

ЦУКРОВИЙ ДІАБЕТ І МЕТАБОЛІЧНИЙ СИНДРОМ: ВАЖЛИВІ МЕТАБОЛІЧНІ ПОРУШЕННЯ І НАСЛІДКИ ДЛЯ ЗДОРОВ'Я НАСЕЛЕННЯ У СВІТЛІ ДЕЯКИХ ЕПІДЕМІОЛОГІЧНИХ ДОСЛІДЖЕНЬ

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Реферат

Хвороби серцево-судинної системи - ведуча причина смерті в усіх країнах світу, а також в Польщі, де вони складають майже 50% усіх смертей [1]. Незалежно від регіону світу, смертність від серцево-судинної патології зумовлена передовсім розвитком атеросклерозу [2, 3].

Мета. *Вивчення даних епідеміологічних досліджень впливу діабету і метаболічного синдрому на здоров'я населення.*

Матеріал і методи. *Дані наукових журналів і монографій за 1989-2010 роки. Метод: бібліосемантичний.*

Результати й обговорення. *Всесвітня організація охорони здоров'я (ВООЗ) повідомляє, що з 7 білльйонів людей у світі 175 мільйонів мають діабет, і передбачає, що за наступні 25 років ця кількість зросте до 250 мільйонів. Діабет діагностовано у близько 2-5% населення Європи старше 15 років. Найчастіше хвороба зустрічається в міських поселеннях (близько 2%) і менше в сільських (близько 1%) і частіше у жінок, ніж у чоловіків. У Польщі, потерпають від діабету 1,5 мільйонів чоловік [4]. Встановлено, що серед усіх дітей у світі (від 0 до 14 років), яких було у 2007 році близько 1,8 білльйона - 0,02% мали діабет. Це означає, що у світі дітей з діабетом приблизно 440 000, і кожного року вперше встановлюється такий діагноз у 70 000 випадків. Незважаючи на терапевтичний прогрес, діабет - хвороба, яка скорочує середню тривалість життя пацієнтів на 20-30%. Встановлено, що на лікування діабету і його ускладнень витрачається близько 7% усіх матеріальних коштів системи охорони здоров'я Польщі [5].*

Висновки. *Дані епідеміологічних досліджень поширеності діабету як і метаболічного синдрому не оптимістичні, тому що у всьому світі спостерігається зростання ризику погіршення здоров'я населення через поширення ожиріння та збільшення числа серцево-судинних захворювань.*

Ключові слова: *діабет, метаболічні порушення, хвороби цивілізації, епідеміологія, охорона здоров'я*

Abstract

DIABETES MELLITUS AND METABOLIC SYNDROME: IMPORTANT METABOLIC DISORDERS AND CONSEQUENCES FOR THE HEALTH OF THE POPULATION IN LIGHT OF SOME EPIDEMIOLOGICAL STUDIES

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Aim. *Diseases of the cardiovascular system are the leading cause of death in all countries, as well as in Poland, where*

they account for almost 50% of all deaths. Independent of region, mortality due to cardiovascular disorders is primarily due to atherosclerosis. The aim of the present study was to present selected data from epidemiological studies of diabetes and metabolic syndrome and their health consequences.

Methods. *Papers were selected from scientific journals and monographs from 1989 to 2010, and their contents were analyzed.*

Results. *The World Health Organization (WHO) has noted that, of the 7 billion people in the world, 175 million have diabetes, and it expects that over the next 25 years, this number will increase to 250 million. Diabetes affects about 2-5% of the population of Europe over 15 years of age. The greatest incidence of the disease occurs in urban areas (about 2%) and less in rural areas (about 1%), and it affects women more than men. In Poland, 1.5 million people have diabetes. From this, it was estimated that the population of all children in the world (aged 0 to 14 years) was about 1.8 billion in 2007, of which 0.02% have diabetes. This means that nearly 440,000 children have diabetes, and 70,000 new cases are diagnosed each year. Despite therapeutic advances, diabetes is a disease that causes disability and shortens the average life of patients by 20-30%. It is estimated that the treatment of diabetes and its complications consumes about 7% of all health care expenditures in Poland.*

Conclusions. *Much of the epidemiological data on the prevalence of the diabetes, as well as metabolic syndrome, are not optimistic, because observations carried out around the world confirm that we are dealing with a growing epidemic situation with increased risks for health due to the prevalence of overweight and obesity and the increase of cardiovascular diseases.*

Keywords: *diabetes, metabolic disorders, diseases of civilization, epidemiology, public health*

Introduction

Epidemiological data on the prevalence of the metabolic syndrome are not optimistic, because the observations carried out around the world confirm that we are dealing with the growing epidemic of metabolic syndrome.

Aim of the study

Presentation of selected data from epidemiological studies of diabetes and metabolic syndrome with health consequences.

Materials and methods

Selected papers from scientific journals and monographs from 1989 to 2010.

