

THE ROLE OF INSULIN RESISTANCE-ASSOCIATED METABOLIC SYNDROME IN THE PATHOGENESIS OF CARDIOVASCULAR DISEASES

Bekmurodova M.R.

Samarkand State Medical University 5th-year student 2nd faculty of general medicine

Department of propaedeutics of internal diseases

Scientific supervisor – Assistant

PhD. Tairov D.R.

Introduction. Metabolic syndrome is a pathological condition associated with insulin resistance, which significantly increases the risk of cardiovascular diseases. Its core components include abdominal obesity, dyslipidemia, arterial hypertension, and impaired glucose tolerance. These alterations contribute to severe cardiovascular damage through disruptions in lipid and carbohydrate metabolism, endothelial dysfunction, and oxidative stress.

Research objective. To analyze cardiovascular impairments associated with insulin resistance in metabolic syndrome, determine the relationship between its components and cardiovascular complications, and enhance diagnostic and therapeutic approaches.

Materials and methods. The study was conducted at the Consultation Polyclinic and Cardiology Department of the 1st Clinic of Samarkand State Medical University. A total of 120 patients with cardiovascular diseases were enrolled. Diagnosis was based on the 2005 diagnostic criteria established by the American Heart Association and the National Cholesterol Education Program. The study included patients from the following age groups: 35–44 years—22 patients (18.3%), 45–59 years—61 patients (50.8%), 60–74 years—33 patients (27.5%), 75 years and older—4 patients (3.4%). The mean age of the patients was 52.6 ± 8.7 years, while the average age at disease onset was 44.8 ± 7.2 years. Notably, metabolic syndrome developed in 68.2% of cases within the 35–55 age range.

Research results. Among patients aged 35–44 years, the prevalence of cardiovascular diseases was as follows: arterial hypertension—10 cases (45.5%), atherosclerosis—6 cases (27.3%), stenocardia—3 cases (13.6%), myocardial infarction—1 case (4.5%). In the 45–59 age group: arterial hypertension—37 cases (60.7%), atherosclerosis—28 cases (45.9%), stenocardia—15 cases (24.6%), myocardial infarction—7 cases (11.5%), heart failure—2 cases (3.3%). Among patients aged 60–74 years: arterial hypertension—29 cases (87.9%), atherosclerosis—25 cases (75.8%), stenocardia—20 cases (60.6%), myocardial infarction—12 cases (36.4%), heart failure—5 cases (15.2%). In patients aged 75 years and older: arterial hypertension—4 cases (100%), atherosclerosis—3 cases (75%), stenocardia—3 cases (75%), myocardial infarction—2 cases (50%), heart failure—2 cases (50%). Based on the diagnostic criteria established by the American Heart Association and the National Cholesterol Education Program, insulin resistance was confirmed in patients exhibiting at least three out of five diagnostic markers. The distribution of metabolic syndrome components was as follows: 35–44 years: abdominal obesity—16 cases (72.7%), triglycerides >1.7 mmol/L—14 cases (63.6%), hypoalphalipoproteinemia—12 cases (54.5%), blood pressure $>130/85$ mmHg—10 cases (45.5%), fasting glucose ≥ 5.6 mmol/L—9 cases (40.9%). Patients with three or more criteria—14 cases (63.6%). 45–59 years: abdominal obesity—48 cases (78.7%), triglycerides >1.7 mmol/L—45 cases (73.8%), hypoalphalipoproteinemia—40 cases (65.6%), blood pressure $>130/85$ mmHg—37 cases (60.7%), fasting glucose ≥ 5.6 mmol/L—35 cases (57.4%). Patients with three or more criteria—42 cases (68.9%). 60–74 years: abdominal obesity—28 cases (84.8%), triglycerides >1.7 mmol/L—27 cases (81.8%), hypoalphalipoproteinemia—25 cases (75.8%), blood

pressure $>130/85\text{mmHg}$ –29 cases(87.9%),fasting glucose $\geq 5.6\text{mmol/L}$ –27 cases(81.8%).Patients with three or more criteria–30 cases(90.9%).75 years and older abdominal obesity–3 cases(75%),triglycerides $>1.7\text{mmol/L}$ –3 cases(75%),hypoalphalipoproteinemia–3 cases(75%),blood pressure $>130/85\text{mmHg}$ –4 cases(100%),fasting glucose $\geq 5.6\text{mmol/L}$ –3 cases(75%).Patients with three or more criteria–4 cases(100%).According to the study results,at least three diagnostic criteria for metabolic syndrome were identified in 90 out of 120 patients (75%), confirming the presence of insulin resistance.

Conclusion.Cardiovascular diseases and insulin resistance are closely interrelated,with their detrimental effects on the cardiovascular system becoming more pronounced with age.This relationship leads to the development of various diseases and symptoms of different severity levels.The obtained results confirm the direct association between metabolic syndrome and cardiovascular diseases,highlighting the necessity for early diagnosis,prevention,and the improvement of comprehensive treatment strategies.

Full name of author(s), course, and faculty (to be specified)	Bekmurodova Malika Ro'zimurod qizi Samarkand State Medical University 5th-year student 2nd faculty of general medicine
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Name of presenter	Bekmurodova Malika Ro'zimurod qizi
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Short name of higher education institution	SamSMU
Department	Department of propaedeutics of internal diseases
Participant(s) contact information: phone number,email,link to social media profile	+998908757568 bekmurodovamalika15@gmail.com telegram:@loves_babie
Full name of scientific advisor(s) &contact number	Tairov Doston Rustamovich +998902716954
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