcionalni i motorički status.

Ključne reči: hipokinetički sindrom, invalidnost, kinetički programi

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Kada hipertenzija može da znači više? Hipertenzivna kriza kod bolesnika sa bezbolnom hroničnom nerupturiranom Stanford B disekcijom aorte

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Tragedije života su uglavnom arterijske.
William Osler

Uvod. Hronična disekcija aorte sa trombozom lažnog lumena može biti uzrok hipertenzije koja se teško reguliše. Cilj prikaza bolesnice sa bezbolnom hroničnom nerupturiranom Stanford B disekcijom aorte je da se obrati pažnja na ovaj uzrok hipertenzije.

Prikaz bolesnika. Pacijentkinja u dobi od 54 godina koja je nakon više javljanja u Službu hitne medicinske pomoći u toku jednog dana te nekoliko pokušaja snižavanja krvnog pritiska standardnim protokolima, upućena na bolničko liječenje. Brzo se utvrđuje da se radi o atipičnoj hipertenzivnoj krizi po tipu emergencije. Od faktora rizika kod pacijentkinje su prisutni dugogodišnja hipertenzija, pušenje, povišene koncentracije lipida u krvi. Odmah nakon urađenih laboratorijskih analiza dežurni ljekar samostalno uradi ultrazvuk abdomena. Tokom pregleda nalaze se znaci disekcije abdominalne aorte, te se pacijentkinja odmah upućuje na CT abdomena, a naknadno i toraksa. Otkrivena je velika hronična, disekantna, nerupturirana aneurizma sa razvijenom trombozom po tipu Stanford B. Indikuje se hitan premještaj pacijentkinje u bolnicu sa vaskularnom hirugijom, gdje će se pristupiti tretmanu nađenog oboljenja. Pacijentkinji je kao krajnja terapija urađena TEVAR procedura, krvni pritisak je dobro regulisan i ona se sada odlično osjeća. Hronične disekcije aorte su često asimptomatske i otkrivaju se slučajno, prilikom dijagnostike drugih oboljenja. Tromboza lažnog lumena uz značajnu redukciju pravog lumena, može biti razlog pojave veoma visokih vrijednosi krvnog pritiska. Komplikovane disekcije aorte tipa Stanford B imaju veliku intrahospitalnu smrtnost.

Zaključak. Prikaz slučaja pacijentkinje upućuje da kod pacijenata sa rizičnim profilom, te hipertenzijom koja se teško reguliše, treba razmišljati i o aortnoj disekciji, a pravovremena sonografija, koja je lako dostupna, neinvazivna i jeftina, je od velikog značaja u postavljanju ispravne dijagnoze.

Ključne riječi: hipertenzivna kriza, bezbolna hronična Stanford B diskecija aorte

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Učestalost faktora rizika za kardiovaskularna oboljenja radno sposobnog stanovništva u odnosu na pol i starosne grupe

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Uvod. Kardiovaskularne bolesti vodeći su uzrok umiranja u većini razvijenih zemalja ali i u mnogim zemljama u razvoju. Faktori rizika za razvoj kardiovaskularnih bolesti obuhvataju promjenljive i nepromjenljive faktore. Nepromjenljivi faktori su oni na koje se ne može uticati, gdje se ubrajaju genetička predispozicija, pol i starost. Na promjenljive faktore može se uticati, a prema Američkoj asocijaciji za srce (AHA – American Heart Association) ti faktori su: povišen krvni pritisak, povišen nivo glukoze u krvi, pušenje, indeks tjelesne mase (BMI – Body Mass Index), smanjena fizička aktivnost, nepravilna ishrana i povišen ukupni holesterol. Cilj ovog istraživanja bio je utvrditi učestalost faktora rizika kardiovaskularnih bolesti u dijelu populacije radno sposobnog stanovništva šireg područja grada Banja Luka te predložiti adekvatne preventivne mjere.

Metode. Uzorak ispitivane populacije obuhvatio je uzrasnu kategoriju radno sposobnog stanovništva starosti od 18 do 60 godina sa šireg područja grada Banja Luke. Analizom je obuhvaćeno ukupno 68 pacijenata, a korišćena je metoda slučajnog uzorka pacijenata koji su se javljali na pregled u internističku ambulantu. Pacijenti su pregledani u periodu od oktobra 2017. godine do marta 2018. godine. Na osnovu podataka dobijenih anamnestički, fizikalnim pregledom, laboratorijskim analizama krvi, antropometrijskim mjerenjima, računanjem BMI te računanjem skora kardiovaskularnog rizika korišćenjem interaktivne elektronske verzije SCORE (Systematic Coronary Risk Evaluation) tabela za regione sa visokim rizikom, urađena je retrospektivna analiza.

