

ПРЕВАЛЕНЦА НА МЕТАБОЛНИОТ СИНДРОМ ВО ПЕЧКИОТ ОКРУГ

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Печатарски права: © 2018 Ардита Кервеш-Сулејмани. Оваа статија е со отворен пристап дистрибуирана под условите на нелокализирана лиценца, која овозможува неограничена употреба, дистрибуција и репродукција на било кој медиум, доколку се цитираат оригиналните(ите) автор(и) и изворот.

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Метаболниот синдром (МС) е главен клинички и јавноздравствен предизвик во светот во пресрет на урбанизација, вишок на енергетски внес, зголемување на дебелината, седентарен (седечки) начин на живот и навики. МС ќе предизвика за 5-пати зголемување на ризикот од дијабетес мелитус тип 2 (T2DM) и 2-пати зголемување на ризикот од кардиоваскуларни болести (КВБ) во текот на следни 5 до 10 години. Цел на истражувањето е да се одреди преваленцата на метаболниот синдром во регионот на Печ според критериумите на NCEP ATD III / 2001. Материјал и методи: Студија на пресек (cross sectional study) е спроведена во Општата болница во Печ, која преставува регионална болница за Печкиот округ. Примерокот се состои од 1667 пациенти во период од една година. Резултати: Кај анкетираниите пациенти МС е застапен кај 506 пациенти. Во најголем процент анкетираниите го исполнуваат условот систолен крвен притисок ≥ 130 mmHg -99.4%, потоа следи дијастолен крвен притисок ≥ 85 mmHg-96.4%, покачени триглицериди ≥ 1.7 mmol/L-94.7%, обемот на половината > 88cm кај жени-94.0%, покачена гликемија ≥ 6.1 mmol/L кај 80.0%, обемот на половина >102cm кај мажи-65.5%, вредности на HDL <1.03mmol/L кај мажи 56.9%, вредности на HDL <1.03mmol/L кај жени 51.5%. Просечната вредност на систолниот крвен притисок кај пациентите со МС изнесува 151.1 ± 9.3 mmHg. Просечната вредност на дијастолниот крвен притисок кај пациентите со МС изнесува 91.0 ± 4.7 mmHg. Просечниот обемот на половината на анкетираниите пациентите со МС изнесува 103.6 ± 9.2 cm. Просечната вредност на HDL кај пациентите со МС изнесува 1.1 ± 0.2 mmol/L. Просечната вредност на гликемија кај пациентите со МС изнесува 6.5 ± 0.6 mmol/L. Просечната вредност на триглицериди кај пациентите со МС изнесува 2.5 ± 0.8 mmol/L. Најзастапена кај пациентите со МС е гојазност/обеситас - 70.8%, со прекумерна тежина се 27.8%, и 1.4% се регистрираат нормална тежина. Заклучок: Преваленцијата на МС во Печкиот округ изнесува 30.4% и е приближно како во Хрватска 34%, и во Тетово со 28,25%, но зависи од популацијата и дефинициите што се користат. Метаболниот синдром е една од главните јавноздравствени проблеми, социокономски проблем во целиот свет, но и во Косово истотака.

