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METABOLIČKI SINDROM U POPULACIJI PSIHIJATRIJSKIH PACIJENATA U NOVOM SADU

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Sažetak: CILJEVI: Cilj rada je određivanje prevalencije metaboličkog sindroma (MetS) u uzorku hospitalizovanih pacijenata i povezati ga sa sociodemografskim karakteristikama, psihijatrijskom dijagnozom i psihofarmakoterapijom. **METODE:** Studija je zamišljena kao retrospektivna kohortna studija. Podaci od interesa za ovo istraživanje prikupljeni su iz istorije bolesti hospitalizovanih pacijenata na Klinici za psihijatriju KCV u periodu od januara 2018. godine do januara 2020. godine. **REZULTATI:** Od ukupno hospitalizovanih 2409 bolesnika Klinici za psihijatriju, kriterijume za metabolički sindrom je imalo 1327 bolesnika, sa visokom prevalencom od 55,1% među ovom populacijom. Iako je u uzorku više ispitanica (55,7%), dominira muški pol sa dijagnozom MetS (58,1%). Podaci pokazuju da se prevalencija metaboličkog sindroma statistički značajno povećava sa godinama psihijatrijskih pacijenata. Međutim, zastupljenost metaboličkog sindroma u ispitivanoj populaciji mlađoj od 30 godina je oko 33%. Među pacijentima sa nezavršenom osnovnom školom, 67% ima dijagnozu metaboličkog sindroma, što je statistički visok značano više u odnosu na ostale obrazovne profile ($p < 0,001$). Uzorak studije pokazuje statistički značajno veću prevalenciju metaboličkog sindroma među pacijentima lečenim od psihotičnih poremećaja, sa čak 67% prevalencije. Terapija atipičnim antipsihoticima je najviše udružena sa metaboličkim sindromom u 67,5% bolesnika a zatim sledi kombinacija 2 ili više antipsihotika sa 60,7% ($\chi^2=26,99$, $p < 0,0019$). Abdominalna gojaznost je najjači prediktor odgovora da će ispitanici oboleti od metaboličkog sindroma, čiji je količnik verovatnoće logističkom regresijom 1,34. Drugi značajan prediktor se odnosi na trigliceridemiju, čiji je količnik verovatnoće 1,12. **ZAKLJUČAK:** Prevalencija metaboličkog sindroma kod psihijatrijskih pacijenata u Novom Sadu je alarmantno velika, u više od polovine 55,7% pacijenata posebno kod onih koji se leče od psihotičnih poremećaja i poremećaja raspoloženja i koriste atipične antipsihotike i kombinacije antipsihotika. U pacijent sa metaboličkim sindromom postoji dominacija muškog pola, niskog obrazovnog profila i prevalenca statistički značajno raste sa povećavanjem starosti psihijatrijskih pacijenata.

Cljučne reči: Abdominalna gojaznost, Metabolički sindrom, Mentalni poremećaji

UVOD

Masovne nezarazne bolesti su na prvom mestu po mortalitetu i morbiditetu u okviru opšte populacije. U ovu grupu bolesti prednjače metabolička oboljenja poput gojaznosti, šećerne bolesti i dislipidemija, koja su praćena povećanjem rizika za nastanak kardiovaskularnih i cerebrovaskularnih incidenata, te sledstvenim fatalnim ishodom. U populaciji psihijatrijskih pacijenata, međutim, poznato je da je stopa prevremene smrtnosti od svih uzroka daleko veća nego u opštoj populaciji. Studije su pokazale da je očekivani životni vek pacijenata sa značajnim psihijatrijskim poremećajima smanjen za 7 do 24 godine [1,2,3,4]. S druge strane, oko 60% prevremenih

smrti psihijatrijskih pacijenata nastaje zbog telesnih bolesti, predominatno zbog kardiovaskularnih bolesti. Rizik od kardiovaskularnih bolesti, povećan komorbiditetima poput šećerne bolesti, gojaznosti, ishemijske bolesti srca i moždanog udara je višestruko povećan u pacijenata sa više različitih psihijatrijskih bolesti poput psihotičnih poremećaja, poremećaja raspoloženja i anksioznih poremećaja [1,2,3,4,5].

Metabolički sindrom se definiše kao kombinacija više komorbidnih stanja poput abdominalne gojaznosti, povišenog arterijskog krvnog pritiska, sniženog „dobrog“, HDL holesterola, hipertrigliceridemije i hiperglikemije. Metabolički sindrom predstavlja fazu u razvoju kardiovaskularnih bolesti i

METABOLIC SYNDROME IN THE POPULATION OF PSYCHIATRIC PATIENTS IN NOVI SAD

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Summary: **OBJECTIVES:** The aim of this study is to determine the prevalence of metabolic syndrome (MetS) in a sample of hospitalized patients and to relate it to socio-demographic characteristics, psychiatric diagnosis and psycho-pharmacotherapy. **METHODS:** The study was conceived as a retrospective cohort study. Data of interest for this research were collected from the medical history of hospitalized patients at the Clinic for Psychiatry KCV in the period from January 2018 to January 2020. **RESULTS:** Out of a total of 2409 patients hospitalized at the Psychiatric Clinic, 1327 patients had criteria for metabolic syndrome, with a high prevalence of 55.1% among this population. Although there are more respondents in the sample (55.7%), males with a diagnosis of MetS (58.1%) dominate. The data show that the prevalence of metabolic syndrome increases statistically significantly with the age of psychiatric patients. However, the prevalence of metabolic syndrome in the study population younger than 30 years is about 33%. Among patients with incomplete primary school, 67% have a diagnosis of metabolic syndrome, which is statistically significantly higher than other compulsory profiles ($p < 0.001$). The study sample shows a statistically significantly higher prevalence of metabolic syndrome among patients treated for psychotic disorders, with as much as 67% prevalence. Therapy with atypical antipsychotics was most associated with metabolic syndrome in 67.5% of patients, followed by a combination of 2 or more antipsychotics with 60.7% ($\chi^2=26.99$, $p<0.0019$). Abdominal obesity is the strongest predictor of the response that the subjects will suffer from the metabolic syndrome, the quotient of which is 1.34 by logistic regression. Another important predictor refers to triglyceridemia, whose probability quotient is 1.12. **CONCLUSION:** The prevalence of metabolic syndrome in psychiatric patients in Novi Sad is alarmingly high, in more than half of patients, especially those treated for psychotic and mood disorders and using atypical antipsychotics and combinations of antipsychotics. In a patient with metabolic syndrome there is male dominance, low educational profile and the prevalence increases statistically significantly with increasing age of psychiatric patients

Keywords: Abdominal Obesity, Metabolic Syndrome, Mental disorders

INTRODUCTION

Mass non-communicable diseases are in the first place in terms of morality and morbidity within the general population. In this group of diseases, metabolic diseases such as obesity and diabetes predominate, which are accompanied by an increased risk of cardiovascular and cerebro-vascular incidents, and a consequent fatal outcome. In the population of psychiatric patients, however, it is known that the rate of premature mortality from all causes is far higher than in the general population. Studies have shown that the life expectancy of patients with significant psychiatric disorders is reduced by 7 to 24 years [1,2,3,4]. On the other hand, about 60% of premature deaths of psychiatric patients occur due to somatic illnesses, predominantly

due to cardiovascular diseases. The risk of cardiovascular diseases, increased by comorbidities such as diabetes, obesity, stroke, is multiplied in patients with several different psychiatric diseases such as psychotic disorders, mood disorders and anxiety disorders. [1,2,3,4,5].