Rezultati. Od ukupno 68 ispitanika (38 ženskog i 30 muškog pola) najviše ih je bilo u starosnoj grupi od 30 do 50 godina, njih 35 (52%). U starosnoj grupi od 50 do 60 godina bilo je 18 ispitanika (26,5%), a u grupi od 18 do 30 godina 15 ispitanika (22%). Pozitivnu porodičnu anamnezu imala su 42 ispitanika (62%). Povišene vrijednosi krvnog pritiska (> 140/90 mmHg) imala su 24 ispitanika (35%), dok je normotenzivnih bilo 44 (65%). Vrijednosti skora kardiovaskularnog rizika kretale su se od 1% (kod 48 ispitanika) do 17% (kod jednog ispitanika). Povišene vrijednosti HbA1c ustanovljene su kod 24 ispitanika (35%), dok je povišen ukupni holesterol konstatovan kod čak 64 ispitanika (94%). Podaci o vrijednostima triglicerida, LDL i HDL holesterola date su u radu. Pušači su bili zastupljeni sa 46% (31 ispitanik). Povećan in-

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deks tjelesne mase utvrđen je kod 46 ispitanika (68%). Pothranjen je bio jedan ispitanik (1,5%), 21 ispitanik (31%) bio je normalno uhranjen, 46 ispitanika (68%) je bilo prekomjerne tjelesne mase, a pretilih nije bilo. Rezultati ukazuju da su faktori rizika najučestaliji u starosnoj grupi od 50 do 60 godina. U radu je data detaljna analiza i komparacija svih prikupljenih podataka po polovima i starosnim kategorijama.

Zaključak. Rezultati ovih istraživanja ukazuju na jasnu potrebu za unapređenjem prevencije, prvenstveno na nivou primarne zdravstvene zaštite. Sama prevencija treba uključiti kako mjere bolje detekcije tako i kontrole bolesti. Veliki značaj u prevenciji ima zdravstvena edukacija pacijenata o faktorima rizika kao i efikasna motivacija za mijenjanje štetnih životnih navika, čime bi se redukovala učestalost kardiovaskularnih bolesti kako pojedinca tako i čitave populacije.

Ključne riječi: kardiovaskularna oboljenja, faktori rizika, radno sposobno stanovništvo

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Hipertenzija i pridruženi faktori rizika

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Uvod. Hipertenzija je jedan od vodećih faktora rizika za kardiovaskularni događaj i smrtnost u svijetu. Rizik se povećava sa povećanjem broja pridruženih faktora rizika. Cilj rada je bio da se kod bolesnika sa hipertenzijom odredi broj pridruženih faktora rizika i utvrdi koliki je kardiovaskularni rizik.

Metode. Analizirani su bolesnici sa hipertenzijom koje je liječio jedan tim porodične medicine.

Rezultati. Analiza je pokazala da i pored dobre kontrole pritiska, veliki broj pacijenata (oko 80%) ima pored povišenog pritiska i pridružene faktore rizika. Broj faktora rizika je vjerovatno i veći ako se uzme u obzir da kod nekih pacijenta nedostaju podaci, i da ima i drugih faktora koji ovim radom nisu obuhvaćeni.

Zaključak. Veliki broj pacijenata oboljelih od hipertenzije ima evidentirane i druge faktore rizika, kao i veliki broj neevidentiranih faktora rizika. Kardiovaskularni rizik raste sa porastom broja faktora rizika. Preporuka je da sekundarnom prevencijom radimo na otkrivanju faktora rizika, njihovoj redukciji i tako smanjenju kardivaskularnog rizika. Ova preporuka bi bila u potpunosti provedena ukoliko uključimo pacijenta u HISPA program, kojim bi individualnim pristupom pacijentu, kroz farmakološke i nefarmakološke mjere, radili na smanjenu ukupnog kardiovaskularnog rizika.

Ključne riječi: hipertenzija, faktori rizika, sekundarna prevencija, kardiovaskularni rizik

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Impact of contemporary predictive scores on prevention of cardiovascular disease

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It is widely known that over the last decade cardiovascular disease has become the leading cause of death worldwide. The Framingham Heart Study (1948) remains the most famous and cited research on epidemiology of cardiovascular disease. Most of the now-common knowledge concerning heart disease, such as the effects of diet, exercise, and common medications, such as aspirin, is based on this longitudinal study. The Framingham Risk Score (2008) is a gender-specific algorithm used to estimate the 10-year cardiovascular risk of an individual. The Framingham Risk Score was first developed based on data obtained from the Framingham Heart Study, to estimate the 10-year risk of developing coronary heart disease. The SCORE project was initiated to develop a risk scoring system for use in the clinical management of cardiovascular risk in European clinical practice. The SCORE system (2003) estimated the 10-year risk of a first fatal atherosclerotic event (heart attack, stroke, aneurysm of the aorta, or other). In 2007 risk was given as a 10-year risk of cardiovascular death and not of cardiovascular events, fatal and non-fatal together. This is in contrast with other risk scoring systems as the Framingham score. A 5% SCORE risk of cardiovascular death is equal to a 10– 25% of value calculated by using the Framingham risk score for total cardiovascular risk. Equivalent contributions of prevention initiatives (Framingham Risk Score, Score system), pharmaceutical developments and technological improvements, have led to an important success in the reduction of mortality related to cardiovascular diseases.