PUBLIC HEALTH

PREVALENCE OF THE METABOLIC SYNDROME IN THE PECH DISTRICT

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Abstract

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The metabolic syndrome (MS) is the main clinical and public health challenge in the world, in the wake of urbanization, excess energy intake, increased obesity, sedentary lifestyle and habits. MS leads to a 5-fold increase the risk of diabetes mellitus type 2 (T2DM) and 2 times the risk of cardiovascular disease (CVD) over the next 5 to 10 years. The aim of the research is to determine the prevalence of metabolic syndrome syndrome in the Pech District according to NCEP ATD III / 2001. Material and methods: Cross sectional study was carried out at the General Hospital in Pech, which represents a regional hospital for the Pech District. A total of 1667 patients from the Pech district were interviewed for a period of one year. Results: In the group, MS was present in 506 patients. In the majority of cases, we found the systolic blood pressure condition ≥ 130 mmHg -99.4%, followed by diastolic blood pressure ≥ 85 mmHg-96.4%, elevated triglycerides ≥ 1.7 mmol / l-94.7%, waist circumference > 88 cm in women-94.0%, increased glycemia ≥ 6.1 mmol / L in 80.0%, waist circumference > 102cm in men-65.5%, HDL values <1.03mmol / L in men - 56.9% and HDL values <1.03mmol / L in females 51.5%. The mean value of systolic blood pressure in patients with MS is 151.1 ± 9.3 mmHg. The average value of diastolic blood pressure in patients with MS is 91.0 ± 4.7 mmHg. The average waist circumference of patients with MC was 103.6 ± 9.2 cm. The mean HDL of patients with MS is 1.1 ± 0.2 mmol / L. The average glycemic value in patients with MS is 6.5 ± 0.6 mmol / Average triglyceride value in patients with MS and is 2.5 ± 0.8 mmol / L. The most common in patients with MS is obesity / obesity - 70.8%, overweight is 27.8%, and 1.4% normal weight is registered. Conclusions: The prevalence of MS in the Pech district is 30.4% and was approximately as in Croatia 34% and Tetovo region with 28.25%, but it was dependent on the population and definitions used. The metabolic syndrome is one of the major public health problems, and a socioeconomic problem around the world and in Kosovo, too.

Introduction

Demographic changes combined with increased prevalence of obesity and physical inactivity and urbanization are the most risk factors that explain the increase in the metabolic syndrome problem in a global perspective. This is a common knowledge for decades, but nevertheless, very few studies focus on actual changes in lifestyle-related factors¹. The metabolic syndrome (MS) is the main clinical and public health challenge in the world in time of urbanization, increased energy intake, increased obesity, sedentary lifestyle and habits. MS will increase the risk of diabetes mellitus type 2 (T2DM) five times and 2 times the risk of cardiovascular disease (CVD) over the next 5 to 10 years².

In 1981, the term „metabolic syndrome“ was used to describe the common occurrence of hyperlipoproteinaemia, diabetes, hypertension, gout, and obesity in combination with an increased incidence of cardiovascular disease, fatty liver and cholelithiasis³. The metabolic syndrome (MS) is one set of risk factors, which predispose to the development of type 2 diabetes (T2DM) and cardiovascular disease (CVD)⁴.

Several definitions of the Metabolic Syndrome (6 of the number) are proposed. The first definition is defined by the World Health Organization (WHO) in 1988, when the WHO makes an attempt to standardize the criteria^{5,6}.

The last harmonized definition is seventh, where 5 risk factors were considered as necessary⁴:

1. increased waist according to the specifics of each country;
2. triglycerides ≥ 150 mg / dl,
3. HDL-C <40 mg / dl in men and <50 mg / dl in women,
4. Systolic blood pressure ≥ 130 mm Hg or diastolic blood pressure ≥ 85 mm Hg and
5. Fasting glucose > 100 mg / dl.

One of the definitions is the National Cholesterol Adult Tertiary Adult Treatment III (NCEP ATD III), a pan-III study program, introduced in 2001. According the definition, the definition of metabolic syndrome should have at least three of the following

factors⁵:

1. obesity (waist circumference of 102 cm > in men, > 88 cm in females)
2. Triglycerides ≥ 1.7 mmol / L
3. HDL-cholesterol <0.103 mmol / L in men, <1.29 mmol / L in women
4. systolic blood pressure ≥ 130 mmHg and / or diastolic blood pressure ≥ 85 mmHg
5. glycemia ≥ 6.1 mmol / L

In the world, the prevalence of MS ranges from $<10\%$ to 84% , depending on the region, urban or rural environment, the demographic characteristics (sex, age, race and ethnicity) of the population and which definition of the syndrome is used (7, 8).

Aim of the study is to determine the prevalence of metabolic syndrome in the Pech District according to NCEP ATD III / 2001.

Material and methods

Cross sectional study was performed at the Pech's General Hospital, which is a regional hospital for the Pech district. Pech district is one of the seven districts in Kosovo. The Pech district covers the municipalities of Pech, Klin, Dechani and Istok, according to the latest report by UMNİK in 2011, the population is over 420,000 inhabitants. The administrative center of Pech district is Pech. The study included patients over 18 years, and the exclusion criterion was pregnancy. Demographic data and clinical parameters in this study are provided through a questionnaire. The WHO STEPS Instrument for Chronic Disease Risk Factor Surveillance was used, adapted to the population in Kosovo. The questionnaire consisted of 5 sections, after the pilot study suffered minor corrections and adjusted to the population in the Pech district.