MetS is defined as a combination of multiple comorbid conditions such as abdominal obesity, high arterial blood pressure, low "good", HDL cholesterol, hypertriglyceridemia and hyperglycemia. MetS is therefore the first step on the so-called. A "metabolic pathway" that ultimately ends in premature death. This concept of MetS is in line with the recommendations of the International Diabetes Federation. The concept of MetS has proven to be the most appropriate universal predictive

dijabetesa i on je prva stepenica na tzv. „metaboličkoj putanji“ koja se u konačnici završava prevremenom smrću. Ovakav koncept metaboličkog sindroma je u saglasju sa preporukama Međunarodne federacije za dijabetes. Koncept metaboličkog sindroma se pokazao kao najpodesniji univerzalni prediktivni činilac koji omogućava da se izdvoje grupe sa povećanim rizikom i da se pravovremeno medicinsko-nutritivnim delovanjem spreči progresija „metaboličke putanje“ [6,7].

Prevalencija metaboličkog sindroma u opštoj populaciji je između 10 i 15%, dok je u populaciji psihijatrijskih pacijenata višestruko veća vrednost i kreće se od 30% do čak 60% [8,9,10]. Većina svetskih istraživanja, ističe psihotropnu terapiju kao jedan od glavnih uzroka višestruko povećane incidencije metaboličkog sindroma u okviru grupe psihijatrijskih pacijenata [11,12]. Povećanje telesne mase je često neželjeno dejstvo velikog broja psihotropnih lekova. Danas je jasno i da neki lekovi koji se koriste u psihijatriji kao neželjeno dejstvo remete metabolizam masti i šećera [13,14].

Nismo naišli na studije prevalencije metaboličkog sindroma u grupi psihijatrijskih pacijenata u Srbiji. Stoga je provedena ova studija kako bi se procenila prevalenca metaboličkog sindroma u uzorku sastavljenom od pacijenata hospitalizovanih na Klinici za psihijatriju Kliničkog Centa Vojvodine (KCV) u Novom Sadu i povezala je sa sociodemografskim karakteristikama, psihijatrijskom dijagnozom i korišćenom psihofarmakoterapijom kod psihijatrijskih pacijenata, te izdvojila moguće prediktorske faktore rizika za skrining metaboličkog sindroma.

MATERIJAL I METODE

Istraživanje je dizajnirano kao retrospektivna kohortna studija, transverznog tipa. Podaci od interesa za ovo istraživanje prikupljeni su iz istorija bolesti hospitalizovanih bolesnika na Klinici za psihijatriju KCV u periodu od januara 2018. godine do januara 2020. godine. Prikupljeni su podaci o 2409 bolesnika. Bolesnici mlađi od 18 godina nisu uključeni u studiju, kao i oni koji nisu imali primarnu psihijatrijsku otpusnu dijagnozu prema MKB-10, te i oni pacijenti za koje nije bilo kompletnih podataka iz istorija bolesti. Oni pacijenti koji su više puta lečeni u ispitivanom periodu ubrojani su samo jedaput u ukupnom uzorku. U uzorku se

nisu našli pacijenti koji su lečeni od bolesti zavisnosti.

Sociodemografski i klinički podaci su preuzeti iz istorije bolesti. Kao primarna psihijatrijska dijagnoza uzeta je ona sa otpusnice prema sistemu šifara MKB-10. Sve dijagnoze su grupisane u četiri kategorije: psihoze (F20-29), poremećaji raspoloženja (F30-34), anksiozni poremećaji (F40), i ostali mentalni poremećaji.

Metabolički sindrom je određen kriterijumima predviđenim agendom Međunarodne diabetološke federacije. Beležene su :

- 1) vrednosti obima struka - >102 cm za muškarce i >88 cm za žene;
- 2) trigliceridemija >1,5 mg/ml;
- 3) HDL holesterolemija <0,4 mg/ml za muškarce i <0,5 mg/ml za žene;
- 4) arterijski krvni pritisak >135/85 mmHg;
- 5) glikemija našte >6,1 mmol/l.

Ako je zadovoljeno minimalno tri od navedenih kriterijuma smatrano je da postoji dijagnoza metaboličkog sindroma. Pacijenti koji u anamnezi imaju pridružene metaboličke bolesti, arterijsku hipertenziju i diabetes melitus nisu uključeni u studiju.

Beleženi su podaci o psihofarmacima koje su pacijenti uzimali. Medikamenti su podeljeni u 4 grupea klasični antipsihotici, 2 atipični antipsihotici, antidepresivi, stabilizatori raspoloženja a peta grupa su kombinacije lekova. Veliki broj pacijenata nije bio na monopsihofarmakoterapiji, tako da je formirana još jedna grupa gde su svrstani pacijenti koji su pili 2 ili više lekova. Smatrano je da je pacijent na terapiji određenim psihofarmakom ako ga je uzimao poslednjih 30 dana u propisanoj terapijskoj dozi.

Statistička obrada podataka inicijalno se sastojala od deskriptivnih varijabli. Za njihovu obradu korišćeni su frekvencije i proporcije, dok su standardne devijacije, srednje vrednosti i medijane korišćene za predstavljanje kvantitativnih varijabli. Hi kvadrat test je korišćen da se proceni razlika u prevalenciji metaboličkog sindroma između polova. Poređenje prevalencije metaboličkog sindroma u različitim dijagnozama izvršeno je pomoću ANOVA (F) testa, a u slučaju statistički značajne razlike primenjen je t-test i χ^2 test. Binarni logički regresioni model je primenjen da se identifikuju najvažniji faktori za dihotomni ishod - prisustvo ili odsustvo metaboličkog sindroma u ispitivanoj grupi. Za sve primenjene statističke

factor that allows to select groups with increased risk and to prevent the progression of the "metabolic pathway" by timely medical and nutritional action [6,7].

The prevalence of MetS in the general population is between 10% and 15%, while in the population of psychiatric patients the value is many times higher and ranges from 30% to as much as 60% [8,9,10]. Most of the world's research points to psychotropic therapy as one of the main causes of the multiple incidence of MetS within a group of psychiatric patients [11,12]. Weight gain is often a side effect of a large number of psychotropic drugs. Today it is clear that some drugs used in psychiatry as a side effect disrupt fat and sugar metabolism [13,14].

We did not find studies of the prevalence of MetS in a group of psychiatric patients in Serbia. Therefore, this study was conducted to assess the prevalence of MetS in a sample of patients hospitalized at the Clinic for Psychiatry of the Clinical Center of Vojvodina (KCV) in Novi Sad and linked it to socio-demographic characteristics, psychiatric diagnosis and psycho-pharmacotherapy used in psychiatric patients and to single out possible predictor risk factors for MetS screening.