Keywords: prevention, predictive risk scores, cardiovascular disease

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Metode odvikavanja od pušenja

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Uvod. Liječenje pušača se smatra zlatnim standardom prevencije masovnih hroničnih bolesti. Na raspolaganju je niz metoda koje se koriste u podršci odvikavanja od pušenja, pri čemu je njihova djelotvornost, sudeći prema istraživanjima, različita. Cilj rada je opisati karakteristike metoda koje se najčešće primjenjuju u podršci odvikavanja od pušenja.

Metode. U radu su opisane metode za odvikavanje od pušenja, bilo da su preporučene od strane Svjetske zdravstvene organizacije (SZO) (savjetovanje, farmakoterapijska sredstva, telefonska linija), ili je riječ o metodama koje izazivaju interes stručne i opšte javnosti (e-cigareta, akupunktura), a na osnovu pregleda literature objavljene u posljednjih pet godina.

Rezultati. Intervencija 5A, razvijena od strane Američke javne zdravstvene službe, predstavlja smjernice najbolje prakse savjetovanja pušača, podržane i od strane SZO. U pogledu farmakoterapije, nadomjesna terapija nikotinom, bupropion i vareniklin, odobreni su za ovu svrhu u SAD i Evropi. Citizin je odobren za upotrebu u Rusiji i Istočnoj Evropi. Pravilna upotreba ovih lijekova pokazala je značajno povećanje stope prestanka pušenja kod teških zavisnika o nikotinu. Nalazi istraživanja u pogledu korišćenja e-cigarete kao sredstva za pomoć u prestanku pušenja su oprečna. Čini se da su ipak najupečatljiviji nalazi studije zasnovane na najvećem reprezentativnom uzorku korisnika e-cigareta u SAD do sada, koja je zaključila da je korištenje e-cigareta povezano s povećanjem prestanka pušenja na populacionom nivou. U pogledu akunpunkture, nema dokaza da akunpuktura utiče na prestanak pušenja.

Zaključak. Djelotvornost metoda odvikavanja od pušenja je različita, a metode preporučene posljednih godina zahtjevaju dodatne provjere.

Ključne riječi: pušenje, metode odvikavanja, intervencija 5A

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Frequency of persistent atrial fibrillation in patients with arterial hypertension and myocardial infarction

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Introduction. Atrial fibrillation (AF) is the most common permanent cardiac arrhythmia present in about 0.5-1.0% of the general population under 60 and 4% over 60 years of age. Large epidemiological studies find that the prevalence of AF in the general population is between 1.5% and 6.2%. Arterial hypertension is considered the most common cause of AF, which increases the possibility of its formation by 40-50%. Coronary disease increases the risk of AF 2 to 4 times. The incidence of AF is 6.5-7.9% in the cohort of patients with thrombolysis or percutaneous coronary intervention (PCI). The aim of this study was to investigate the frequency of persistent AF in patients with arterial hypertension and myocardial infarction.

Methods. The study included 151 patients with arterial hypertension and myocardial infarction (57.7 ± 8.9 years), 125 (82.8%) men and 26 (17.2%) women. In all, clinical examination, continuous electrocardiographic control, laboratory, echocardiographic and angiographic examinations were applied.

Results. Persistent AF existed in 8.6%, paroxysmal AF 2.6%, total with persistent and paroxysmal AF 11.3% of patients. The age of patients with persistent AF was 61.4 ± 8.0 years, without AF 57.5 ± 8.8 years ($p > 0.05$). In the group without AF, 81.3% were men and 18.7% were women, and in the persistent AF group, they were all males. The frontalization of infarction (anterospetal, anterior, anterolateral) was the most frequent in the group with persistent AF (69.2%) and in the group without AF (53.9%) ($p > 0.05$). Myocardial reinfarction had 38.5% of patients with persistent AF and 14.2% without AF ($p > 0.05$). A three-vessel coronary disease has 84.6% of patients with persistent AF and 44.7% without AF ($p < 0.01$). Left ventricular ejection fraction in the persistent AF group is 39.5 ± 7.5%, without AF 52.5 ± 8.7% ($p < 0.01$). With diabetes, 84.6% of patients with persistent AF and 34.3% did not have AF ($p<0.01$). Patients with persistent AF were subjected to surgical revascularization (CABG) 53.8% of cases, PCI 23.1%, medically 23.1%, and those without AF – CABG 40.3%, PCI 43.3% and medically 11.9% cases. There is no significant difference in the treatment of CABG, PCI, and medically between patients with persistent AF and without AF ($p > 0.05$). Cardiac insufficiency was found in 61.5% of patients with persistent AF and 8.9% without AF ($p < 0.001$).