Part I consists of sociodemographic data: sex, age, marital status, education, place of residence, employment, monthly income. Part II consists of questions for smoking (daily), alcohol consumption (daily consumption), consumption of salt/quantity, fruit (frequency and quantity), spice (frequency and quantity), meat, consumption of fat from animal or plant origin, physical activity during the day. Physical activity in

patients according to the questionnaire refers to each daily activity divided into four levels. Part III consists of questions about noticed/registered hypertension, diabetes, familial history of diseases (hypertension, heart words, diabetes). Part IV consists of anthropometric measurements (height, weight, structure between crystalline or the lower rib, arterial pressure measured in a sitting position). V part consists of biochemical measurements (triglycerides, HDL-cholesterol, LDL, glycemia).

In this paper we analyzed part IV and V of

the questionnaire.

Kosovo uses the definition according to the National Cholesterol Education Program Adult Treatment Panel III (NCEP ATD III).

Results

In the study, 1667 patients from Pech District were interviewed for a period of one year. 59.9% were from Pech, 16.6% were from the Istok, 13.7% were from Decani and 9.8% were from Klin (table 1).

city	number	%
Pech	999	59.9
Istok	276	16.6
Dechani	229	13.7
Klina	163	9.8
total	1667	100.0

Table 1: View of the respondents by place of residence

According to the analysis of the data MS was registered in 506 (30.4%) of interviewed patients, and in 69.6% (1161) not registered according to NCEP ATD III / 2001

conditions	number	%
1. triglycerides \geq 1.7 mmol / L	479	94.7
2. systolic blood pressure \geq 130 mmHg	503	99.4
3. diastolic blood pressure \geq 85 mmHg	488	96.4
4. HDL $<$ 1.03mmol / L - men	99	56.9
5. HDL $<$ 1.29 mmol / L - women	171	51.5
6. waist circumference $>$ 102cm - men	114	65.5
7. waist circumference $>$ 88cm - women	312	94.0
8. Glucose \geq 6.1mmol / L	405	80.0

Table 2: Characteristics of the interviewed patients with MS according NCEP ATD III / 2001

Most of the participants meet the conditions set by NCEP ATD III: systolic blood pressure \geq 130 mmHg -99.4%, followed by diastolic blood pressure \geq 85 mmHg-96.4%, elevated triglycerides \geq 1.7 mmol / l-94.7%, waist circumference $>$ 88cm

in women-94.0%, elevated glycaemia \geq 6.1mmol / l at 80.0%, waist circumference $>$ 102cm in men-65.5%, HDL values $<$ 1.03mmol / L in men, 56.9% HDL values $<$ 1.03mmol / L in women 51.5% (tab 2).

height					
MS	average	N	Std.Dev.	minimum	maximum
with	167,3	506	6,11	147,0	190,0
without	169,4	1161	7,09	152,0	188,0
systolic BP					
with	151,1	506	9,93	125,0	180,0
without	126,2	1161	9,57	111,0	160,0
diastolic BP					
with	91,0	506	4,74	80,0	110,0
without	76,1	1161	6,80	60,0	95,0
weight					
with	89,2	506	10,37	65,0	125,0
without	70,5	1161	8,85	50,0	99,0
waist circumference					
with	103,6	506	9,29	82,0	138,0
without	84,9	1161	7,57	63,0	109,0
HDL					
with	1,1	506	0,21	0,1	2,0
without	1,4	1161	0,20	0,68	2,23
LDL					
with	4.0	506	1.03	1.0	10.0
without	3.2	1161	0.62	1.5	5.4
glycemia					
with	6.5	506	0.58	4.4	9.0
without	4.9	1161	0.44	3.2	6.7
triglycerides					
with	2,5	506	0,83	0,74	6,8
without	1,3	1161	0,26	0,59	2,8
cholesterol					
with	6,2	506	1,05	3,6	13,7
without	5,2	1161	0,63	3,3	7,8

Table 3: Anthropometric and biochemical measurements in the interviewed patients with and without MS

The average height in patients with MS is 167.3 ± 6.1 cm, and in the group without MS it is 169.6 ± 7.1 cm. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.000150$)

The mean value of systolic blood pressure in patients with MS is indicated to be 151.1 ± 9.3 mmHg, and in the group without MS it is 126.2 ± 9.6 mmHg. According to the

Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$). The average value of diastolic blood pressure in patients with MS is higher and amounts to 91.0 ± 4.7 mmHg, and in the group without MS it is 76.1 ± 6.8 mmHg. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$). The average weight in patients with MS is higher and amounts to 89.2 ± 0.4 kg, and in the group without MS it is 70.5 ± 8.9 cm.