MATERIAL AND METHODS

The study was designed as a retrospective cohort study. Data of interest for this research were collected from the medical histories of hospitalized patients at the Clinic for Psychiatry KCV in the period from January 2018 to January 2020. Data on 2409 patients were collected. Patients under the age of 18 were not included in the study, as well as those who did not have a primary psychiatric discharge diagnosis according to ICD-10, and those patients for whom there were no complete data from medical histories. Those patients who were treated more than once in the study period were counted only once in the total sample. There were no patients treated for addiction in the sample. Sociodemographic and clinical data are taken from the history of the disease. The primary psychiatric diagnosis was taken from the discharge card according to the code system ICD-10. All diagnoses are grouped into four categories: psychosis (F20-29), mood disorders (F30-34), anxiety disorders (F40), and other mental disorders. The MetS is determined by the

criteria envisaged by the agenda of the International Diabetes Federation.

- 1) Waist circumference values > 102 cm for men and > 88 cm for women,
- 2) triglyceridemia > 1,7 mmol / L (1.5 mg / ml)
- 3) HDL cholesterolemia HDL < 1.03 mmol/L (men) or < 1.29 mmol/L (women) (<0.4 mg/ml for men and <0.5 mg/ml for women),
- 4) arterial blood pressure > 135/85 mmHg,
- 5) fasting glycemia > 6.1 mmol / l.

If at least three of the above criteria are met, it is considered that there is a diagnosis of MetS. Patients with a history of associated arterial hypertension and diabetes mellitus were also included in the study.

Data on psycho-pharmaceuticals that patients, included in the study, drank were also recorded. Medications are divided into five groups - classic and atypical antipsychotics, antidepressants, mood stabilizers. A large number of patients were not on monopsychopharmacotherapy, so another group was formed where patients who took 2 or more drugs were classified. It is considered that a patient is on therapy with a certain psychopharmaceutical if he has been drinking it for the last 30 days in the prescribed therapeutic dose.

Statistical data processing initially consisted of descriptive variables. Frequencies and proportions were used for their processing, while standard deviations, means and medians were used to represent quantitative variables. The chi square test was used to assess the difference in the prevalence of MetS between the sexes. Comparison of the prevalence of MetS in different diagnoses was performed using the ANOVA (F) test, and in the case of a statistically significant difference, the t and χ^2 test was applied. A binary logical regression model was applied to identify the most important factors for the dichotomous outcome - the presence or absence of MetS in the study group. For all applied statistical tests, the error level was set to an acceptable level of $p < 0.05$. Statistical data processing was done in the computer program SPSS 12.0.

The conduct of such a study was approved by the Ethics Committee of the KCV. The study is conducted according to internationally recognized ethical standards set in the field of biomedical research.

testove nivo greške je podešen na prihvatljivi nivi od $p < 0,05$. Statistička obrada podataka je urađena u kompjuterskom programu SPSS 12.0. Provođenje ovako dizajnirane studije odobrio je Etički komitet KCV. Studija se provodi po međunarodno priznatim etičkim standardima

postavljenim u oblasti biomedicinskih istraživanja.

REZULTATI

U istraživanju je učestvovalo ukupno 2409 psihijatrijskih pacijenata. Prevalencija metaboličkog sindroma među ovom populacijom iznosi 1327, odnosno 55,1%.

Tabela 1. Sociodemografske karakteristike

	Metabolički sindrom			Statistička analiza	
	Ukupno	Ima	Nema	χ^2	P
Pol					
Muški	1068 (44,3%)	621 (58,1%)	447 (41,9%)		
Ženski	1341 (55,7%)	706 (52,6%)	635 (47,4%)	7,045	0,008
Uzrast					
AS±SD	46,87±18,09	47,06±17,97	46,64±18,24		
< 30 godina	953 (39,6%)	321 (33,7%)	632 (66,3%)		
od 31 do 50 godina	817 (33,9%)	449 (55,0%)	368 (45,0%)		
> 51 godina	639 (26,5%)	357 (55,9%)	282 (44,1%)	0,230	0,891
Bračni status					
u braku	527 (21,9%)	255 (48,4%)	272 (51,6%)		
sam/a	752 (31,2%)	467 (62,1%)	285 (37,9%)		
razveden/a	862 (35,8%)	427 (49,5%)	435 (50,5%)		
udovac/-ica	268 (11,1%)	178 (66,4%)	90 (33,6%)	49,157	0,000
Broj dece					
AS±SD	1,56±0,60	1,56±0,61	1,55±0,60		
bez dece	1205 (50,0%)	660 (54,8%)	545 (45,2%)		
od 1 do 3 dece	1062 (44,1%)	586 (55,2%)	476 (44,8%)		
> 3 dece	142 (5,9%)	81 (57,0%)	61 (43,0%)	0,271	0,873
Stepen obrazovanja					
nezavršena osnovna škola	477 (19,8%)	322 (67,5%)	155 (32,5%)		
osnovna škola	629 (26,1%)	344 (54,7%)	285 (45,3%)		
srednja škola	799 (33,2%)	436 (54,6%)	363 (45,4%)		
visoka škola	504 (20,9%)	225 (44,6%)	279 (55,4%)	57,079	0,000
Mesto stanovanja					
Urbano	1162 (48,2%)	650 (55,9%)	512 (44,1%)		
Ruralno	1247 (51,8%)	677 (54,3%)	570 (45,7%)	0,595	0,440

Napomena: AS – aritmetička sredina, SD – standardna devijacija, χ^2 - statistik, p – statistička značajnost

U Tabeli 1. su prikazane sociodemografske karakteristike na celom uzorku (N=2409) i prema metaboličkom sindromu. Premda je ženskih ispitanica više u uzorku (55,7%), među ispitanicima muškog pola je više onih sa dijagnozom metaboličkog sindroma (58,1%) u odnosu na žene. Prosečan uzrast pacijenata iznosi oko 47 godina. Oko 40% uzorka čine ispitanici mlađi od 30 godina, trećinu od 30 do 50 godina, a četvrtinu preko 50 godina starosti. U populaciji pacijenata mlađih od 30 godina trećina ima kriterijume za dijagnozu metaboličkog sindroma. Može se uočiti da je

među udovcima i samcima više ispitanika sa metaboličkim sindromom u poređenju sa pacijentima koji su u braku ili razvedeni. U proseku, ispitanici imaju manje od dvoje dece. U pogledu stepena obrazovanja, trećina ispitanika ima završenu srednju školu, petina čak nema završenu osnovnu školu, a svaki četvrti ispitanik njih ima samo osnovnu školu, a oko 20% njih ima diplomu visoke škole. Među pacijentima sa nezavršenom osnovnom školom, gotovo dve trećine njih ima dijagnozu metaboličkog sindroma. Vidi se da postoji statistički značajna povezanost između pola ispitanika i prevalencije

RESULTS

A total of 2409 psychiatric patients participated in the study. The prevalence of MetS

among this population is 1327 and 55.1%, respectively.