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Conclusion. The incidence of persistent AF in patients with hypertension and myocardial infarction is 8.6%. Patients with persistent AF are male, have a significantly more frequent three-vessel disease, heart failure, diabetes, and a lower ejection fraction of the left ventricle than patients without AF. Patients with persistent AF have a more frequent myocardial infarction, a re-infarction, and are more often subjected to CABG than patients without AF, but the differences are not significant.

Keywords: atrial fibrillation, arterial hypertension, myocardial infarction

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Homocysteine serum levels in patients with arterial hypertension with and without myocardial infarction

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Introduction. Previous studies have shown that serum levels of homocysteine are elevated in hypertensive patients and that hyperhomocysteinemia may play a role in the development of elevated blood pressure. Several studies have shown a clear correlation between the total serum homocysteine and the incidence of coronary disease. The aim of this study was to investigate the level of serum homocysteine in patients with arterial hypertension, with and without myocardial infarction, and the possible influence and significance of homocysteine in the development of hypertension and coronary disease.

Methods. The study included 72 patients, 16 with hypertension (55.7 ± 10.2 years), 35 with hypertension and myocardial infarction (59.1 ± 8.4 years) and 21 subjects without hypertension and infarction (46.8 ± 9.7 years). The homocysteine serum level was determined in all subjects. by the chemiluminescence method. Normal values are 5-14 μmol/L.

Results. There was no significant difference in age between patients with hypertension and patients with hypertension and infarction ($p > 0.05$). Patients with hypertension were significantly older than those of the control group ($p < 0.05$), as well as patients with hypertension and infarction compared to the control group ($p < 0.05$). The mean homocysteine serum level in patients with hypertension is 12.23 ± 3.73 μmol/L, with hypertension and infarction of 14.12 ± 3.73 μmol/L and control group 9.74 ± 2.55 μmol/L. The mean homocysteine level of all patients with hypertension, with and without infarction, is 13.57 ± 4.23 μmol/L and is significantly higher than the level of homocysteine control group ($p < 0.01$). Serum levels of homocysteine in patients with hypertension and patients with hypertension and infarction are significantly higher compared to the control group ($p < 0.05$; $p < 0.01$). There is no significant difference in homocysteine levels between patients with hypertension and patients with hypertension and infarction ($p > 0.05$). Hyperhomocysteinemia (> 14.0 μmol/L) was found in 31.2% of patients with hypertension, 37.1% with hypertension and infarction, and 4.8% of control group subjects. Patients with hypertension and hypertension and infarction have a significantly higher incidence of hyperchomocysteinemia than those of the control group ($p < 0.01$). There was no significant difference in the incidence of hyperhomocysteinemia between patients with hypertension and hypertension and infarction ($p > 0.05$).

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Conclusion. Hyperhomocysteinemia is significantly more frequent and serum level of homocysteine is significantly higher in patients with hypertension, with and without myocardial infarction as compared to the control group. Patients with hypertension and infarction have a higher incidence of hyperchomocysteinemia and a higher level of homocysteine compared to patients with hypertension, but the difference is not significant. A higher incidence of hyperchomocysteinemia and a higher serum level of homocysteine in patients with hypertension, with and without myocardial infarction in comparison with control group, indicates the importance of homocysteine in the pathogenesis of hypertension, atherosclerosis and coronary disease.

Keywords: homocysteine, arterial hypertension, myocardial infarction

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C-reactive protein level in patients with arterial hypertension with and without myocardial infarction

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Introduction. C-reactive protein (CRP) is a sensitive marker of inflammation and an independent predictor of future cardiovascular events. Several studies have observed an increase in CRP serum levels in patients with arterial hypertension and confirmed the existence of an independent association between hypertension and inflammation. It was indicated that inflammation could play a key role in the pathogenesis of acute coronary syndrome. The aim of the study was to examine the level of serum CRP in patients with hypertension, with and without myocardial infarction, and the possible impact and significance of CRP in the development of hypertension and coronary disease.

Methods. The study included 72 patients, 16 with hypertension (55.7 ± 10.2 years), 35 with hypertension and myocardial infarction (59.0 ± 8.4 years) and 21 subjects without hypertension and infarction (46.8 ± 9.7 years). In all subjects, the CRP serum level was determined by the turbidimetry method. Normal values are up to 5.0 mg /L.

