

<https://doi.org/10.7124/bc.000B6D>

**O.M. Tatarchuk, L.M. Mosiychuk, I.A. Klenina,
O.M. Shevtsova, O.P. Petishko**

SI "Institute Gastroenterology of the National Academy
of Medical Sciences of Ukraine"

96, Slobozhanskyi Ave., Dnipro, Ukraine, 49074

om_tat@ukr.net

ASSOCIATION OF FGF21 WITH VISCERAL OBESITY IN GASTROESOPHAGEAL REFLUX DISEASE AND METABOLIC DYSFUNCTION-ASSOCIATED STEATOTIC LIVER DISEASE

Background/Aim. Fibroblast growth factor 21 (FGF21) regulates lipid and glucose metabolism. We aimed to assess its association with visceral obesity, insulin resistance and leptin in the patients with gastroesophageal reflux disease (GERD) and metabolic dysfunction-associated steatotic liver disease (MASLD). **Methods.** This study included 80 patients with a mean age of 39.04 ± 1.03 years (56 men, 24 women) and 16 generally healthy persons as controls (11 men, 5 women; 34.6 ± 1.6 years). The study was approved by the Medical and Biological Ethics Committee of the State Institution "Institute of Gastroenterology of the NAMS of Ukraine" (Protocol No. 2, April 19, 2021). Body composition was assessed by TANITA MC-780MA; serum FGF21, leptin and insulin were measured by ELISA. **Results.** FGF21 differed by adiposity category (Kruskal-Wallis $p = 0.024$): overweight, 1254 (1216;1310) pg/mL; obesity grade 1, 1321 (1298;1345); grade 2, 1335 (1255;1493); grade 3, 1374 (1305;1400). Visceral obesity was detected in 31/80 (38.8%) patients; FGF21 was higher than in controls (1374 (1307;1456) vs 1101 (1011;1153) pg/mL; $p < 0.01$) and patients with a safe visceral fat level (1314 (1231;1356); $p < 0.05$). FGF21 was the highest in MASLD (1450 (1417;1491)) versus GERD (1314 (1290;1393)) and MASLD+GERD (1324 (1242;1371)) pg/mL ($p < 0.05$). FGF21 correlated with visceral fat ($r = 0.26$; $p = 0.0197$), BMI ($r = 0.24$; $p = 0.004$), HOMA-IR ($r = 0.30$; $p = 0.0103$), leptin ($r = 0.29$; $p = 0.0195$) and triglyceride/HDL-C ratio ($r = 0.48$; $p = 0.0001$). Logistic regression showed OR = 1.28 ($p = 0.0022$). FGF21 >1317.5 pg/mL identified visceral obesity with 71.0% sensitivity and 53.1% specificity (AUC = 0.705; $p < 0.01$). **Conclusions.** Elevated FGF21 levels were associated with visceral adiposity and adverse metabolic features. FGF21 >1317.5 pg/mL may be considered an adjunct marker of visceral obesity; its independent predictive value requires confirmation in larger studies with adjustment for age, sex and BMI (taking into account a multitude of factors). **Funding.** "To study the nutritional status of patients with diseases of the gastrointestinal tract and to develop a program for the correction of detected disorders" (No. 0121U111550).

Keywords: fibroblast growth factor 21, visceral obesity, insulin resistance, leptin.

REFERENCES:

1. Sørensen TIA *et al.* Epidemiology of Obesity. *Handb Exp Pharmacol.* 2022;274:3—27.
2. Li T *et al.* Association of Obesity with Coronary Artery Disease, Erosive Esophagitis and Gastroesophageal Reflux Disease: A Systematic Review and Meta-Analysis. *Iran J Public Health.* 2022;51(8):1690—705.

Received: 05.06.2026; Accepted: 08.09.2026; Published: 29.09.2026

Citation: Tatarchuk O.M., Mosiychuk L.M., Klenina I.A., Shevtsova O.M., Petishko O.P. (2026) Association of FGF21 with visceral obesity in gastroesophageal reflux disease and metabolic dysfunction-associated steatotic liver disease. *Biopolymers & Cell*, Special issue(42), 91. <https://doi.org/10.7124/bc.000B6D>

© Publisher PH "Akademperiodyka" of the NAS of Ukraine, 2026. This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted reuse, distribution, and reproduction in any medium, provided the original work is properly cited