

Occurrence of Obesity in Patients with Cardiovascular Diseases

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Abstract:

Objective: The aim of this research is to identify behavioral risk factors in patients with cardiovascular diseases with a focus on obesity.

Design: Descriptive study.

Participants: The sample group consisted of 878 patients with ischemic heart disease.

Methods: Clinical, laboratory parameters and a questionnaire focused on identifying behavioral risk factors of one's lifestyle. Data processing through descriptive and inductive statistics.

Results: The mean BMI is 29.39 (\pm SD 4.69). The results

show that 355 (40.2%) patients have obesity and we identified overweight as a precursor to obesity in 377 (42.93%) patients. We found deficiencies in behavioral risk factors (smoking, alcohol consumption, nutrition, physical activity) in all patients. A significant relationship was confirmed between smoking, alcohol consumption and obesity.

Conclusion: The results of our research suggest that there is a need to improve primary and secondary prevention in patients, healthcare professionals and government policy.

Introduction

Cardiovascular diseases (CVD) belong among diseases with the highest morbidity and mortality rate in Slovakia. According to current medical knowledge, a great number of risk factors contribute to the origination and development of cardiovascular diseases, and it is true that the more risk factors one has, the sooner the disease develops and it develops faster. An increased weight is associated with: increased risk of overall morbidity and mortality from CVD; with increased blood pressure; increased likelihood of diabetes (1).

The summary of ESC recommendations also states that overweight and obesity are associated with a risk of death from CVD (2). In most cases, obesity is a multifactorial determined disease, in which the interaction of environmental factors and genetic predispositions leads to a positive energy balance that results in excessive accumulation of adipose tissue. It is usually defined by body mass index (BMI - weight in kg/height in m²) (3). Obesity is one of the behavioral risk factors for the origination and development of cardiovascular diseases. Other behavioral risk factors include: smoking; poor eating habits; alcohol consumption; insufficient physical activity, and excessive stress. The aim of our research was to identify behavioral risk factors in patients with cardiovascular diseases. We focused on obesity as one of the most important risk factors and we also monitored the relationship between obesity and selected risk factors.

Methodology

The sample group consisted of 878 patients with ischemic heart disease (IHD), hospitalized in a specialized cardiovascular medical facility (VUSCH, a.s.) in Kosice. The sample was selected on the basis of the following criteria: confirmed ischemic heart disease; patients indicated

for selective coronary angiography; patients after coronary angiography or coronary angioplasty; patients with positive findings from coronary angiography. As a method of data collection, we used clinical, laboratory parameters and a questionnaire of our own design, in which we focused on the identification of behavioral risk factors of one's lifestyle (smoking, alcohol consumption, eating habits, physical activity). The research was carried out in a specialized medical facility the East Slovak Institute of Cardiovascular Diseases, a.s. Kosice (VUSCH, a.s.). The study protocol was approved by the Ethics Committee of the Faculty of Medicine, P. J. Safarik University in Kosice (approval no. 115/2011), and all patients gave written informed consent before participating in the study. To evaluate the data, methods of descriptive and inductive statistics (Pearson's Chi-square test) were used. Data were processed in SPSS 25.0.

Results

The sample group consisted of 878 patients with IHD. The mean age of the patients was $57.81 \pm \text{SD } 7.58$ years. The age range of the research group was from 24 to 75 years. Of the total number of respondents, 60% were men ($n = 527$); 40% were women ($n = 351$). In terms of clinical and laboratory parameters, we found the following values: mean systolic blood pressure: $137.03 (\pm \text{SD } 18.80)$; mean diastolic blood pressure: $83.39 (\pm \text{SD } 11.47)$; mean total cholesterol: $4.92 (\pm \text{SD } 1.23)$; mean HDL cholesterol: $1.24 (\pm \text{SD } 0.61)$; mean LDL cholesterol: $2.92 (\pm \text{SD } 1.69)$; mean triglycerides: $1.98 (\pm \text{SD } 1.51)$; mean blood glucose: $6.76 (\pm \text{SD } 4.22)$. The values of obesity represent the calculation of BMI index that is above 30. Mean BMI of the sample is $29.39 (\pm \text{SD } 4.69)$. The maximum BMI value of the respondents was 51.99; the minimum value was 16.90. BMI below 25 (normal weight)

had 16.62% (n = 146) of respondents (Table 1). The results show that 355 (40.2%) patients have obesity and we identified overweight as a precursor to obesity in 377 (42.93%) patients.