Results and discussion

Metabolic disorders and consequences for health of population

The prevalence of metabolic syndrome in populations is diverse in terms of ethnicity, age and gender. The main role played by obesity, especially abdominal obesity. The prevalence of obesity and excessive duration of the disease and causing her a lot of diseases of very secondary importance for a sick person and to society, make the costs involved are very large. The only way to reduce these costs is intense primary and secondary prevention and health education, which not only affects an adjunct to treatment, but alone it is by teaching patients how to care for their own health. Metabolic syndrome is one of the major causes of cardiovascular diseases and diabetes type 2. It is estimated that the presence of metabolic syndrome doubles the risk of cardiovascular disease and five times higher risk of developing diabetes type 2 [6,7]. Metabolic syndrome is a conglomeration of factors that contribute to the development of atherosclerotic plaque. As of obesity, which is one of the diagnostic criteria of metabolic syndrome by hypertension and atherogenic dyslipidemia - all these elements contribute to the development of atherosclerosis. In the United States of America, over 65% of people suffer from obesity, in Europe, this problem affects more than 67% of the population. It is estimated that in Poland about 20% of adults are obese [8]. The current state of knowledge shows that the most important etiological factors of the metabolic syndrome are closely related - abdominal obesity and insulin resistance [9]. There are three groups of etiological factors: abdominal obesity and fat metabolism, insulin resistance and compensatory hyperinsulinemia, and a collection of independent risk factors, such as physical inactivity, aging, or hormonal disorders [10]. It is commonly believed that the development of metabolic syndrome are responsible genetic predisposition and environmental factors, which consist of such calories and atherogenic diet and low physical activity. It emphasizes the great diversity within the population due to both genetic and due to the different gene expression in response to various environmental factors [11]. Genetic factors for the development of metabolic syndrome include genes whose mutations are responsible for its individual components, and especially such as polymorphic genes whose expression may lead to obesity, insulin resistance and glucose intolerance, and hypertension [11,12].

There is convincing data that indicate a genetic basis for this disease, as evidenced by a family history of metabolic syndrome such as obesity, insulin resistance, dyslipidemia and hypertension [12,13]. In the fight against cardiovascular disease in overweight and obesity is an important element in combating the disease. People who have problems with the cardiovascular system, they should follow and implement in your eating habits are some important changes to food intake. For proper nutrition healthy eating pyramid developed, which is the basis of the diet of people with overweight and obesity throughout the world. Nowadays, the greatest impact on the pyramid is dietary recommendations, which have developed, scientists from Harvard School of Medicine [14]. It presents the principles of proper nutrition, and facilitates the selection of appropriate products. Major causes of morbidity and mortality in the World are related to poor diet and a sedentary lifestyle. The prevalence of overweight and obesity is often as result of sugar-sweetened soft drinks higher consumption and are increasing globally. Foods high in meat and fat appear to confer a higher diabetes risk in all ethnic groups. Many of the cancers common in the Western world, including colon, prostate and breast cancers, are thought to relate to dietary habits. The nutritional behavior of the procedure to get food. This process is very complex, genetically determined by the production of various hormones, neurotransmitters, the development of sensory organs, to the influence of environmental factors, cultural and knowledge about the value of such food. Consumption of restaurant meals of hamburgers, fried chicken, fried fish, and also Chinese food were independently associated with an increased risk of type 2 diabetes mellitus. Many research shows also a direct link between high consumption of fructose and the development of insulin resistance, hyperinsulinemia, glucose intolerance, hypertriglyceridemia, hypertension and elevated risk of ischemic heart disease. Currently recorded also a significant increase in consumption of added fructose as a sugar, can have adverse metabolic consequences, promote the development of obesity, metabolic syndrome, resulting in type 2 diabetes and atherosclerosis as well as may play also a role in pancreatic cancer etiology. Some case-control and cohort studies have found positive associations between dietary Glicemic Index and risk of various cancers, including those of the colon, breast, and prostate [13,14]. Although inconsistencies in the current findings still need to be resolved, sufficient positive evidence,

especially with respect to renewed interest in postprandial events, suggests that the Glycemic Index may have a role to play in the treatment and prevention of chronic diseases associated with overconsumption and inactivity leading to central obesity and insulin resistance [15, 16, 17].

