Influence of Body Weight on the Biochemical Indicators in Menopause

Muhamed Rosic1, Semso Rosic2, Remzo Samardzic3, Sulejman Kendic4

Primary Health Care, Health Care Center Cazin, Bosnia and Herzegovina1
Faculty of Teacher Education, University of Bihac, Bosnia and Herzegovina2
Internist Consultative Service, Health Care Center Cazin, Bosnia and Herzegovina3
School of Health Studies, University of Bihac, Bosnia and Herzegovina4

Corresponding author: Muhamed Rosic, MD. Health center Cazin, Cazin, Bosnia and Herzegovina. E-mail: mrosic@gmail.com

ABSTRACT

Introduction: One of the problems of today and probably this century is obesity, which is classified by the WHO as a disease. Material and methods: We performed a prospective cross-sectional study of the body weight impact on certain biochemical indicators in menopausal women living in the municipalities Cazin and Velika Kladusa. Results and discussion: The study included 334 women aged 40-60 years, who had regular medical examinations. For each patient at the beginning of the study we measured: body mass index, total cholesterol values, LDL, HDL and triglycerides fractions. Our findings indicate an increase in total cholesterol, LDL fraction and triglycerides in patients with increased body mass index, without statistical significance. Values of HDL fraction were significantly decreased with increasing body mass index. Keywords: body mass index, biochemical indicators, menopause.

1. INTRODUCTION

The term obesity means abundant accumulation of fat in the body. Obesity is diagnosed when body weight exceeds the ideal weight for more than 20%. Severe pathological changes that affect almost all systems can be expected only when the relative body weight is over 50% from ideal. Obesity occurs especially in the preceding phases of menopause, when there is declining physical of women (1). It was found that obesity is more common in poorer than the rich, because their diet is directed toward foods that are cheaper and have a higher energy value. It should be noted that the dominant type of obesity is alimentary obesity, as a result of a positive energy balance. In obese patients, the levels of cholesterol, triglycerides and lipoproteins in the blood are increased (2). Obesity is positively correlated with the occurrence of many diseases, such as hypertension, atherosclerosis, and thrombosis of the heart and brain blood vessels.

Obesity is a chronic disease that takes epidemic proportions and according to the WHO becoming a leading public health problem. Alarming data suggest that in the developed countries obesity affects nearly one-third of the adult population and one fifth of children.

2. GOALS

Determine existence of statistically significant difference in the concentration of total cholesterol, LDL, HDL fractions and triglyceride levels in patients with normal body mass index compared to patients with increased body mass index (BMI).

3. STUDY DESIGN AND METHODOLOGY

We conducted a prospective cross-sectional study for a period of one year in the municipality of Cazin and Velika Kladusa. The study included 334 women aged 40-60 years of age, which had regular medical examinations. For each patient at the beginning of the study we measured the body mass index, total cholesterol, LDL, HDL and triglycerides.

We divided the sample into three groups according to body mass index:

- Patients with a normal BMI (21.5 to 25.6 kg/m²)
- Patients with increased BMI (25.7 to 30.5 kg/m²)
- Patients with markedly increased BMI (> 30.5 kg/m²)

After collection obtained values of the observed variables are processed with the statistical software SPSS for Windows (Statistic 21). From the statistical models we used one-way analysis of variance.

4. RESULTS

The average age of the patients was 51.75 ± 6.83 years. Table 1 shows the mean values of the observed variables in all three groups of patients. Data in Table 2 indicate a statistically significant decrease in HDL cholesterol in patients with increased body mass index.

Figure 1 shows the mean values of the observed variables in relation to body mass index. The results of our study suggest an increase in cholesterol, LDL and triglycerides in patients with increased body mass index. HDL values are statically significantly decreased with the increase of body mass index.
Data in Table 2 indicate a statistically significant decrease in HDL cholesterol in patients with various diseases, particularly cardiovascular diseases, type 2 diabetes mellitus, obstructive apnea, certain types of cancer, osteoarthritis and asthma. The most serious cardiovascular disorders begin as metabolic syndrome, and cause about 50% of deaths in the developed (Western) countries and greatly reduce the quality of life (3).

The most common causes of death in our country, as well as in the developed countries are diseases of the heart and blood vessels. On their development overweight has a number of effects. As overweight is more expressed the greater are the risks of developing diseases of the heart and blood vessels. Fat concentrated in the abdomen is much more dangerous for the development of cardiovascular disease than fat concentrated in the thighs, and the risk of developing the disease is precisely proportional to the ration of thigh and abdomen circumference (4).

Overweight eventually causes high blood pressure because poorly vascularized adipose tissue creates greater resistance to blood flow towards the periphery, and the requirements for the heart as a pump increased with every physical exertion. It is noted that the obesity is associated with ovarian cancer, as well as breast cancer in postmenopausal women. This is probably related to a larger amount of active estrogen in the blood, which can derive from a less active to more active in the adipose tissue in the abdomen (5). In obese persons are relatively common also gallbladder cancers and cancers of the liver and pancreas.

Therefore, the obesity itself should be viewed as a disease and its treatment as prevention of various diseases (6). However, in spite of everything, obesity is now only nominally considered as a disease. Usually the most normal procedure is to use expensive drugs or procedures to treat the consequences of obesity, and that obesity itself is not treated as such, or if patients are not referred to its treatment but it is left to the patient's decision (7).