Results. Patients with hypertension were significantly older than those of the control group ($p < 0.05$) as well as patients with hypertension and myocardial infarction ($p < 0.05$). The mean level of CRP in patients with hypertension without myocardial infarction was 3.75 ± 3.37 mg/L, with hypertension and myocardial infarction of 12.72 ± 9.81 mg/L and in control group 1.71 ± 1.82 mg L. Patients with hypertension, without myocardial infarction, have significantly higher CRP levels than the control group ($p < 0.05$), as well as patients with hypertension and myocardial infarction ($p < 0.01$). Patients with hypertension and myocardial infarction have significantly higher serum levels of CRP than those with hypertension without infarction ($p < 0.01$). The mean CRP level of all subjects with hypertension with and without myocardial infarction is 10.03 ± 9.38mg / L and is significantly higher than the control group CRP serum level ($p < 0.01$). Elevated CRP serum level (> 5.0 mg / L) was found in 18.7% of hypertensive patients, 65.7% of patients from the group with hypertension and myocardial infarction and in 4.7% of control group subjects. Patients with hypertension without and with myocardial infarction have significantly higher incidence of elevated CRP values compared to control group subjects ($p < 0.05$; $p < 0.01$). Patients with hypertension and myocardial infarction have significantly higher incidence of CRP compared to those with hypertension without infarction ($p < 0.01$).

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Conclusion. Patients with hypertension, with and without myocardial infarction, have significantly higher incidence of elevated serum CRP level and significantly higher CRP levels compared to the control group. Patients with hypertension and myocardial infarction have a higher incidence of elevated CRP and a higher serum level of CRP than those with hypertension without infarction, but the differences are not significant. The higher incidence of elevated CRP levels and higher CRP concentrations in patients with hypertension, with and without infarction, as compared to the control group, indicate the importance of CRP and inflammation in the pathogenesis of hypertension, atherosclerosis, and coronary disease.

Keywords: C-reactive protein, hypertension, myocardial infarction

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Risk factors for non-ST-segment elevation myocardial infarction

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Introduction. The most common cause of myocardial ischemia is atherosclerotic coronary artery disease seen in 90% of patients. Risk factors positively correlate with the emergence, development and subsequent complications of atherosclerotic disease.

Methods. In order to determine the frequency of usual risk factors for coronary artery disease in patients with non-ST-segment elevation myocardial infarction (NSTEMI), with regard to sex, a retrospective study was conducted, involving 600 patients treated for NSTEMI at the Clinic for Internal Medicine of the University Clinical Centre Tuzla in the period from June 2013 to December 2017.

Results. In male patients, the leading risk factor was smoking rating of 74%, while in female patients it was hypertension, at 67%.

Conclusion. Quitting smoking is one of the most efficient measures of secondary prevention, since it decreases re-infarction risk for 50%. The knowledge of risk factors for coronary disease, as well as the success in their reduction can highly contribute to an overall feeling of contentment and significantly raise patients' self-confidence.

Keywords: risk factors, coronary disease, hypertension

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Uloga "ankle-brachial" indeksa u dijagnostici bolesti perifernih arterija

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Uvod. Periferna arterijska bolest (PAD) je aterosklerotska bolest karotidnih, vertebralnih, renalnih, mezenteričnih i arterija gornjih i donjih ekstremiteta. Polovina oboljelih od PAD ima i koronarnu arterijsku bolest. Samo trećina bolesnika sa PAD ima simptome bolesti. Faktori rizika za nastanak PAD su životna dob iznad 50 godina, hipertenzija, dijabetes, pušenje i dislipidemija. Ankle-brachial index (ABI) – predstavlja odnos sistolnog pritiska na članku i sistolnog pritisak na nadlaktici. Mjerenje ABI klinički je standard za dijagnostiku PAD. Postoji obrnuto proporcionalna povezanost između vrijednosti ABI indeksa i rizika od kardiovaskularnih bolesti. ABI se smatra i pokazateljem proširenosti aterosklerotske bolesti. Nizak ABI (< 0,90) povezan je sa povećanim rizikom za kardiovaskularni morbiditet i mortalitet. Prediktor je ateroskleroze prvenstveno koronarnih i karotidnih arterija. ABI > 1,3 upućuje na kalcifikaciju zida arterija i perifernu vaskularnu bolest i, takođe, je povezan sa povećanim mortalitetom. Cilj rada je identifikovati pacijente sa ABI < 0,9 i ABI > 1,3 i uputiti ih na dalju dijagnostiku i liječenje.

Metode. Provedeno je prospektivno istraživanje u kom je pacijentima koji imaju neki od faktora rizika za PAD odredi ABI.

Rezultati. Određen je ABI kod 113 pacijenata sa jednim ili više faktora rizika za PAD. Vrijednosti ABI < 0,9 je utvrđena kod 7, a ABI > 1,3 kod 3 pacijenta od kojih je samo jedan pacijent imao tegobe i na tretmanu je vaskularnog hirurga.

