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METABOLIC RISK STRATIFICATION IN ADULTS WITH EXCESS ADIPOSITY: ANTHROPOMETRIC AND BIOCHEMICAL ASSESSMENT

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Abstract: This study examined clinical and metabolic characteristics of metabolic syndrome in individuals with excess body weight and obesity. The study included 34 men and 77 women with comparable mean ages of 39.4 ± 1.3 and 39.2 ± 0.9 years, respectively. Participants were classified according to body mass index as overweight, first-degree obesity, or second- and third-degree obesity. Increasing body mass index was accompanied by greater body fat accumulation, while abdominal obesity was already evident among men with excess body weight. Men demonstrated higher triglycerides, lower HDL cholesterol, and more frequent abdominal obesity, dyslipidemia, and fatty liver than women.

Keywords: metabolic syndrome; obesity; excess body weight; abdominal obesity; dyslipidemia.

СТРАТИФИКАЦИЯ МЕТАБОЛИЧЕСКОГО РИСКА У ВЗРОСЛЫХ С ИЗБЫТОЧНЫМ НАКОПЛЕНИЕМ ЖИРОВОЙ ТКАНИ: АНТРОПОМЕТРИЧЕСКАЯ И БИОХИМИЧЕСКАЯ ОЦЕНКА

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Аннотация: исследовании изучены клинико-метаболические особенности метаболического синдрома у лиц с избыточной массой тела и ожирением. Обследованы 34 мужчин и 77 женщины, сопоставимые по среднему возрасту: $39,4 \pm 1,3$ и $39,2 \pm 0,9$ года соответственно. В зависимости от индекса массы тела обследованные были распределены на группы с избыточной массой тела, ожирением I степени и ожирением II–III степени. С увеличением индекса массы тела возрастало содержание общего жира,

причем у мужчин абдоминальное ожирение выявлялось уже при избыточной массе тела. У мужчин отмечались более высокие уровни триглицеридов, более низкие значения ХС ЛПВП, а также более высокая частота абдоминального ожирения, дислипидемии и жирового гепатоза.

Ключевые слова: метаболический синдром; ожирение; избыточная масса тела; абдоминальное ожирение; дислипидемия.

Introduction: Metabolic syndrome is a cluster of metabolic abnormalities frequently associated with excess body weight and obesity. Its clinical expression depends not only on adiposity but also on fat distribution and accompanying biochemical changes. Visceral fat accumulation is especially important because it is associated with insulin resistance, dyslipidemia, arterial hypertension, and fatty liver. Therefore, body mass index alone cannot fully describe metabolic risk in individuals with increased body weight. Waist-to-hip ratio, body fat percentage, fasting glucose, triglycerides, high-density lipoprotein cholesterol, and liver enzymes provide complementary information about metabolic status. The source study compared men and women with excess body weight and different degrees of obesity. Participants were classified into excess weight, first-degree obesity, and second- or third-degree obesity according to BMI. The analysis focused on abdominal and total fat accumulation, lipid abnormalities, glucose metabolism, arterial hypertension, and fatty liver. The findings indicated that metabolic abnormalities developed differently between the two groups. In men, abdominal fat distribution and several metabolic complications were already prominent at excess body weight. In women, metabolic disturbances increased more clearly with progression toward severe obesity. These observations emphasize the importance of early anthropometric and biochemical assessment before advanced obesity develops. Recognition of unfavorable metabolic patterns may support individualized prevention and weight-management strategies and help reduce future cardiometabolic complications.

Aim of the study: To evaluate clinical and metabolic characteristics of metabolic syndrome in individuals with excess body weight and obesity and to determine

how increasing body mass index is associated with the distribution of major metabolic abnormalities.

Materials and methods. The study included 111 individuals: 34 men and 77 women admitted to a therapeutic clinic for weight reduction. Mean age was 39.4 ± 1.3 years in men and 39.2 ± 0.9 years in women. Participants were divided according to BMI into three subgroups: excess body weight, BMI 25–29.9 kg/m²; first-degree obesity, BMI 30–34.9 kg/m²; and second- or third-degree obesity, BMI above 35 kg/m². Anthropometric assessment included body weight, height, waist and hip circumferences, and skin-fold thickness. Measurements were obtained with 0.5 cm accuracy for linear dimensions and circumferences, 1 mm for skin folds, and 0.1 kg for body weight. Body fat percentage was measured by bioimpedance using an OMRON device. BMI was calculated from body weight and height. Fat distribution was assessed by waist-to-hip ratio; abdominal obesity was defined as ≥ 0.90 in men and ≥ 0.85 in women. Biochemical assessment included fasting glucose, total cholesterol, high-density lipoprotein cholesterol, triglycerides, aspartate aminotransferase, and alanine aminotransferase. Serum parameters were measured by enzymatic methods using a Photometer 5010 analyzer. Fatty liver was identified using ultrasound and biochemical findings. Metabolic syndrome components included abdominal obesity, dyslipidemia, arterial hypertension, impaired carbohydrate metabolism, and fatty liver. Statistical analysis was performed using standard methods with Statistica 6.0 using analysis of variance, Student's t-test, chi-square, and Mann–Whitney procedures. Comparisons considered sex and BMI category, and statistical significance was determined from reported probability values.

