Association between Chinese Visceral Adiposity Index and Risk of Diabetes among Residents Aged 40 Years and Older in Liaoning Province: A Postprint

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Abstract

Background The Chinese Visceral Adiposity Index (CVAI) is a novel and simple indicator for assessing human visceral adiposity, which is closely associated with cardiovascular and metabolic diseases. Currently, research on the correlation between CVAI and diabetes mellitus remains limited.

Objective This study aims to investigate the association between CVAI and diabetes mellitus, provide a scientific basis for the screening and prediction of diabetes, and offer new insights and recommendations for diabetes prevention, treatment, and management.

Methods From January to December 2023, a stratified multistage cluster sampling method was employed to conduct questionnaire surveys, physical examinations, and laboratory tests among urban and rural residents aged 40 years and above in Liaoning Province. Measurements of height, body weight, waist circumference (WC), blood pressure, total cholesterol (TC), high-density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), glycated hemoglobin (HbA1c), and fasting plasma glucose (FPG) were obtained from participants to calculate CVAI. Binary logistic multivariate regression analysis and restricted cubic spline plots were used to evaluate the association between CVAI and diabetes mellitus. Receiver operating characteristic (ROC) curve analysis was employed to assess the predictive value of CVAI, BMI, and waist circumference (WC) for diabetes risk in the total population, men, and women, with calculation of the area under the ROC curve (AUC), sensitivity, specificity, and optimal cutoff values.

Results This study included a total of 32,813 participants, among whom 8,421 had diabetes mellitus, yielding a prevalence rate of 25.7%. The mean CVAI was

(119.37$±$37.01). When CVAI was categorized by quartiles, the prevalence rates of diabetes in Q1, Q2, Q3, and Q4 groups were 13.9% (1,138/8,204), 22.7% (1,862/8,203), 29.4% (2,415/8,203), and 36.6% (3,006/8,203), respectively. Binary logistic multivariate regression analysis revealed that, after adjusting for confounding factors, the Q2 (OR=1.74, 95%CI=1.60~1.89), Q3 (OR=2.38, 95%CI=2.20~2.58), and Q4 (OR=3.18, 95%CI=2.94~3.44) groups of CVAI were all associated with a high risk of diabetes mellitus compared with the Q1 group (P<0.05). Restricted cubic spline analysis demonstrated a significant non-linear relationship between CVAI and diabetes risk (P<0.01). With increasing CVAI levels, the risk of diabetes mellitus increased significantly (P<0.05). ROC curve analysis showed that the AUCs for CVAI, BMI, and WC in predicting diabetes risk were 0.635 (95%CI=0.628~0.642, P<0.001), 0.611 (95%CI=0.604~0.608, P<0.001), and 0.579 (95%CI=0.572~0.586, P<0.001), respectively.

Conclusion CVAI demonstrates a significant positive association with diabetes mellitus and can identify potentially high-risk populations for diabetes at an early stage, enabling timely implementation of health management and intervention measures targeting the onset and progression of diabetes.

Full Text

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Note: The remainder of the provided text consists primarily of PDF encoding artifacts and corrupted data that cannot be meaningfully translated. The content appears to have been a results section containing statistical notation (P values, odds ratios, confidence intervals), but the underlying data is irrecoverably corrupted with (cid:) markers and fragmented characters. Per the instruction to "skip garbage text (watermarks, artifacts, meaningless fragments)," only the institutional preamble and journal information have been preserved.

Note: Figure translations are in progress. See original paper for figures.