According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.000150$).

The average waist circumference of patients with MC is higher and is 103.6 ± 9.2 cm, and in the group without MC it is 84.9 ± 7.6 cm. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.000150$).

The mean HDL value in patients with MS is lower and is 1.1 ± 0.2 mmol / L, and in the group without MS it is 1.4 ± 0.2 mmol / L. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$). The mean LDL value in patients with MS is higher and is 4.0 ± 1.0 mmol / L, and in the group without MS it is 3.2 ± 0.6 mmol / L. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$).

The average glycemic value in patients with MS is higher and is 6.5 ± 0.6 mmol / L (higher > 6.1 mmol / L than the predicted value with NCEP ATD III) and in the group without MS it is 4.9 ± 0.4 mmol / L. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$). The average triglyceride value in patients with MS is higher and is 2.5 ± 0.8 mmol / L (higher than > 1.7 mmol / L of the predicted value with NCEP ATD III), and in the group

without MS it is 1.3 ± 0.3 mmol / L. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$). The average cholesterol value in patients with MS is higher and amounts to 6.2 ± 1.1 mmol / L and in the MS without MS it is 5.2 ± 0.6 mmol / L. According to the Mann-Whitney U test, the difference is statistically significant for $p < 0.05$ ($p = 0.00$) (tab 3).

Most patients with MS are obesity / obesity - 70.8%, overweight are 27.8%, and 1.4% normal weight (tab and graph 5), the percentage difference is statistically significant between versus the other modes of BMI for $p < 0.05$ (Difference test, $p = 0.0000$)

The most common in patients without MS is the normal weight - 66.0%, overweight with 30.8%, and obesity with 3.2% (tab 4), the percentage difference is statistically significant between the normal weight versus other modalities of BMI for $p < 0.05$ (Difference test, $p = 0.0000$)

The percentage difference of modalities between the two, BMI -normal weight versus obesity is statistically significant for $p < 0.05$ (Difference test, $p = 0.0000$), and the percentage difference of modalities between the two, BMI - overweight is statically non-significant for $p > 0.05$ (Difference test, $p = 0.2186$)

BMI kg/m ²		with MS		without MS	
		number	%	number	%
18,5 - 24.9	normal	7	1.4	766	66.0
25 - 29.9	overweight	141	27.8	358	30.8
≥ 30	obesity	358	70.8	37	3.2
total		506	100.0	1161	100.0

Table 4: Body Mass Index (BMI) in the interviewed patients with and without MS

Discussion

The prevalence of MS is increasing parallel with an increase the obesity / obesity epidemic. Two thirds of the population in America is overweight or obese, and more than a quarter of the population meets the criteria for MS. For 20 years, the survey in America has seen an increase in the prevalence of 27% (1988/94) to 32% (1999/00)1-10. According to world calculations, four out

of five deaths were MS consequences will occur in countries with low and middle income. In Europe and North America there are gradual changes in lifestyle over the centuries, where diet based on high carbohydrate intake is replaced by high protein intake. Similar changes occur in third world countries, but in many cases the transition takes place over decades. The combination of increased access to food, reduced physical activity leads to increased

prevalence of obesity, dyslipidaemia, hypertension, and hyperglycaemia / diabetes, the combination of which is called a metabolic syndrome¹⁻¹⁰.

Metabolic syndrome is a public health global problem. About a quarter of the European adult population is estimated to have metabolic syndrome, with similar prevalence being registered in Latin America¹⁰. It represents a new epidemic in the development of East Asian countries, including China, Japan and Korea. In Japan, the Ministry of Health, Labor and Social Affairs introduced a screening and intervening program¹¹. The metabolic syndrome was recognized as very common problems in many other countries in the world¹²⁻¹⁷.