Results. Increasing BMI was accompanied by adipose accumulation in both groups. In women, BMI increased from 27.14 ± 0.18 kg/m² with excess weight to 32.45 ± 0.16 kg/m² with first-degree obesity and 40.7 ± 0.79 kg/m² with second- or third-degree obesity. Body-fat percentage increased from $33.35 \pm 0.41\%$ to $39.04 \pm 0.35\%$ and $44.07 \pm 0.56\%$, respectively ($p < 0.01$). In men, BMI values were 28.73 ± 0.33 , 32.64 ± 0.29 , and 41.1 ± 0.95 kg/m², while body-fat percentages were

24.27±1.23%, 29.35±0.68%, and 35.46±0.70%. Men had waist-to-hip ratios above recommended values in all BMI categories, whereas women exceeded the threshold mainly with second- or third-degree obesity, indicating earlier visceral fat accumulation in men. In women, increasing BMI was associated with higher fasting glucose, triglycerides, and ALT activity and lower HDL cholesterol. In men, BMI increase was accompanied by higher fasting glucose and ALT. Men had higher triglycerides and lower HDL cholesterol than women. Abdominal obesity occurred in 13%, 35%, and 48% of women versus 70%, 78%, and 89% of men across BMI categories. Dyslipidemia occurred in 18%, 14%, and 38% of women and 40%, 52%, and 79% of men. Hypertension increased from 7% to 16% and 43% in women and from 20% to 30% and 49% in men. Fatty liver was found in 3%, 8%, and 29% of women compared with 30%, 30%, and 40% of men. Thus, men demonstrated a greater metabolic burden already at excess weight, whereas women showed a more progressive accumulation of metabolic syndrome components with increasing obesity severity.

Conclusions: Increasing BMI was accompanied by greater total and visceral fat accumulation and a higher frequency of metabolic abnormalities. Men demonstrated earlier abdominal obesity, dyslipidemia, fatty liver, and hypertension, whereas women showed a clearer progressive increase in metabolic disturbances with increasing obesity severity. Abdominal obesity affected 70% of men with excess weight compared with 13% of women. These findings support early anthropometric and biochemical screening in individuals with excess weight. Timely identification of metabolic syndrome components may facilitate lifestyle intervention and reduce future cardiometabolic risk. Regular monitoring is particularly important before severe obesity and established complications develop in routine clinical practice.

References.

1. Ziyadullaev, S. K., Sultonov, I. I., Dushanova, G. A., & Akbarovna, K. S. (2021). The Effectiveness Of Pharmacotherapy For Dmards With Ra Depending On The C3435t Polymorphism Of The Mdr1 Gene. *Int. J. of Aquatic Science*, 12(3), 2908-2916.
2. Islomovich, S. I. (2024). GENDER CHARACTERISTICS OF THE CURRENT RHEUMATOID ARTHRITIS. *International journal of medical sciences*, 4(10), 3-8.
3. Ilkhom, S. (2023). CAJAM–VOLUME 1. ISSUE 1. 2023. *Central Asian Journal of Advanced Medicine*, 1(01), 16-19.
4. Kireev, V. V., Sultonov, I. I., Ziyadulaaev, S. K., Suyarov, A. A., Aripova, T. U., Usmanbekova, K. T., & Nasretidinova, M. T. (2021). Genetic Engineered Preparations-An Innovative Approach in the Treatment of Rheumatoid Arthritis. *Annals of the Romanian Society for Cell Biology*, 25(3), 4114-4119.
5. Sultonov, I. I., Xasanov, F. S., Eshmuratov, S., Uralov, R. S., Shukurova, D., & Ziyadullayev, S. X. Predictors of Systemic Lupus Erythematosus: A Case-control Study. *International journal of health sciences*, 6(S10), 175-182.
6. Khusainova, M. A., Vakhidov, J. J., Khayitov, S. M., & Mamadiyorova, M. M. (2023). Cardiac arrhythmias in patients with rheumatoid arthritis. *Science and Education*, 4(2), 130-137.
7. Yarmatov, S., Khusainova, M., & Djabbarova, N. (2023). STUDY OF QUALITY OF LIFE INDICATORS IN PATIENTS WITH CORONARY HEART DISEASE USING THE SF-36 QUESTIONNAIRE. *Бюллетень студентов нового Узбекистана*, 1(7), 58-64.