

KORELASI ANTARA *VISCERAL FAT ADIPOSITY/SUBCUTANEOUS FAT ADIPOSITY RATIO* DENGAN *PANCREATIC STEATOSIS* PADA PASIEN DIABETES MELITUS TIPE 2

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INTISARI

Latar Belakang: Adipositas visceral berperan penting dalam patofisiologi diabetes melitus tipe 2 (DMT2) dan diduga berhubungan dengan deposisi lemak ektopik, termasuk *pancreatic steatosis*. Meskipun lemak visceral sering dikaitkan dengan *pancreatic steatosis* hubungan antara *pancreatic steatosis* dan rasio *visceral fat adiposity* terhadap *subcutaneous fat adiposity* (VAT/SAT ratio) pada pasien DMT2 masih belum jelas.

Tujuan: Menilai korelasi antara VAT/SAT ratio dan *pancreatic steatosis* pada pasien DMT2 menggunakan *computed tomography* (CT).

Metode: Penelitian ini merupakan studi *retrospective cross-sectional* pada pasien DMT2 yang menjalani CT abdomen periode Januari 2023–September 2025. Luas lemak visceral dan subkutan diukur secara semi-otomatis pada CT non-kontras setinggi umbilikus untuk menghitung VAT/SAT ratio. *Pancreatic steatosis* dinilai berdasarkan selisih atenuasi parenkim pankreas terhadap lien pada CT non-kontras. Analisis korelasi, korelasi parsial, dan regresi multivariat dilakukan dengan mempertimbangkan variabel perancu.

Hasil: Sebanyak 43 subjek dianalisis dengan median VAT/SAT ratio 0,57 (0,23–2,68) dan rerata selisih atenuasi pankreas–lien $-7,36 \pm 6,39$ HU. Tidak ditemukan korelasi bermakna antara VAT/SAT ratio dan *pancreatic steatosis* ($r = -0,081$; $p = 0,607$). Korelasi antara *pancreatic steatosis* dengan visceral fat, subcutaneous fat, dan total fat juga tidak signifikan ($p > 0,05$). Analisis multivariat menunjukkan bahwa VAT/SAT ratio bukan prediktor independen *pancreatic steatosis* setelah kontrol variabel perancu ($p = 0,641$).

Kesimpulan: VAT/SAT ratio tidak berhubungan secara signifikan dengan *pancreatic steatosis* pada pasien DMT2. Temuan ini menunjukkan bahwa akumulasi lemak pankreas bersifat multifaktorial dan tidak semata-mata ditentukan oleh distribusi lemak abdominal.

Kata kunci: *pancreatic steatosis*, VAT/SAT ratio, lemak visceral, CT, diabetes melitus tipe 2

CORRELATION BETWEEN THE VISCERAL FAT ADIPOSIY/SUBCUTANEOUS FAT ADIPOSIY RATIO AND PANCREATIC STEATOSIS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

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ABSTRACT

Background: Visceral adiposity plays a key role in the pathophysiology of type 2 diabetes mellitus (T2DM) and has been implicated in ectopic fat deposition, including pancreatic steatosis. However, the association between pancreatic steatosis and the visceral fat adiposity/subcutaneous fat adiposity (VAT/SAT) ratio in patients with T2DM remains unclear.

Objective: To evaluate the correlation between the VAT/SAT ratio and pancreatic steatosis in patients with T2DM using computed tomography (CT).

Methods: This retrospective cross-sectional study included patients with T2DM who underwent abdominal CT between January 2023 and September 2025. Visceral and subcutaneous fat areas were quantified semi-automatically on non-contrast axial CT images at the umbilical level to calculate the VAT/SAT ratio. Pancreatic steatosis was assessed by measuring the attenuation difference between the pancreas and spleen on non-contrast CT using region-of-interest analysis. Correlation, partial correlation, and multivariate regression analyses were performed to adjust for potential confounding variables.

Results: Forty-three subjects were analyzed, with a median VAT/SAT ratio of 0.57 (0.23–2.68) and a mean pancreatic–splenic attenuation difference of -7.36 ± 6.39 HU. No significant correlation was observed between the VAT/SAT ratio and pancreatic steatosis ($r = -0.081$; $p = 0.607$). Pancreatic steatosis was also not significantly correlated with visceral, subcutaneous, or total fat ($p > 0.05$). Multivariate analysis confirmed that the VAT/SAT ratio was not an independent predictor of pancreatic steatosis ($p = 0.641$).

Conclusion: In patients with T2DM, the VAT/SAT ratio was not significantly associated with pancreatic steatosis. These findings suggest that pancreatic fat accumulation is influenced by multifactorial mechanisms beyond abdominal fat distribution alone.

Keywords: pancreatic steatosis, VAT/SAT ratio, visceral fat, computed tomography, type 2 diabetes mellitus