As a consequence of obesity occur many diseases–from diabetes mellitus, obstructive apnea, certain types of cancer, osteoarthritis and asthma. The most serious cardiovascular disorders begin as metabolic syndrome, and cause about 50% of deaths in the developed (Western) countries and greatly reduce the quality of life (3).

Table 1. Arithmetic mean of the observed variables tested in our sample

|                | N   | Mean  | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | Lower Bound | Upper Bound | Minimum | Maximum |
|----------------|-----|-------|----------------|------------|---------------------------------|-------------|-------------|---------|---------|
| Cholesterol    |     |       |                |            |                                 |             |             |         |         |
| BMI 21.5 - 25.6| 87  | 5.801 | 1.3888         | .1489      | 5.505                           | 6.096       | 3.1         | 10.8    |         |
| BMI 25.7 - 30.5| 119 | 5.901 | .9600          | .0880      | 5.727                           | 6.075       | 3.4         | 8.5     |         |
| BMI >30.6      | 128 | 5.909 | 1.1115         | .0982      | 5.714                           | 6.103       | 3.7         | 9.7     |         |
| Total          | 334 | 5.878 | 1.1392         | .0623      | 5.755                           | 6.000       | 3.1         | 10.8    |         |
| HDL            |     |       |                |            |                                 |             |             |         |         |
| BMI 21.5 - 25.6| 73  | 1.845 | .8308          | .0972      | 1.651                           | 2.039       | .5          | 4.2     |         |
| BMI 25.7 - 30.5| 104 | 1.788 | .7881          | .0773      | 1.634                           | 1.941       | .6          | 4.1     |         |
| BMI >30.6      | 103 | 1.510 | .7198          | .0709      | 1.369                           | 1.651       | .3          | 5.4     |         |
| Total          | 280 | 1.700 | .7865          | .0470      | 1.608                           | 1.793       | .3          | 5.4     |         |
| LDL            |     |       |                |            |                                 |             |             |         |         |
| BMI 21.5 - 25.6| 73  | 3.323 | 1.1828         | .1384      | 3.047                           | 3.599       | .6          | 6.1     |         |
| BMI 25.7 - 30.5| 102 | 3.526 | 1.0107         | .1001      | 3.328                           | 3.725       | .4          | 6.6     |         |
| BMI >30.6      | 103 | 3.549 | 1.0600         | .1044      | 3.342                           | 3.756       | .1          | 6.5     |         |
| Total          | 278 | 3.481 | 1.0765         | .0646      | 3.354                           | 3.609       | .4          | 6.6     |         |
| Triglycerides  |     |       |                |            |                                 |             |             |         |         |
| BMI 21.5 - 25.6| 83  | 1.511 | 1.0347         | .1136      | 1.285                           | 1.737       | .3          | 6.5     |         |
| BMI 25.7 - 30.5| 116 | 1.670 | .9094          | .0844      | 1.503                           | 1.837       | .5          | 5.9     |         |
| BMI >30.6      | 125 | 1.823 | .9358          | .0837      | 1.657                           | 1.989       | .4          | 5.7     |         |
| Total          | 324 | 1.688 | .9580          | .0532      | 1.583                           | 1.793       | .3          | 6.5     |         |

Table 2. ANOVA test of the observed variables tested in our sample

5. DISCUSSION

Overweight is most commonly a result of excessive food intake and energy and lack of physical activity. It is associated with various diseases, particularly cardiovascular diseases, type
6. CONCLUSIONS

The results of our study suggest an increase in cholesterol, LDL and triglycerides in patients increased body mass index. HDL also significantly decreased with the increase in body mass index. We recommend changing habits in these patients as a first measure in the prevention and treatment of obesity. It is believed that a healthy diet and regular exercise provide long-term health. This lifestyle helps to reduce the risk of cardiovascular diseases and osteoporosis. We recommend choosing foods with low concentration of saturated fatty acids and cholesterol.

Conflict of interest: none declared.

REFERENCES

1. Grodstein F, Manson JE, Colditz GA, Willet WC, Speizer FE, Stampfer MJ. A prospective, observational study of postmenopausal hormone therapy and primary prevention of cardiovascular diseases. Ann Intern Med. 2000; 133: 933-941.

2. Genazzani AR, Gambacciani M. Controversial issues in climacteric medicine: Cardiovascular disease and hormone replacement therapy. Climacteric. 2000; 3: 233-240.

3. Mosca L, Collins P, Herrington DM, Mendelsohn M, Pasternak R, Robertson RM, Schenck-Gustafson K, Smith S, Taubert K, Wenger N. Hormone Replacement therapy and Cardiovascular disease. A statement for health-care Comminings SR, Ecker S, Kruger KA et al. The effect of raloxifene on risk of breast cancer in postmenopausal women. Results from the MORE randomized trial. J Am Med Assoc. 1999; 281: 2189-2197.

4. Lovrenčič-Huzjan A, Bosnar M, Huzjan R, Demarin V. Frequency of different risk factors for ischemic stroke. Acta clinica Croatica. 2000; 38: 159-163.

5. Professionals from the American Heart Association. Circulation. 2001; 104: 499-503.

6. Genant HK, Lucas J, Weiss S. et al. Low dose esterified estrogen therapy. Arch Intern Med. 1997; 157: 2609-2615.

7. Gallagher TC, Geling O, Comite F. Use of multiple providers for regular care and women’s receipt of hormone replacement therapy counseling. Medical Care. 2001; 39(10): 1086-1096.

8. DW, James WP. Obesity. Lancet. 2005; 366 (9492): 1197-1209. doi:10.1016/S0140-6736(05)67483-1.