Zaključak. ABI je neinvazivna metoda u skriningu i dijagnostici PAD. Značajan je marker kardiovaskularnih bolesti. Izmjerene vrijednosti ABI <0,9 i >1,3 zahtijevaju dalju dijagnostičku obradu kao i intenzivno provođenje mjera sekundarne prevencije.

Ključne riječi: periferna arterijska bolest, ankle-brachial index, ateroskleroza

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Karakteristike srčane insuficijencije kod gojaznih osoba

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U poslednje vreme sve se češće spominje gojaznost kao faktor rizika za remodelovanje leve komore i nastanak srčane insuficijencije. Rizik za pojavu srčane insuficijencije se povećava za 5% kod muškaraca i 7% kod žena za svaku jedinicu povećanja indeksa telesne mase (BMI). Gojaznost je povezana sa češćom hipertrofijom leve komore i njenom dilatacijom, što su prekursori srčanog popuštanja. Uzroci češće pojave srčane insuficijencije kod gojaznih osoba su mnogobrojni. Prevalencija metaboličkog sindroma, koronarne bolesti, dijabetesa, arterijske hipertenzije i hiperlipoproteinemija raste sa porastom indeksa telesne mase. Povišen BMI udružen je sa izmenjenim remodelovanjem i hipertrofijom leve komore, neurohormonalnom aktivacijom, povećanim oksidativnim stresom i sistemskom inflamacijom. Sve su češća mišljenja da je gojaznost nezavisni prediktor nastanka srčane insuficijencije i sve je šire prihvaćeno shvatanje o postojanju kardiomiopatije gojaznih. U tom smislu se pominju opstruktivna slip apneja kao uzrok disfunkcije desne komore, sekrecija jednog kardiodepresornog proteina u masnom tkivu i efekti adipokina. Dijagnoza srčane insuficijencije kod gojaznih osoba se često ne postavlja na vreme. Mnogi simptomi i znaci srčane insuficijencije su prisutni i kod gojaznih osoba bez srčane insuficijencije, a mnoge znake je teško registrovati. Nivo BNP-a je snižen kod gojaznih osoba, a često postoji mikrovoltaža na EKG-u i otežan je ehokardiografski pregled. Redukciju telesne težine kod gojaznih osoba sa srčanom insuficijnecijom treba razmatrati u cilju prevencije progresije srčane insuficijencijom i sprečavanja pogoršanja simptoma (uz određeni oprez i rezervu). Promena načina života i ishrane, prevencija dijabetesa, posebno kod gojaznih osoba, može značajno redukovati rizik od nastanka srčane insuficijencije. Terapija srčane insuficijencije kod gojaznih se, kao i kod ostatka populacije, sastoji iz opštih mera lečenja, medikamentne terapije, invazivnih kardioloških terapijskih mera, kao i hirurškog lečenja. Postoje sugestije da osobe sa prekomernom telesnom težinom i gojaznošću mogu imati bolju prognozu u odnosu na one koji gube telesnu težinu. Udruženost između gojaznosti, poznatog kardiovaskularnog faktora rizika, i boljeg kliničkog ishoda bolesnika sa srčanom insuficijencijom (suprotno epidemiologiji) naziva se paradoksom gojaznosti (obesity paradox).

Ključne reči: srčana insuficijencija, gojaznost

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Specifičnosti praćenja efikasnosti antikoagulantne terapije u urbanoj i ruralnoj sredini

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Uvod. Antikoagulantna terapija se često koristi u ambulantama porodične medicine a najčešće kod pacijenata oboljelih od nevalvularne atrijalne fibrilacije. Učinak terapije se mjeri putem INR (engl. International normalized ratio). Cilj rada je izmjeriti prosječne vrijednosti INR-a u pacijenata oboljelih od nevalvularne atrijalne fibrilacije.

Metode. Istraživanje je retrospetkivno-prospektivno i sprovedeno je u vremenskom periodu od 01. 01. 2017. do 31.12. 2017. godine i obuhvatilo je 176 pacijenata iz 5 timova porodične medicine. Od ukupnog broja pacijenata njih 132 je ispunjavalo kriterijume za uključivanje u istraživanje. Kriterijumi za uključivanje bili su: pacijenti stariji od 18 godina, nalaz interniste/kardiologa, elektrokardiografski nalaz i/ili ehokardiografski nalaz, kao i nalaz INR-a. Od materijala je korišćen elektronski karton pacijenata.

Rezultati. Prosječna starost pacijenata na antikoagulantnoj terapiji je 73 godine. Broj izmjerenih vrijednosti INR u toku jedne godine je 8,3 po bolesniku od čega je 70% u terapijskom opsegu. Zapaža se značajna razlika između urbane i gradske sredine u smislu praćenja i kontrole INR-a. Samo 30% pacijenata u ruralnoj sredini ima regularan broj praćenja INR-a naspram 70% pacijenata iz urbane sredine. Regulisanost INR-a je veća kod pacijenata u urbanoj sredini nego u ruralnoj.

