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Does the Carotid Bulb Offer a Better 10-Year CVD/Stroke Risk Assessment Compared to the Common Carotid Artery? A 1516 Ultrasound Scan Study

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Abstract

The objectives of this study are to (1) examine the "10-year cardiovascular risk" in the common carotid artery (CCA) versus carotid bulb using an integrated calculator called "AtheroEdge Composite Risk Score 2.0" (AECRS2.0) and (2) evaluate the performance of AECRS2.0 against "conventional cardiovascular risk calculators." These objectives are met by measuring (1) image-based phenotypes and AECRS2.0 score computation and (2) performance evaluation of AECRS2.0 against 12 conventional cardiovascular risk calculators. The Asian-Indian cohort (n = 379) with type 2 diabetes mellitus (T2DM), chronic kidney disease (CKD), or hypertension were retrospectively analyzed by acquiring the 1516 carotid ultrasound scans (mean age: 55 ± 10.1 years, 67% males, ~92% with T2DM, ~83% with CKD [stage 1-5], and 87.5% with hypertension [stage 1-2]). The carotid bulb showed a higher 10-year cardiovascular risk compared to the CCA by 18% (P < .0001). Patients with T2DM and/or CKD also followed a similar trend. The carotid bulb demonstrated a superior risk assessment compared to CCA in patients with T2DM and/or CKD by showing: (1) ~13% better than CCA (0.93 vs 0.82, P = .0001) and (2) ~29% better compared with 12 types of risk conventional calculators (0.93 vs 0.72, P = .06).

Keywords: 10-year risk; atherosclerosis; cardiovascular risk; carotid bulb; chronic kidney disease; common carotid artery; risk assessment; type 2 diabetes.

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