Table 1. Sociodemographic characteristics

	Overall	Metabolic syndrome		Statistical analysis	
		Yes	No	χ^2	P
Sex					
Male	1068 (44,3%)	621 (58,1%)	447 (41,9%)		
Female	1341 (55,7%)	706 (52,6%)	635 (47,4%)	7,045	0,008
Age					
AS $\pm$ -SD	46,87 $\pm$ 18,09	47,06 $\pm$ -17,97	46,64 $\pm$ -18,24		
< 30 years	953 (39,6%)	321 (33,7%)	632 (66,3%)		
od 31 do 50 years	817 (33,9%)	449 (55,0%)	368 (45,0%)		
> 51 yers	639 (26,5%)	357 (55,9%)	282 (44,1%)	0,230	0,891
Marital status					
Married	527 (21,9)	255 (48,4%)	272 (51,6%)		
Single	752 (31,2%)	467 (62,1%)	285 (37,9%)		
Divorced	862 (35,8)	427 (49,5%)	435 (50,5%)		
Widowed	268 (11,1%)	178 (66,4%)	90 (33,6%)	49,157	0,000
Number of children					
AS $\pm$ -SD	1,56 $\pm$ 0,60	1,56 $\pm$ -0,61	1,55 $\pm$ -0,60		
None	1205 (50,0%)	660 (54,8%)	545 (45,2%)		
1-3 children	1062 (44,1%)	586 (55,2%)	476 (44,8%)		
> 3 children	142 (5,9%)	81 (57,0%)	61 (43,0%)	0,271	0,873
Educational level					
Illiterate	477 (19,8%)	322 (67,5%)	155 (32,5%)		
Primary/less	629 (26,1%)	344 (54,7%)	285 (45,3%)		
Secondary/less	799 (33,2%)	436 (54,6%)	363 (45,4%)		
University/other	504 (20,9)	225 (44,6%)	279 (55,4%)	57,079	0,000

Note: AS - arithmetic mean, SD - standard deviation, χ^2 - statistical, p - statistical significance

Although there are more female respondents in the sample (55.7%), there are more male respondents with a diagnosis of MetS (58.1%) than women. The average age of the patient is about 47 years. About 40% of the sample consists of respondents younger than 30 years, a third from 30 to 50 years, and a quarter over 50 years of age. In the population of patients younger than 30, one third record the criteria for the diagnosis of MetS. It can be observed that among widows and singles there are more subjects with MetS compared to patients who are married or divorced. On average, respondents have less than two children. In terms of education, one third of respondents have completed secondary school, one fifth do not even have completed primary school, and one in four respondents has only primary school, and about 20% of them have a high school diploma. Among patients with incomplete primary school, almost two thirds of them are diagnosed with MetS. It can be seen

that there is a statistically significant correlation between the sex of the subjects and the prevalence of MetS χ^2 (7.045, p=0.008). Men have a relatively higher prevalence of MetS χ^2 (49,157, p=0,000). There is a statistically significant correlation between the level of education of the subjects and the prevalence of MetS χ^2 (52,079, p=0,000.)

Approximately half of the patients included in the study are being treated for psychotic disorders, a third are suffering from mood disorders, and a fifth are suffering from anxiety disorders. The study sample shows a statistically significantly higher prevalence of metabolic syndrome among patients treated for psychotic disorders, with as much as 67% prevalence. Therapy with atypical antipsychotics was most associated with metabolic syndrome in 67.5% of patients, followed by a combination of 2 or more antipsychotics with 60.7% ($\chi^2=26.99$, p <0.0019). The diagnosis of metabolic syndrome is most common in patients

metaboličkog sindroma χ^2 (7,045, $p=0,008$). Muškarci imaju relativno veću prevalenciju metaboličkog sindroma χ^2 (49,157, $p=0,000$).

Postoji statistički značajna povezanost između stepena obrazovanja ispitanika i prevalencije metaboličkog sindroma χ^2 (52,079, $p=0,000$).

Tabela 2. Kliničke karakteristike na celom uzorku (N=2409) i prema metaboličkom sindromu

		Metabolički sindrom		Statistička analiza	
	Ukupno	Ima	Nema	χ^2	p
Psihijatrijska dijagnoza					
Psihitični poremećaji	1098 (45,6%)	742 (67,5%)	356 (32,5%)		
Poremećaji raspoloženja	806 (33,5%)	429 (53,2%)	377 (46,7%)		
Anksiozni poremećaji	454 (23,2%)	142 (31,3%)	312 (68,7%)		
Ostali mentalni poremećaji	51 (2,1%)	19 (37,2%)	32 (62,8%)	181,05	0,000
Psihofarmacija					
atipični antipsihotik	898 (37,3%)	594 (66,1%)	304 (33,9%)		
Antidepresiv	287 (11,9%)	160 (55,7%)	127 (44,3%)		
klasični antipsihotik	448 (18,6%)	246 (54,9%)	202 (45,1%)		
stabilizator raspoloženja	267 (11,1%)	141 (52,8%)	126 (47,2%)		
kombinacija dva ili više psihofarmatika	509 (21,1%)	309 (60,7%)	200 (43,8%)	26,99	0,0019
Početak bolesti					
AS+-SD	26,18±5,46	26,14±5,37	26,22±5,57		
< 25 godina	1023 (42,5%)	568 (56,5%)	455 (44,5%)		
25 - 50 godina	1386 (57,5%)	759 (54,8%)	627 (45,2%)	0,138	0,711
Dužina trajanja bolesti					
AS+-SD	20,73±16,87	20,97±16,86	20,45±16,89		
≤1 godine	504 (20,9%)	206 (41,0%)	298 (59,0%)		
od 2 do 5 godina	501 (20,8%)	325 (64,9%)	176 (35,1%)		
od 6 do 10 godina	396 (16,4%)	247 (62,5%)	149 (37,5%)		
> 10 godina	1008 (41,8%)	509 (50,5%)	499 (49,5%)	3,653	0,312
Indikatori gojaznosti					
BMI	27,82±5,92	32,50±3,50	22,08±1,76		
Obim struka (cm)	94,97±13,82	103,67±11,90	84,28±6,65		
Krvni pritisak					
Sistolni (mmHg)	126,37±21,68	126,22±21,63	126,54±21,75		
Dijastolni (mmHg)	80,72±16,41	80,88±16,35	80,53±16,49		
Laboratorijska merenja					
Analiza šećera u krvi našte (mmol/L)	5,80±2,61	7,78±2,62	5,91±2,60		
Trigliceridemija (mmol/L)	2,77±1,59	2,75±1,58	1,79±1,62		
HDL-Holesterolemija (mmol/L)	1,12±0,60	1,00±0,59	1,23±0,62		

Napomena: AS – aritmetička sredina, SD – standardna devijacija, χ^2 - statistik, p – statistička značajnost

Približno polovina pacijenata uključenih u studiju se leči od psihotičnih poremećaja, trećina boluje od poremećaja raspoloženja, a petina od anksioznih poremećaja. Uzorak studije pokazuje statistički značajno veću prevalenciju metaboličkog sindroma među pacijentima lečenim od psihotičnih poremećaja, sa čak 67% prevalencije. Atipični antipsihotici su najviše udruženi sa metaboličkim sindromom u 67,5% bolesnika a zatim sledi kombinacija 2 ili više antipsihotika sa 60,7% ($\chi^2=26,99$, $p<0,0019$). Dijagnoza metaboličkog sindroma je

najzastupljenija kod pacijenata koji su bolesni do 5 godina i iznosi preko 65%.

Indeks telesne mase u proseku iznosi oko 28, ali je za 10 jedinica veći među populacijom ispitanika koja ima metabolički sindrom. Slična je situacija i kada je u pitanju obim struka. Prosečan obim struka među psihijatrijskom populacijom u uzorku iznosi 95 cm, dok je među ispitanicima sa MS obim struka veći za gotovo 20 cm u odnosu na one bez MS.

up to 5 years of age and is over 65%. The body mass index averages about 28, but is 10 units higher among the population of subjects who have MetS. The situation is similar when it comes to waist circumference. The average waist

circumference among the psychiatric population in the sample was 95 cm, while among subjects with MetS the waist circumference was higher by almost 20 cm compared to those without MetS.

