Obesity as a Risk Factor for Cardiovascular Diseases in Women: Pathogenesis, Clinical Features, and Modern Prevention Methods

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ABSTRACT

Obesity is one of the most pressing public health issues in the modern world. According to the World Health Organization (WHO), the number of overweight patients has significantly increased in recent decades, leading to a rise in cardiovascular disease (CVD) incidence [1]. Women with obesity have a significantly higher risk of developing hypertension and metabolic syndrome, as confirmed by numerous epidemiological studies [2]. Despite the large number of studies on obesity, the management strategies for women with obesity and a high risk of cardiovascular diseases remain insufficiently studied. Modern prevention and correction methods should include not only diet therapy and physical activity but also pharmacological strategies aimed at improving metabolic status and reducing inflammatory processes [3].

Thus, studying obesity as a risk factor for cardiovascular diseases in women and searching for modern approaches to prevention and treatment are crucial tasks of contemporary medicine.

Keywords: obesity, cardiovascular diseases, arterial hypertension, metabolic syndrome, dyslipidemia, insulin resistance

Research Objective

To study the impact of obesity on the cardiovascular system in women, determine the pathogenic mechanisms of cardiovascular complications, and evaluate the effectiveness of modern prevention and correction methods for this pathology.

Introduction

Obesity is one of the leading risk factors for cardiovascular diseases (CVD), particularly among women. This study examines the pathogenic mechanisms of obesity, its impact on the cardiovascular system, and modern approaches to prevention and treatment. The research is based on the clinical analysis of 90 women, divided into three groups depending on the presence of obesity and CVD. The results revealed a direct association between obesity, dyslipidemia, insulin resistance, and the risk of developing hypertension and atherosclerosis. The study presents key prevention strategies, including dietary correction, physical activity, and pharmacological methods.

Materials and Methods

The study included 90 women, divided into three groups: a control group (women with normal body weight), a group of women with obesity without CVD, and a group of women with obesity and established CVD. The study assessed anthropometric parameters, lipid profile, glucose and insulin levels, inflammatory markers (CRP, IL-6), and instrumental diagnostic methods (ECG, echocardiography, vascular Doppler ultrasound). Statistical data analysis was performed using SPSS software.

Study Results

Table 1. Characteristics of the Study Participants

Indicator	Control Group (n=30)	Obesity Without CVD (n=30)	Obesity + CVD (n=30)
Age (years)	45.2 ± 3.8	46.8 ± 4.2	48.5 ± 4.7
Place of Residence	City - 60%, Rural - 40%	City - 55%, Rural - 45%	City - 70%, Rural - 30%
Employment	Employed - 70%, Housewives - 30%	Employed - 65%, Housewives - 35%	Employed - 50%, Housewives - 50%
BMI (kg/m^2)	22.3 ± 1.2	32.5 ± 2.8	35.4 ± 3.1
Obesity Degree	Normal	I-II degree	II-III degree
Waist Circumference (cm)	78.4 ± 4.1	98.7 ± 5.2	105.2 ± 6.3
Blood Pressure (mmHg)	120/80 ± 5	130/85 ± 7	145/90 ± 8
Heart Rate (bpm)	72 ± 6	78 ± 7	84 ± 9
LDL (mmol/L)	2.9 ± 0.3	3.8 ± 0.4	4.5 ± 0.5
HDL (mmol/L)	1.6 ± 0.2	1.3 ± 0.2	1.1 ± 0.2
Triglycerides (mmol/L)	1.1 ± 0.2	1.8 ± 0.3	2.2 ± 0.4
Fasting Glucose (mmol/L)	4.8 ± 0.5	5.6 ± 0.7	6.2 ± 0.9
CRP (mg/L)	1.2 ± 0.4	2.4 ± 0.6	3.8 ± 0.8
Comorbidities	None	Metabolic syndrome, prediabetes	Hypertension, CHD, type 2 diabetes
Clinical Symptoms	No significant complaints	Dyspnea on exertion, fatigue	Headaches, chest pain, fatigue
Diet	Balanced diet, adequate fiber intake	High fat intake, fiber deficiency	High-calorie diet, excessive carbohydrates

Discussion of Results

Data analysis showed that the average age of participants varied slightly between groups. However, patients with obesity and CVD were slightly older, suggesting the accumulation of metabolic disorders over time.

Place of residence influences obesity prevalence: the CVD group had more urban residents, which may be linked to a sedentary lifestyle and dietary habits. The obesity group without CVD had a higher proportion of rural residents, possibly due to lower medical awareness and healthcare access.

Blood pressure levels were significantly higher in patients with obesity, especially in those with CVD. An average level of 145/90 mmHg indicates hypertension, requiring both pharmacological and non-pharmacological correction.

Heart rate was higher in obese patients, likely due to sympathetic nervous system activation and compensatory responses to excess body weight.

Lipid profile changes were pronounced in women with obesity, particularly in the CVD group: increased LDL and triglycerides, along with decreased HDL, indicate a high risk of atherosclerosis and cardiovascular complications.

Dietary habits play a crucial role in obesity development. The CVD group exhibited excessive calorie, fat, and carbohydrate intake,

which, combined with a sedentary lifestyle, exacerbates metabolic disorders.

Conclusion

1. Obesity is closely associated with increased blood pressure, dyslipidemia, and carbohydrate metabolism disorders, significantly raising the risk of cardiovascular diseases.
2. The CVD group showed a more severe degree of obesity, accompanied by hypertension, lipid metabolism disorders, and chronic inflammation.
3. Social factors, such as place of residence, occupation, and diet, significantly impact obesity development and its complications.
4. A comprehensive approach to obesity prevention and treatment is necessary, including lifestyle modification, dietary correction, physical activity, and metabolic risk factor management.

References

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