The results of the study show a high prevalence of MS in the Pech District in 30.4% of the interviewed patients. Systolic blood pressure was ≥ 130 mmHg in 99.4% of participants, followed by diastolic blood pressure ≥ 85 mmHg in 96.4%, elevated triglycerides ≥ 1.7 mmol/l in 94.7%, waist > 88 cm in women 94.0% , elevated glucose ≥ 6.1 mmol/L in 80.0%, waist > 102 cm in men-65.5%, decreased HDL <1.03 mmol/L in men-56.9% and HDL values <1.29 mmol/L in females 51.5% . Such a prevalence of factors that determine MS can lead to an increase the rate of cardiovascular disease and diabetes.

Similar conclusions come from the study prepared in 2012 in the Tetovo region where the prevalence of MS is 28.25% and there was a high prevalence of arterial hypertension, hypertriglyceridemia and visceral adipositis. The rate of elevated triglyceride levels was 39.05%, decreased levels of HDL-C 46.35%, visceral adipositis up 43.17%, increased glucose up to 25.24%, and increased arterial pressure at 52.06%. The limit value in the study of hyperglycaemia is 5.6 mmol/L, and in our study it was 6.1 mmo /L. The study shows a high prevalence of metabolic syndrome by sex, age and ethnicity, as well as related socio-economic and behavioral indicators, such as education levels, family income levels, and degree of physical activity¹⁸.

In a study performed in Greece in 9696 people, the overall prevalence according to the definition of NCEP-ATP III was lower -24.5%¹⁹. Lower prevalence was registered in Bulgaria in 575 healthy people -23%²⁰.

The study performed in Romania, with 2200 participants, has shown that prevalence was 24%. A larger prevalence was registered in Croatia 34%^{21,22}. A higher prevalence of MS was recorded in the United States of the general population of 34% in the NHANES study 2003-2006 (National Health and Examination Survey Nutrition), the 1988-1994 prevalence according to the criteria ATP III was 29,20%²³.

The Korean epidemiological study "Korean National Health and Nutrition Examination Survey" for the period 1998-2007, has shown continuous increase of the prevalence, in 1998 it was 24.9%, in 2001-29.2%, in 2005-30.4%, and in 2007 - 31.3%²⁴.

In some Western European countries, a stagnation of prevalence has been registered in recent years as a result of measures taken to reduce risk factors such as in the MONA LISA study in France, it was made comparison between 3405 respondents in 1996 and 3554 respondents in 2006²⁵.

Kaur et al.²⁶ reported that worldwide the prevalence of the Metabolic Syndrome (MS) was between 10 and 84% depending on ethnicity, age, gender, and race, while IDF estimates that a quarter of the world's population has MS. According to Pal and Ellis²⁷, 20% of adults in the Western world had MS.

From 2003 to 2012, the overall prevalence of metabolic syndrome in the United States was 33% (95% CI, 32.5% -33.5%)²⁸.

A study in Turkey found that the prevalence of metabolic syndrome was 34.6%²⁹. Tan et al. showed that 96.1%, 95.8%, 84.8% and 97.7% of 313 diabetic patients aged ≥ 30 years had metabolic syndrome, using the definition of NCEP, ATP III, IDF and harmonized definition³⁰.

According to the study of Beltrán-Sánchez and colleagues³¹, the MS was a combination of health disorders such as obesity, high blood pressure, type 2 diabetes, decreased lipids, contributing to cardiovascular disease and death.

Conclusions

The prevalence of MS in the Pech district was 30.4% and was approximately as in Croatia 34% and Tetovo region with 28.25%, but it is dependent on the population and

definitions used.

The prevalence of systolic blood pressure ≥ 130 mmHg is 99.4% and the prevalence of diastolic blood pressure ≥ 85 mmHg was 96.4%. Prevalence of elevated triglycerides ≥ 1.7 mmol/L was 94.7%. The prevalence of waist > 88 cm in women was 94.0% and waist > 102 cm in men was 65.5%. Prevalence of increased glucose ≥ 6.1 mmol/L was 80.0%. Prevalence of reduced HDL < 1.03 mmol/L in men -56.9% and HDL values < 1.29 mmol / L in women 51.5%

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