Metabolic disorders and results of some epidemiological studies

Epidemiological studies indicate a significant prevalence of the metabolic syndrome in both the U.S. and Europe, including Poland. It is estimated that among adults in developed countries from 20 to 25% of people in middle age meet the diagnostic criteria for metabolic syndrome [7]. The coexistence of different definitions and criteria for diagnosis of metabolic syndrome makes it difficult to study the epidemiology and comparison of incidence in different countries. Studies conducted in the United States by Ford et al. [18], who the incidence of metabolic syndrome evaluated based on the WHO definition based on research and NCEP - ATP III (National Cholesterol Education Program-Adult Treatment Panel III) that estimate the prevalence of the metabolic syndrome is depends on the accepted diagnostic criteria. Although the prevalence of metabolic syndrome recognized on the basis of two different definitions are similar, different results were obtained in the assessment rate, especially among men over 40 years of age, and among different ethnic groups, where the differences increase with age. A year earlier, the same research group published the results of the prevalence of the metabolic syndrome in the U.S., which was assessed based on the definition of NCEP - ATP III. The authors analysed the study data NHANES III (The Third National Health and Nutrition Examination Survey) conducted in 1988 - 1994, 8814 a group of men and women aged over 20 years. It was estimated that metabolic syndrome occurs in about 24% of adults in the United States. These authors also evaluated the effect of age and sex of the metabolic syndrome. It was shown that the prevalence of metabolic syndrome increases with age. In the age group 20 - 29 years metabolic syndrome was found in less than 7% of the people, while in the group over 60 years, the frequency is increased above 40%. The prevalence of metabolic syndrome was similar in both sexes. Epidemiological studies have revealed the racial and ethnic differences in the prevalence of the metabolic syndrome and its risk factors [19]. Prevalence of metabolic syndrome

was estimated in other studies of American studies FOS (Framingham Offspring Study - FOS exam 5 / 1991-1995 /) and the study SAHS (San Antonio Heart Study - (SAHS) phase II follow-up exam / 1992-1996 /, that this study included nearly 6000 whites aged 30 - 79 years. in these studies using the diagnostic criteria of WHO and NCEP - ATP III had the following prevalence of metabolic syndrome: FOS - 24% according to both definitions; SASH - 23 and 21% among Caucasians, respectively according to the WHO and NCEP - ATP III, and 31 and 30% among Mexican Americans, respectively by the WHO and NCEP - ATP III. Of gender differences were observed only in the population of Americans of Mexican descent who have metabolic syndrome was more frequent in women than in men [20]. Also a very high incidence of metabolic syndrome observed in some European countries. EGIR (European Group for the Study of Insulin Resistance), based on WHO criteria, in several populations of different European countries assessed the occurrence of this syndrome in persons aged 40 - 55 years 7 - 36% in men and 5 - 22% in women [21]. Data on the prevalence of metabolic syndrome in Poland obtained by NATPOL PLUS trial (Arterial Hypertension in Poland Plus Lipid disorders and diabetes) and WOBASZ study (Multicenter National Health Surveillance /WOBASZ/ population) conducted in Poland. In both studies the prevalence of metabolic syndrome was assessed NCEP - ATP III in 2001 and the most recent version of 2005. Survey a representative sample of Polish population in 6114 included WOBASZ men and 6894 women aged 20 - 74 years. Based on these data, it appears that metabolic syndrome occurs, on average, with one in five adults, or almost 6 million Polish citizens. Metabolic syndrome according to criteria NCEP - ATP III was diagnosed in 19.5% of males and 18.6% women, while the lower limit of fasting to a value ≥ 100 mg/dl and taking account of those receiving medication for hypertension, dyslipidemia, and hyperglycemia, met the criteria for the metabolic syndrome 23% of men and 20% of women [22]. Similar results were observed in the study NATPOL PLUS, in which the prevalence of metabolic syndrome was assessed in a group of 2329 men and women aged ≥ 18 years, based on criteria of NCEP - ATP III [23]. Observing changes in the prevalence of metabolic syndrome in a Polish population can be seen a marked increase in the incidence of metabolic syndrome in the past few years. Study conducted in Poland NATPOL

PLUS showed that the metabolic syndrome are affected by approximately 20% of the adult Polish population [24]. Metabolic syndrome occurs more frequently in men than in women, respectively 49% vs 35%. Characteristically, however, abdominal obesity (which is the basis authorizing the diagnosis of metabolic syndrome) related to more than 50% of women and only 30% of men [25]. The authors of numerous research works have shown a clear effect of age on the prevalence of metabolic syndrome. In Poland, it was observed that the prevalence of the metabolic syndrome significantly increases with age, and this trend is more pronounced in women. In the study reported WOBASZ almost 12 - fold increase in the prevalence of the metabolic syndrome with age among women. Analysis of occurrence of individual symptoms showed the highest prevalence of hypertension [26]. The prevalence of metabolic syndrome is increasing. An analysis of NHANES III conducted in the period 1999 - 2000 shows that metabolic syndrome is affected 27% of adults in the United States. Based on the results of this study, it is estimated that the number of people with the metabolic syndrome in the United States is 64 million and still increasing, which has been shown associated with an increase in obesity [26]. Also on the basis of long-term observation of the population covered by the Polish international survey Pol - MONICA (Monitoring of Trends and Determinants In Cardiovascular Diseases), we can say that the prevalence of metabolic syndrome increases. In 2001, the metabolic syndrome was found in about 20% of the population of Warsaw, this percentage increased significantly compared to 1988, on which there was two - fold lower incidence of metabolic syndrome in men and 3 - fold lower in women [8].

Conclusion

Many epidemiological data on the prevalence of the diabetes as well as metabolic syndrome are not optimistic, because the observations carried out around the world confirm that we are dealing with the growing epidemic situation with secondary importance risks for health with prevalence of overweight and obesity and with an increasing of cardiovascular diseases.

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