Table 2. Clinical characteristics

	Overall	Metabolic Syndrome		Statistical analysis	p
		Yes	No		
Psychiatric diagnosis					
Psychotic disorder	1098 (45,6%)	742 (67,5%)	356 (32,5%)		
Mood disorder	806 (33,5%)	429 (53,2%)	377 (46,7%)		
Anxious disorder	454 (23,2%)	142 (31,3%)	312 (68,7%)		
Other mental disorders	51 (2,1%)	19 (37,2%)	32 (62,8%)	181,05	0,000
Psychopharmacs					
Atypical antipsychotic	898 (37,3%)	594 (66,1%)	304 (33,9%)		
Antidepressive	287 (11,9%)	160 (55,7%)	127 (44,3%)		
Classical antipsychotic	448 (18,6%)	246 (54,9%)	202 (45,1%)		
Mood stabilizer	267 (11,1%)	141 (52,8%)	126 (47,2%)		
Mix of 2 or more psychopharmacs	509 (21,1%)	309 (60,7%)	200 (43,8%)	26,99	0,0019
Beginning of illness (year)					
AS+SD	26,18±5,46	26,14±5,37	26,22±5,57		
< 25	1023 (42,5%)	568 (56,5%)	455 (44,5%)		
25 – 50	1386 (57,5%)	759 (54,8%)	627 (45,2%)	0,138	0,711
Duration of psychiatric disease (years)					
AS+SD	20,73±16,87	20,97±16,86	20,45±16,89		
<=1	504 (20,9%)	206 (41,0%)	298 (59,0%)		
1-5	501 (20,8%)	325 (64,9%)	176 (35,1%)		
6-10	396 (16,4%)	247 (62,5%)	149 (37,5%)		
> 10	1008 (41,8%)	509 (50,5%)	499 (49,5%)	3,653	0,312
Obesity indicators					
BMI	27,82±5,92	32,50±3,50	22,08±1,76		
Waist circumference (cm)	94,97±13,82	103,67±11,90	84,28±6,65		
Blood pressure					
Systolic (mmHg)	126,37±21,68	126,22±21,63	126,54±21,75		
Diastolic (mmHg)	80,72±16,41	80,88±16,35	80,53±16,49		
Laboratory tests					
Fasting blood glucose (mmol/L)	5,80±2,61	7,78±2,62	5,91±2,60		
Triglycerides (mmol/L)	2,77±1,59	2,75±1,58	1,79±1,62		
HDL- Cholesterol (mmol/L)	1,12±0,60	1,00±0,59	1,23±0,62		

Note: AS - arithmetic mean, SD - standard deviation, χ^2 - statistical, p - statistical significance

It has been shown that there is a statistically significant difference in BMI values between subjects with MetS and those who do not have this syndrome. In subjects with MetS, a significantly higher value of the mentioned index is recorded in relation to subjects without MetS, where the magnitude of the impact is large and amounts to 0.86. Also, there is a statistically significant difference in the value of the waist circumference indicator between subjects with MetS and those who do not have this syndrome.

Subjects with MetS have a significantly larger waist circumference compared to subjects without MetS, with a large impact size of 0.76. Table 3 also shows that there is a statistically significant difference in blood sugar, triglyceridemia and HDL cholesterol level between subjects with MetS and those who do not have this syndrome.

Tabela 3. Mann-Whitney U test za ispitivanje razlika između pacijenata sa i bez metaboličkog sindroma u pogledu indeksa telesne težine (BMI) i obima struka, vrednosti arterijskog krvnog pritiska i laboratorijskih merenja

Indikator gojaznosti	Metabolički sindrom	Md	N	Mann-Whitney U	Wilcoxon W	Z	p
BMI	Da	31,70	1327	0,000	585903,000	-42,278	0,000
	Ne	22,20	1082				
Obim struka (cm)	Da	102,00	1327	84069,500	669972,500	-37,327	0,000
	Ne	84,30	1082				
Krvni pritisak							
Sistolni(mmHG)	Da	125,90	1327	711884,500	1593012,500	-0,355	0,723
	Ne	126,90	1082				
Dijastolni (mmHG)	Da	80,90	1327	708787,500	1294690,500	-0,537	0,591
	Ne	80,20	1082				
Laboratorijske analize	Metabolički sindrom	Md	N	Mann-Whitney U	Wilcoxon W	Z	p
Glikemija našte (mmol/L)	Da	7,78	1327	713267,500	1594395,500	-18,273	0,005
	Ne	5,40	1082				
Trigliceridi (mmol/L)	Da	2,75	1327	711881,500	1593009,500	-12,355	0,200
	Ne	1,79	1082				
HDL-Holesterol (mmol/L)	Da	1,00	1327	713133,500	1594261,500	-10,281	0,000
	Ne	1.23	1082				

Napomena: Md - medijana, N – broj ispitanika, Mann-Whitney U – vrednost testa, Wilcoxon W – statistik, Z - standardizovani statistik, p – statistička značajnost

Pokazano je da postoji statistički značajna razlika u vrednosti BMI između ispitanika sa metaboličkim sindromom i onih koji nemaju ovaj sindrom. Kod ispitanika sa metaboličkim sindromom se beleži značajno veća vrednost pomenutog indeksa u odnosu na ispitanike bez metaboličkog sindroma, pri čemu je veličina uticaja značajna i iznosi 0,86. Takođe, postoji statistički značajna razlika u vrednosti indikatora obim struka između ispitanika sa metaboličkim sindromom i onih koji nemaju ovaj

sindrom. Kod ispitanika sa metaboličkim sindromom se beleži značajno veći obim struka u odnosu na ispitanike bez metaboličkog sindroma, pri čemu je veličina uticaja značajna i iznosi 0,76.

Iz tabele 3 vidi se i da postoji statistički značajna razlika u vrednosti šećera u krvi, trigliceridemije i u nivou HDL holesterolemije između ispitanika sa metaboličkim sindromom i onih koji nemaju ovaj sindrom.

Tabela 4. Procena uticaj prediktorskih varijabli na verovatnoću dobijanja metaboličkog sindroma- binarna logistička regresija

Varijable	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. za EXP (B)	
							Donja granica	Gornja granica
Početak bolesti	-0,02	0,01	2,82	1,00	0,09	0,98	0,96	1,00
Obim struka	0,29	0,01	516,82	1,00	0,00	1,34	1,31	1,38
Trigliceridemija	0,12	0,05	6,47	1,00	0,01	1,12	1,03	1,23
Konstanta	-26,39	1,18	497,05	1,00	0,00	0,00		

Napomena: B – regresioni koeficijent, S.E. – standardna greška, Wald – vrednost pokazatelja, df – broj stepeni slobode, Sig. – statistička značajnost, Exp (B) – količnik verovatnoće (odds ratio), 95% C.I. za EXP (B) - interval 95-postotnog poverenja za količnik verovatnoće