Zaključak. Najveći broj pacijenata ima optimalne vrijednosti INR-a ali da bi se to postiglo potreban je veći broj mjerenja INR-a. Zapaža se značajna razlika između urbane i ruralne sredine kako u broju kontrolnih vrijednost, tako i broju regulisanosti INR-a.

Ključne riječi: antikoagulantna terapija, efikasnost, urbana i ruralna sredina

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Prevention of cardiovascular diseases in family medicine practice

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Prevention of cardiovascular (CV) diseases in family medicine practice include the assessment of overall cardiovascular risk, blood pressure measurements, dyslipidemia detection, glycemia, smoking status, body mass index (BMI) in patients over 18 years old, and counseling about proper nutrition, everyday moderate physical activity and stress reduction. The overall CV risk is determined using the SCORE (Systematic Coronary Risk Evaluation, 2012) charts to determine if the risk of a fatal CV event in a 10-year period is low (SCORE < 1%), moderate (SCORE 1-5%), high (SCORE 5-10%) or very high (SCORE > 10%). If the risk is low or moderate, non-pharmacological treatment is recommended, while pharmacological therapy is applied in high and very high CV risk. High blood pressure is the most common risk factor for myocardial infarction and stroke. The family doctor carries out the recommendations from the Program for the Prevention of Non-Communicable Diseases in the Republic of Srpska (2003), measuring blood pressure for all persons over 18 years old once in every two years, and than follow the actual European recommendations from 2013 (European Society of Hypertension/European Society of Cardiology - ESH/ESC). Smoking is one of the most significant risk factor for ischemic heart disease, and the role of a family doctor in daily counseling about quitt smoking is important. Hyperlipidemia is a significant risk factor for the onset of atherosclerosis and other CV diseases. The Family Medicine Doctor, through the Prevention Program, checks the total cholesterol and glycemia serum levels of patients with BMI ≥ 30 kg/m² and high blood pressure, while glycemia is checked if family history of diabetes is positive. It further follows the European Guidelines on CVD Prevention, 2012 and the ADA/ EASD 2016 Guidelines (American Diabetes Association/ European Association for the Study of Diabetes). Treatment of obesity, in order to reduce BMI and waist volume, contributes reduction of CV diseases and co-morbid diseases. Prevention on the Primary Health Care level is crucial for reducing CV diseases.

Keywords: prevention, cardiovascular diseases, family medicine

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Ambulatory blood pressure in diagnosis of secondary hypertension

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The U. S. Preventive Services Task Force (USPSTF) recommends screening for high blood pressure in adults aged 18 years or older. The USPSTF found convincing evidence that ambulatory blood pressure monitoring (ABPM) is the best method for diagnosing hypertension. The USPSTF recommends ABPM as the reference standard for confirming the diagnosis of hypertension. Evidence is now available from longitudinal studies that ABPM is a much stronger predictor of CV morbidity and mortality than conventional measurement. It was reported in the literature that the lack of a resting time blood pressure decrease of ≥10% was associated with increased cardiovascular risks. It has been suggested that all forms of secondary hypertension, including renal, renovascular, glucocorticoid and mineralocorticoid excess, pheochromocytoma, hyperthyroidism, diabetic neuropathy, sleep apnea syndrome, autonomic dysfunction, brainstem lesions, acromegaly, hyperparathyroidism, hyperprolactinemia, and toxaemia in pregnancy are associated with the loss of the normal nocturnal fall in blood pressure. ABPM does help in finding patients with white coat, masked and secondary hypertension, safe many patient time and unnecessary tests and treatment.

Keywords: ambulatory blood pressure monitoring, hypertension

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Monitoring quality of treatment of patients with cardiovascular risk in Primary Health Center Bijeljina

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Introduction. In the last 20 years cardiovascular (CV) diseases were the leading cause of morbidity and mortality in the whole world and 31% of total mortality worldwide is caused by CV disorders. In the Republic of Srpska, this percentage is around 48%. Prevention of risk factors and management of patients with CV diseases contributes to the reduction of mortality related to these diseases. The effects of these activities can be measured by quality indicators. Measuring the quality of health care can be done at the level of the system, institution, organizational unit or at the level of the clinical entity, and the obtained results are the basis for the definition of activities for improvement. Valid data is required for the reliability of the calculated indicators. The aim of the study is to determine the impact of education on proper data entry into electronic medical records and management of patients with cardiac risks to the quality of treatment in the Department for Family Medicine at the Primary Health Centre Bijeljina (PHC Bijeljina) for a period of two years.