Table 1 BMI index values (n = 878)

Body Mass Index (BMI)	n	%
BMI underweight (<18.5)	11	1.25
BMI normal weight (18.5-24.9)	135	15.37
BMI overweight (25-29.9)	377	42.93
BMI obesity (30-34.9)	249	16.9
BMI extreme obesity (>35)	106	12.07

Lifestyle behavioral risk factors

Smoking is identified as one of the most serious risk factors for cardiovascular diseases. In the monitored group, 46.2% (n = 405) were ex-smokers; 40.9% (n = 359) were absolute non-smokers; 12.9% (n = 114) - the smallest number - were smokers.

As for the alcohol consumption, the most common response was: occasional alcohol consumption in 59.6% (n = 523); abstinent in 37.1% (n = 326); regular alcohol consumption in 3.3% (n = 23) of respondents. We were also interested in what kind of alcohol respondents consume. The answer "all types of alcohol" had the highest share of 47.5% (n = 253); it was followed by hard liquor with 20.7% (n = 113); wine 15.5% (n = 86); beer 14.0% (n = 78); whiskey and brandy 1.3% (n = 12); the lowest share had other alcohol with 1% (n = 10).

Table 2 lists the findings related to patients' nutrition. Respondents generally consume fruit

and vegetables, which we can evaluate positively. They should limit the consumption of smoked meat products. When asked what kind of bread they preferred, we found that a consumption of white bread dominated in 57.4% (n = 494) of respondents; 30.9% (n = 266) of asked patients preferred brown bread; consumption of both white and brown was reported by 11.7% (n = 118) of respondents.

Physical activity is an important part of adherence to the treatment of patients with cardiovascular diseases. In the monitored group: 74.5% (n = 650) of patients answered that they preferred walking; 22.1% (n = 195) of patients do not exercise; 3.4% (33) of respondents practice sport regularly.

Overall, we were interested if there was a relationship between obesity and significant risk factors such as smoking and alcohol consumption. A significant relationship was confirmed between obesity and smoking in the sense that ex-smokers and non-smokers are more obese than smokers ($\chi^2 = 6.207$; $p = 0.045$). Similarly, we found a statistically significant relationship between obesity and alcohol consumption. Patients who consume alcoholic beverages occasionally have a higher incidence of obesity than patients who are abstinent or consume alcohol regularly ($\chi^2 = 9.901$; $p = 0.007$).

Discussion and Conclusion

Obesity or overweight are currently a global public health problem that is reaching epidemiological proportions in economically developed countries. According to OECD indicators (4), overweight and obesity occurrence in Slovakia is below the average of the EU countries. About 16% of the population over 15 years of age is obese in Slovakia. According to the analysis of

Table 2 Nutrition of patients with IHD (n = 878)

Consumption	Fruit n (%)	Vegetables n (%)	Sweets n (%)	Smoked products n (%)
daily	436 (49.7)	359 (40.9)	226 (26.1)	75 (8.7)
2-3 times a week	315 (35.9)	400 (45.6)	257 (29.7)	369 (42.9)
once in a week	81 (9.2)	82 (9.3)	202 (23.4)	241 (28.0)
seldom	42 (4.7)	35 (4.0)	177 (19.0)	169 (17.6)
never	6 (0.5)	2 (0.2)	16 (1.8)	24 (2.8)

the latest available data of clients of Counseling Centers for Health Protection and Support (i.e. Health Counselling) of the Slovak Republic Public Health Authority, in the area of occurrence of one of the risk factors of cardiovascular diseases: 50.3% of clients had normal weight; overweight was found in 29.1% of clients; obesity in 18% of clients. Those were mainly age groups over 35 years in men: over 45 years in women (5). In the monitored group, we also recorded a high incidence of obesity (40.2%) and overweight (42.93%) in patients with CVD. The presence of other risk factors such as smoking, poor eating habits, alcohol consumption and insufficient physical activity indicate shortcomings.

The results of our research point to the fact that it is necessary to strengthen primary and secondary prevention in patients with cardiovascular diseases. The most important measure to prevent obesity is to control body weight and maintain a BMI of 20-25.0 kg / m², waist circumference <102cm in men: <88cm in women, ideally <94cm in men; <80cm in women (2, 6, 7). As pointed out by several authors (8, 9, 10, 11, 12), it is possible to use several options, e.g. creation of educational centers or more effective administering of nurses' educational competences in practice. In treatment and nursing care, multidisciplinary cooperation (13) and effective application of communication skills of nurses and physicians in relation to the patient are necessary. Emphasis is placed on the attitude towards health and on responsible behavior, such as: regular weight control; adherence to dietary recommendations; regular physical activity; participation in preventive health check-ups (14). Overweight and obesity is an issue of interest at the national level as well as in the international context.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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