Association of Indian Diabetes Risk Score with Arterial Stiffness in Asian Indian Nondiabetic Subjects: The Chennai Urban Rural Epidemiology Study (CURES-84)


Abstract

Objective:
In this study, we aim to determine the association of Indian Diabetes Risk Score (IDRS) with augmentation index (AI), a preclinical marker of early atherosclerotic changes.

Methods:
Subjects without known diabetes (n = 1985) were randomly selected from the Chennai Urban Rural Epidemiology Study, an ongoing population-based study on a representative population (aged ≥20 years) of Chennai, the largest city in Southern India. Augmentation index was measured using the Sphygmocor apparatus (Sphygmocor BPAS-I; PWV Medical, Sydney, Australia). Serum lipids were measured in an overnight fasting sample along with other biochemical parameters. Indian Diabetes Risk Score includes four parameters: age, abdominal obesity, family history of type 2 diabetes, and physical activity.

Results:
Arterial stiffness values increased with an increase in IDRS. Subjects with IDRS ≥60 had significantly higher AI (24.6 ± 7.2; p < .001) compared to subjects with an IDRS of 30–60 (16.4 ± 5.5; p < .001) and with IDRS <30 (13.3 ± 4.5), and the p for trend was statistically significant (<.001). Pearson correlation analysis in the total population revealed that AI was significantly correlated with age (p < .001), systolic and diastolic blood pressure (p < .001), IDRS (p < .001), glycated hemoglobin A1c (A1C) (p < .001), serum cholesterol (p < .001), serum triglycerides (p < .001), high-density lipoprotein (HDL) cholesterol (p < .001), low-density lipoprotein cholesterol (p < .001), and non-HDL cholesterol (p < .001). In linear regression analysis, IDRS showed a significant association with AI even after adjusting for blood pressure, smoking, insulin resistance, A1C, cholesterol, and triglycerides (β = 6.388; p < .001).

Conclusion:
This study shows that, in addition to identifying unknown diabetes, IDRS also helps to identify those with arterial stiffness.


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Abbreviations: (A1C) glycated hemoglobin A1c, (AI) augmentation index, (BMI) body mass index, (CAD) cardiovascular disease, (CURES) Chennai Urban Rural Epidemiology Study, (HDL) high-density lipoprotein, (HOMAIR) homeostasis assessment model for insulin resistance, (IDRS) Indian Diabetes Risk Score, (LDL) low-density lipoprotein, (ROC) receiver operating characteristic, (WHO) World Health Organization

Keywords: arterial stiffness, Asian Indians, atherosclerosis, augmentation index, Indian Diabetes Risk Score

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