Methods. In this evaluation study, all 56 family medicine teams (FMTs) from the PHC Bijeljina were included, and the quality of treatment for patients with CV risk (all registered patients in all FMT older than 18 years) were compared before and after the conducted education. Observation periods: one year before the conducted education (01. 07. 2015 - 30. 06 .2016) and a year after education (01. 07. 2016 - 30. 06. 2017). The quality of medical treatments for patients with CV diseases in PHC Bijeljina was measured using a set of indicators for monitoring patients with the following risk factors: hypertension, diabetes mellitus type 2 (DM type 2), hyperlipidaemia, smoking and body weight.

Results. Comparison of the values of the observed indicators of pre and post education process indicates the improvement of the quality of treatment of patients with CV risks in PHC Bijeljina. Percentage of HbA1c annual measurements in patients with DM type 2 for both periods of observation amounted to slightly more than 50%, while the percentage of these patients with HbA1c over 7.0% in the last 12

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months was in a slight decline during a year after education process. In addition, the percentage of patients with hyperlipidaemia, whose last observed value was greater than 3.4 mmol/L, shows the tendency of decline in the second observational period. For indicators related to the recording of smoking status and the measured body weight among all registered population, the growth was observed in comparison to the period before education. The percentage of patients with hypertension, with the recorded blood pressure in the last 12 months during both periods, amounts to slightly more than 70%, with an increase in the percentage of patients whose last measured value of blood pressure was less than 140/90 mmHg.

Conclusion. This study demonstrated the efficacy of an educational intervention to improve cardiovascular risk factors screening by primary health professionals.

Keywords: cardiovascular risk, education, quality of health care

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Arrhythmia in women: causes and consequences

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Introduction.The study was undertaken with the aim to define the incidence of cardiac arrhythmia in women aged 20-60 years, determine the most commonly associated disease and find out a causal link.

Methods. By inspecting the files of patients, who had visited the Doboj Health Center in the past three years with the diagnosis of arrhythmia, it was determined how many women with arrhythmia were in a working-active period. Also, we examined how many associated diseases were present in these patients and which were the most common.

Results. Out of a total of 3,611 individuals with diagnosis of arrhythmia, 2,112 (58.47%) were females, half of which (20.17%) aged 20-60 years. Among female subjects,233 (57.38%) with arrhythmia had diagnosis of anxiety or depression, 125 (30.78%) hypertension, 105 (25.86%) suffered from hypo- or hyperthyreosis, 58 (14.28%) had anemia, 46 (11.33%) vertigo episodes, 91 (22.48%) headaches, 8 (1.97%) had myocardial infarction, 5 (1.25%) cerebral stroke, 18 (4.4%) angina pectoris, 18 (4.4%) prolapse of mitral valve, 7 (1.72%) deep vein thrombosis and 21 (6.4%) had diabetes. Out a total of 406 women, 239 (58.86%) were unemployed, 138 (33.99%) employed, and retired (5.91%). In the category of patients from 20 to 35 years there were 59 (14.53%) of whom 45 were employed (76.27%) and 13 were unemployed (22.03%); between 35 and 50 years there were 142 (35%) of whom 70 (49.29%) were unemployed, and the same number of employed and from 50 to 60 years there were 205 (50.5%) patients of which 124 (60.48%) unemployed, 55 employed (26.82%), 23 (11.21%) retired. The antiarrhytmic therapy used 257 (73.15%) patients: in the youngest category 32 (54%), in the middle 101 (71%) and in the oldest 165 (80%) patients. Also, in the youngest group there were 24 (40.06%) suffering from anxiodepressive disorder, 16 (35%) unemployed and 7 (53%) employed, 69 (48%) in the middle category, 33 (47.1%) unemployed and 34 (48.6%) employed, and in the oldest 99 persons, 67 (54%) are unemployed, 21 (38%)employed, 10 (10.1%)pensioners. The 105 (25.86%) patients had the disease of the

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thyroid gland, in the youngest 7(11.86%), in the midle 39 (27.46%) and 59 (28.78%) in the oldest category. It is interesting to note that in the youngest category ratio between unemployed and employedwas 4: 3, in the middle 17:22 and in the oldest 36:16. The association of anemia and thyroid gland disease was present with 147 patients (36%).

Conclusion. Arrhythmia in the working-active period of women' life is pronounced. The most common is arrhythmia associated with anxiodepressive disorders, disease of the thyroid gland, and hypertension. The main symptoms that may indicate that it is necessary to examine arrhythmia are headache and vertigo. There is a need to work on prevention of stress, regular controls and screening of the thyroid gland, as well as to pay attention to socioeconomic circumstances, because more than half of the patients are unemployed. In this category of patients there is a small percentage of those in whom inborn illness would be the cause.

Keywords: arrhythmia ,women, associated disease