Kao što je prikazano u Tabeli 4, dve nezavisne varijable su dale jedinstven statistički značajan doprinos modelu (obim struka i trigliceridemija). Najjači prediktor odgovora da će ispitanici oboleti od metaboličkog sindroma je obim struka odnosno abdominalna gojaznost, čiji je količnik verovatnoće 1,34. Dakle,

verovatnoća da će ispitanik imati dijagnozu metaboličkog sindroma je 1,34 puta veća sa povećanjem obima struka, kada su svi ostali faktori jednaki. Drugi značajan prediktor se odnosi na trigliceridemiju, čiji je količnik verovatnoće 1,12. Dakle, verovatnoća da će ispitanik imati dijagnozu metaboličkog sindroma

Table 3. Mann-Whitney U test to examine differences between patients with and without metabolic syndrome in terms of body mass index (BMI) and waist circumference, arterial blood pressure values and laboratory measurements

Laboratory measurements							
Obesity indicator	Metabolic syndrome	Md	N	Mann-Whitney U	Wilcoxon W	Z	p
BMI	Yes	31,70	1327	0,000	585903,000	-42,278	0,000
	No	22,20	1082				
Waist circumference (cm)	Yes	102,00	1327	84069,500	669972,500	-37,327	0,000
	No	84,30	1082				
Blood pressure							
Systolic (mmHG)	Yes	125,90	1327	711884,500	1593012,500	-0,355	0,723
	No	126,90	1082				
Diastolic (mmHG)	Yes	80,90	1327	708787,500	1294690,500	-0,537	0,591
	No	80,20	1082				
Laboratory tests	Metabolic syndrome	Md	N	Mann-Whitney U	Wilcoxon W	Z	p
Fasting blood glucosae (mmol/L)	Yes	7,78	1327	713267,500	1594395,500	-18,273	0,005
	No	5,40	1082				
Triglycerides (mmol/L)	Yes	2,75	1327	711881,500	1593009,500	-12,355	0,200
	No	1,79	1082				
HDL-Cholesterol (mmol/L)	Yes	1,00	1327	713133,500	1594261,500	-10,281	0,000
	No	1,23	1082				

Note: Md - median, N - number of subjects, Mann-Whitney U - test value, Wilcoxon W - statistician, Z - standardized statistician, p - statistical significance

As shown in Table 4, two independent variables made a unique statistically significant contribution to the model (abdominal obesity and triglyceridemia). The strongest predictor of the answer that the respondents will suffer from the MetS is the waist circumference, whose quotient is 1.34. Thus, the probability that the subject will be diagnosed with metabolic syndrome is 1.34 times higher with an increase

in abdominal obesity (waist circumference), when all other factors are equal. Another important predictor refers to triglyceridemia, whose probability quotient is 1.12. Thus, the probability that the subject will be diagnosed with MetS is 1.12 times higher with an increase in triglyceride values, when all other factors are equal.

Table 4. Estimation of the influence of predictor variables on the probability of obtaining metabolic syndrome - binary logistic regression

Variable	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. EXP (B)	
							Down limes	Upper limes
Bibining of illness	-0,02	0,01	2,82	1,00	0,09	0,98	0,96	1,00
Waist circumference	0,29	0,01	516,82	1,00	0,00	1,34	1,31	1,38
Triglycerides	0,12	0,05	6,47	1,00	0,01	1,12	1,03	1,23
Constant	-26,39	1,18	497,05	1,00	0,00	0,00		

Note: B - regression coefficient, S.E. - standard error, Wald - indicator value, df - number of degrees of freedom, Sig. - statistical significance, Exp (B) - odds ratio, 95% C.I. for EXP (B) - 95% confidence interval for the probability quotient

DISCUSSION

As far as the author knows, this is the first work in the Autonomous Province of Vojvodina, but also in the entire territory of the Republic of Serbia, which deals with the examination of the prevalence of MetS in the population of psychiatric patients. It is known that patients with serious psychiatric illnesses have a far higher risk of developing MetS than the general population. In this study, the prevalence of MetS in the study population was 55.1%. This percentage is significantly higher

than values from similar studies conducted worldwide where the prevalence ranges between 25 and 35% [8,14,15,16]. Although the study from the United Arab Emirates records an approximately high value of 48.1% prevalence of MetS in the group psychiatric patients [17]. Regarding the prevalence of MetS in the general population of Serbia, which is quite high and ranges from 38.4 to 42.7%, we see that psychiatric patients in Serbia are also classified as a vulnerable group in terms of metabolic status [18]. It is clear that a person with a mental

je 1,12 puta veća sa povećanjem vrednosti triglicerida, kada su svi ostali faktori jednaki.

DISKUSIJA

Koliko je autoru poznato, ovo je prvi rad u Autonomnoj pokrajini Vojvodini, ali i na celoj teritoriji Republike Srbije koji se bavi ispitivanjem prevalencije metaboličkog sindroma u populaciji psihijatrijskih pacijenata. Poznato je da pacijenti sa ozbiljnim psihijatrijskim oboljenjima imaju daleko veći rizik za oboljevanje od metaboličkog sindroma u odnosu na opštu populaciju. U ovoj studiji dobijena je prevalencija metaboličkog sindroma u ispitivanoj populaciji od 55,1%. Ovaj postotak je značajno viši u odnosu na vrednosti iz sličnih studija provedenih širom sveta gde se prevalencija kreće između 25 i 35% [8,14,15,16]. Mada studija iz Ujedinjenih Arapskih Emirata beleži približno visoku vrednost od 48,1% prevalencije metaboličkog sindroma u grupi psihijatrijskih pacijenata [17]. Što se tiče prevalencije metaboličkog sindroma u opštoj populaciji Srbije koji je dosta visok i kreće se u rasponu od 38,4-42,7% [18] vidimo da su psihijatrijski pacijenti u Srbiji i po pitanju metaboličkog statusta svrstani u vulnerabilnu grupu. Jasno je da je za oko 30% veći rizik za nekog ko je bolestan od psihičke bolesti da dobije i metabolički sindrom. Visoke stope zastupljenosti metaboličkog sindroma kako u opštoj populaciji, tako i u populaciji psihijatrijskih pacijenata u Srbiji svakako je značajno povezana sa dominantno sedenternim načinom života koji se odlikuje minimalnom fizičkom aktivnošću i dominantno kalorijski gustom hranom zastupljenoj u ishrani.

Detaljno je istražena pojava metaboličkog sindroma u odnosu na sociodemografske karakteristike ispitivane grupe psihijatrijskih pacijenata. Iz podataka je vidljivo da prevalencija metaboličkog sindroma raste sa uzrastom psihijatrijskih pacijenata, ali da je u populaciji od 30 do 50 godina i iznad 50 godina približno ista i da iznosi oko 55%. Takvi zaključci su u saglasju sa nalazima više različitih studija slične tematike u celom svetu [19]. Međutim, ono što zabrinjava je da je učestalost metaboličkog sindroma u ispitivanoj populaciji mlađoj od 30 godina oko 33%. Prevalencija metaboličkog sindroma među starijim adolescentima (16-18 godina) u Srbiji je 13% [19]. Koliko je psihijatrijska bolest dodatni otežavajući faktor u životu mladog čoveka za

razvoj komorbiditetnih telesnih bolesti, jasno je iz podatka da se za praktično 10 godina od kraja adolescencije do 30 godina života stopa učestalosti metaboličkog sindroma skoro urtostručuje. Visoka prevalencija metaboličkog sindroma generalno u starijoj populaciji se može objasniti visokom prevalencijom komponenti metaboličkog sindroma u starijim godinama života, kao što su hiperglikemija i dislipidemija [21]. Mada neke studije navode da je da je visoka učestalost metaboličkog sindroma u starijih osoba posledica funkcionalnih i metaboličkih promena, koje su posledica starenja. A to bi značilo da je metabolički sindrom uobičajeni pratilac procesa starenja, što praktično ne stoji. U odnosu na razlike zastupljenosti metaboličkog sindroma u populaciji psihijatrijskih pacijenata u pogledu pola, za razliku od većine sličnih svetskih studija, ovde je nađeno da muškarci, oboleli od psihijatrijskih bolesti značajno češće zadovoljavaju kriterijume za postavljanje dijagnoze metaboličkog sindroma [22,23]. Muški pol, starija životna dob, samački život, niži stepen obrazovanja i veći broj dece su u ovoj studiji izdvojeni faktori rizika za veći rizik za razvoj metaboličkog sindroma u psihijatrijskoj populaciji. Sve ove karakteristike modela psihijatrijskog pacijenta pod rizikom za dijagnozu metaboličkog sindroma potvrdile su i studije iz Južne Koreje [24]. Dok je u opštoj populaciji kao i u populaciji psihijatrijskih pacijenata u većini svetskih studija slične tematike ženski pol dominantnije pod rizikom od dobijanja metaboličkog sindroma. Ovo odstupanje može se objasniti upravo karakteristikama same rizične populacije. Samci, sredovečni muškarci, srednjeg i nižeg stepena obrazovanja i stepena ekonomske moći, koji imaju psihijatrijsku bolest i zbog svega sledstveno nedovoljnu i neadekvatnu socijalnu podršku imaju sve preduslove da upražnjavaju loš životni stil, često praćen štetnim navikama poput pušenja i upotrebe alkohola što vodi razvoju metaboličkog sindroma.

Pokazano je da psihijatrijski pacijenti imaju značajno veći rizik da imaju neke od komponenti metaboličkog sindroma [8]. A što se tiče opšte populacije, ukupni doprinos dijagnoze metaboličkog sindroma opštom mortalitetu se procenjuje na 6-7%, 12-17% što se prevalencije arterijske hiperetnzije i 30-52% što se tiče dijabetesa melitusa [25,26,27]. U ovoj studiji je pokazano da dužina trajanja psihijatrijske

illness is about 30% more likely to develop MetS. High rates of MetS in both the general population and the population of psychiatric patients in Serbia are certainly significantly associated with a predominantly sedentary lifestyle characterized by minimal physical activity and predominantly calorie-dense foods represented in the diet.

The prevalence of MetS increases with the age of psychiatric patients, but that in the population aged 30 to 50 and over 50 is approximately the same and amounts to about 55%. Such conclusions are in agreement with the findings of several different studies on similar topics worldwide [19]. However, what is worrying is that the incidence of MetS in the study population under the age of 30 is about 33%. The prevalence of MetS among older adolescents (16-18 years) in Serbia is 13% [20]. How much psychiatric illness is an additional aggravating factor in the life of a young person for the development of comorbid physical diseases is clear from the fact that in practically 10 years from the end of adolescence to 30 years of age the incidence rate of MetS almost doubles. The high prevalence of MetS in the general population in general can be explained by the high prevalence of MetS components in the elderly, such as hyperglycemia and dyslipidemia [21]. Although some studies suggest that the high incidence of MetS in the elderly is due to functional and metabolic changes which are a consequence of aging. And that would mean that the MetS is a common companion of the aging process, which practically does not stand.

In relation to the differences in the prevalence of MetS in the population of psychiatric patients in terms of gender, unlike most similar world studies, it was found that men with psychiatric diseases significantly more often meet the criteria for diagnosis of MetS [22,23]. Male, older age, single life, lower level of education and higher number of children in this study were selected risk factors for higher risk for the development of MetS in the psychiatric population. All these characteristics of the model of a psychiatric patient at risk for the diagnosis of MetS have been confirmed by studies from South Korea [24]. This deviation can be explained precisely by the characteristics of the risk population itself. Single, middle-aged men, middle and lower level of education and level of economic power, who have a psychiatric illness

and therefore insufficient and inadequate social support have all the prerequisites to practice a bad lifestyle, often accompanied by harmful habits such as smoking and alcohol use leading to metabolic development. syndrome.

Psychiatric patients have been shown to have a significantly higher risk of having some of the components of MetS. [8] And for the general population, the overall contribution of MetS diagnosis to overall mortality is estimated at 6-7%, 12-17% as the prevalence of arterial hypertension and 30-52% regarding diabetes mellitus [25,26,27]. This study showed that the duration of psychiatric illness plays a very important role as a risk factor for the development of MetS in patients. Over 60% of psychiatric patients treated for up to 5 years, as well as over 5 to 10 years, have a MetS. Two meta-analyses by American authors find that the duration of psychiatric illness is the greatest risk factor for the development of MetS [27,28]. The duration of psychiatric illness is certainly related to the age of such patients, but also to the time of exposure to psychotropic medication, which both have a positive impact on the development of MetS.

According to recently published studies, there are no statistically significant differences between the prevalence of MetS among patients with different psychiatric diagnoses — studies that directly compared schizophrenic patients with patients with bipolar disorder. However, there are review studies that find a much higher incidence of MetS among the population of schizophrenic and bipolar disorders [29]. The current study sample shows a significantly higher prevalence of MetS among patients treated for psychotic disorders, with as much as 67% prevalence. While in the second place are patients with a diagnosis of mood disorders. Both samples showed a statistically significant difference in relation to the occurrence of MetS. Certainly, patients with these two psychiatric diseases are most often treated with atypical antipsychotics, mood stabilizers and antidepressants, as well as a combination of several different psychopharmaceuticals, which seems to be the strongest contributing factor to metabolic disorders, in addition to practicing unhealthy lifestyles and harmful habits. But the use of psychotropic drugs is the main difference between the population of psychiatric patients and the general population. It is certainly a mixed constellation of different risk factors such

bolesti igra veoma značajnu ulogu kao faktor rizika za nastanak metaboličkog sindroma kod pacijenata. Preko 60% psihijatrijskih bolesnika koji se leče do 5 godina, kao i preko 5 do 10 godina ima metabolički sindrom. Pacijenti sa psihijatrijskom dijagnozom preko 10 godina beleže izvestan pad u prevalenciji metaboličkog sindroma, što se može objasniti povećanom stopom mortaliteta u toj skupini pacijenata. Dve meta analize američkih autora nalaze da je dužina trajanja psihijatrijske bolesti najveći faktor rizika za razvoj metaboličkog sindroma [28]. Dužina trajanja psihijatrijske bolesti je svakako povezana sa starošću takvih pacijenata, ali i sa vremenom izloženosti psihotropnoj medicaciji, koji imaju uticaj na razvoj metaboličkog sindroma.

Prema skorašnjim meta analizama, nema statistički značajnih razlika između prevalencije metaboličkog sindroma među pacijentima sa različitim psihijatrijskim dijagnozama- studije koje su direktno poredile shizofrene pacijente sa pacijentima sa bipolarnim poremećajem. Međutim, ima preglednih studija koje ipak nalaze da je daleko veća stopa javljanja metaboličkog sindroma među populacijom shizofrenih i bipolarnih poremećaja [29]. U uzorku aktuelne studije beleži se značajno veća zastupljenost metaboličkog sindroma među pacijentima koji se leče od psihotičnih poremećaja, sa čak 67% prevalencije. Dok se na drugom mestu nalaze pacijenti sa nekom dijagnozom poremećaja raspoloženja. Oba uzorka su pokazala statistički značajnu razliku u odnosu na javljanje metaboličkog sindroma. Svakako da su pacijenti oboleli od ove dve psihijatrijske bolesti najčešće lečeni atipičnim antipsihoticima, stabilizatorima raspoloženja i antidepresivima, kao i kombinacijom više različitih psihofarmaka, što je čini se i najjači doprinosni faktor nastanku metaboličkih poremećaja, pored praktikovanja nezdravog načina života i upražnjavanja štetnih navika. Ali je upotreba psihotropnih lekova glavna razlika između populacije psihijatrijskih pacijenata i opšte populacije. Svakako da je to jedna smešana konstelacija različitih faktora rizika poput kliničkih karakteristika same dijagnoze sa predominacijom negativne simptomatike, nedostatkom adekvatne socijalne podrške koji zajedno uslovljavaju takav somatski rizičan stil života psihijatrijskih pacijenata.

Atipični antipsihotici, ali i kombinacija više različitih psihofarmaka su se jedini istakli

kao statistički značajno povezani sa nastankom metaboličkog sindroma. Ovakvi nalazi se slažu sa većinom svetskih nalaza koji povezuju upotrebu atipičnih antipsihotika i razvoj metaboličkog sindroma. U CATIE studiji pokazano je da posle 3 meseca izloženosti olanzapinu postoji značajno povećanje broja pacijenata koji zadovoljavaju kriterijume za nastanak metaboličkog sindroma [28]. Metabolička deterioracija je uočena i tokom dugotrajnog istraživanja pacijenata lečenih clozapinom [29]. Kako se danas značajno proširilo indikaciono polje za atipične antipsihotike - od afektivnih poremećaja pa sve do poremećaja raspoloženja, mnogo je povećana i populacija pacijenata koji koriste ove medikamente. Stoga treba uzeti u obzir i rizik za metaboličke abnormalnosti prilikom izbora odgovarajućeg psihotropnog leka, osobito atipičnih antipsihotika.

Kao dva najzastupljenija doprinosna faktora za nastanak metaboličkog sindroma kod psihijatrijskih pacijenata ističu se abdominalna gojaznost reprezentovana obimom struka i trigliceridemija. Rizik da psihijatrijski pacijent ima dijagnozu metaboličkog sindroma je 1,34 puta veća sa povećanjem obima struka, kada su svi ostali faktori jednaki. Drugi značajan prediktor se odnosi na trigliceridemiju, čiji je količnik verovatnoće 1,12. Ovakva saznanja se slažu sa nalazima više svetskih studija, koje svakako nalaze statistički značajnu povezanost visceralne gojaznosti, obima struka i lošeg mentalnog zdravlja kod pacijenata [30]. Mada izvesne studije ne nalaze povećanu vrednost triglicerida u krvi kao statistički značajan prediktorski faktor za razvoj metaboličkog sindroma, koliko su to dislipidemije tj. nivoi holesterola u krvi [31]. Razlozi za ovakav nalaz u aktuelnoj studiji mogu ležati u samom metabolizmu masti. Glavni razlog za povećane vrednosti holesterola u krvi u pacijenata uključenih u ovu studiju je način ishrane bogat masnoćama koji dominira u Autonomnoj pokrajini Vojvodini.

ZAKLJUČAK

Prevalencija metaboličkog sindroma kod psihijatrijskih pacijenata u Kliničkom centru Vojvodine u Novom Sadu je alarmantno visoka. Posebno su pod rizikom pacijenti koji se leče od psihotičnih poremećaja i poremećaja raspoloženja. Ovakvi nalazi još jednom ističu značaj kontinuiranog, dugoročnog i multisistemskog monitorniga psihijatrijskih

as the clinical characteristics of the diagnosis itself with a predominance of negative symptoms, lack of adequate social support that together condition such a somatic risky lifestyle of psychiatric patients.

Atypical antipsychotics, but also a combination of several different psychopharmaceuticals, were the only ones that stood out as statistically significantly associated with the development of MetS. Such findings agree with most of the world's findings linking the use of atypical antipsychotics and the development of metabolic anchor. The CATIE study showed that after 3 months of olanzapine exposure, there was a significant increase in the number of patients who met the criteria for MetS [28]. Metabolic deterioration was also observed during long-term research of patients treated with clozapine [29]. As the indication field for atypical antipsychotics has significantly expanded today - from affective disorders to mood disorders, the population of patients using these drugs has increased significantly. Therefore, the risk of metabolic abnormalities should be considered when choosing an appropriate psychotropic drug, especially atypical antipsychotics.

Waist circumference and triglyceridemia stand out as the two most common contributing factors for the development of MetS in psychiatric patients. The risk that a psychiatric patient is diagnosed with MetS is 1.34 times higher with an increase in waist circumference, when all other factors are equal. Another important predictor refers to triglyceridemia, whose probability quotient is 1.12. These findings agree with the findings of several world studies, which certainly find a statistically significant association between visceral obesity, waist circumference and poor mental health in patients [30]. Although some studies do not find an increased value of triglycerides in the blood as a statistically significant predictor for the development of

MetS. these are the levels of cholesterol in the blood [31]. The reasons for this finding in the current study may lie in the fat metabolism itself. If it is known that triglycerides are only the initial component in the formation of cholesterol, it can be concluded that a high value of triglycerides also significantly contributes to metabolic risk, albeit indirectly through the consequent increase in cholesterol. The main reason for the increased blood cholesterol values in the patients included in this study is the diet rich in fats and refined simple sugars that dominates in the Autonomous Province of Vojvodina.

CONCLUSION

The prevalence of MetS in psychiatric patients at the Clinical Center of Vojvodina in Novi Sad is alarmingly high. In more than half of patients, especially those treated for psychotic and mood disorders and using atypical antipsychotics and combinations of antipsychotics. In a patient with metabolic syndrome there is male dominance, low educational profile and the prevalence increases statistically significantly with increasing age of psychiatric patients. These findings once again emphasize the importance of continuous, long-term and multisystem monitoring of psychiatric patients, and the need to provide better organized social and health support, especially vulnerable from the group of psychiatric patients - the elderly, singles, singles. especially atypical antipsychotics, as drugs that have stood out as those most strongly associated with the development of MetS in a group of psychiatric patients. Waist circumference and blood triglyceride values are suggested as the best predictor factors for the development of MetS.

Conflict of interest: None.

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pacijenata, te potrebu za pružanjem bolje organizovane socijalne i zdravstvene podrške posebno vulnerabilnim iz grupe psihijatrijskih pacijenata - starijim, samcima, samicama. Posebno se ističe potreba za povećanim oprezom prilikom izbora psihotropnih medikacija, osobito atipičnih antipsihotika, kao lekova koji su se istakli kao oni koji su najjače povezani sa nastankom

metaboličkog sindroma u grupi psihijatrijskih pacijenata. Obim struka i vrednost triglicerida u krvi se predlažu kao najbolju prediktorski faktori za razvoj metaboličkog sindroma.

Sukob interesa: Nema

Zahvalost:

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