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CAROTID INTIMA–MEDIA THICKNESS SCREENING IN DIABETIC WOMEN: A PREVENTIVE IMPERATIVE

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Abstract

INTRODUCTION

Cardiovascular disease (CVD) continues to be the largest cause of premature death among diabetic women, however early vascular injury typically goes undetected in professional settings. Conventional cardiovascular risk assessments, such as lipid profiles, blood pressure readings, and

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symptom-based evaluations, provide minimal information about the early stages of arterial damage. In diabetic women, these techniques frequently underestimate risk, enabling atherosclerosis processes to continue quietly until overt clinical problems occur. In this setting, carotid intima-media thickness (CIMT) measurement has emerged as a useful, non-invasive ultrasonography marker for detecting early artery wall remodelling and subclinical atherosclerosis before symptoms appear [1-3]. Given the disproportionate cardiovascular load that women with diabetes face, CIMT screening should be seen as a therapeutically significant preventive strategy rather than an optional investigative tool.

The epidemiological evidence has consistently demonstrated that diabetes increases the relative cardiovascular risk in women more than in males. Compared to non-diabetic women, diabetic women have a three- to four-fold higher risk of coronary heart disease, which frequently exceeds that of diabetic males [1]. This increased risk is exacerbated by atypical symptom presentation, a higher incidence of silent ischaemia, and delayed referral to expert care. These factors all lead to underdiagnosis and undertreatment, emphasising the importance of early detection of vascular injury via imaging-based assessment rather than relying solely on clinical signs.

CIMT measurement allows for the direct visualisation and quantification of alterations in the carotid artery's intimal and medial layers, which are strongly associated with the future risk of myocardial infarction and stroke [2]. Unlike coronary artery calcium scoring, CIMT testing does not require ionising radiation and can be carried out with readily available ultrasound technology. Its safety, affordability, and feasibility make it especially appealing in low- and middle-income countries, where access to modern imaging modalities is restricted and diabetes prevalence continues to rise [3, 8].

Importantly, CIMT is more than just a predictive indication; it also measures vascular responsiveness to preventive therapies. Evidence suggests that improved glycaemic control, blood pressure management, lipid-lowering treatment, and lifestyle changes can considerably reduce CIMT progression [4-6]. This responsiveness establishes CIMT as a useful feedback tool for improving

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patient involvement, reinforcing adherence to preventive medicines, and supporting individualised cardiovascular risk management.

Despite these benefits, CIMT screening has not been widely adopted in normal diabetic management paths. Historically, concerns about heterogeneity in measurement procedures and interpretation have hindered its widespread implementation. However, vascular and imaging associations have created and supported standardised acquisition protocols, reference values, and quality assurance systems, which address many of these methodological problems [7]. While CIMT does not replace comprehensive cardiovascular risk assessment or the diagnosis of obstructive coronary disease, it is useful in detecting early vascular injury before it causes irreversible damage.

From a clinical standpoint, selective CIMT screening may be especially advantageous for diabetic women over the age of 40, those with long-standing disease, or people with numerous cardiometabolic risks. Incorporating CIMT into routine diabetes examinations every one to two years could enable earlier risk categorisation and timely intensification of preventative measures. To achieve this goal, CIMT competencies will need to be integrated into medical imaging and sonography training programs, as well as clear clinical routes for interpretation and follow-up [7].

Failure to implement accessible and evidence-based preventive strategies like CIMT is a squandered opportunity in the face of a rapidly rising worldwide diabetes epidemic. Cardiovascular problems are best avoided when vascular abnormality is detected early on, rather than after symptoms appear. Arterial imaging provides a practical strategy to move prevention upstream for diabetic women, whose cardiovascular risk is usually underestimated [2, 3].

The ethical and clinical rationale is becoming more convincing. Gender-responsive cardiovascular prevention must shift away from symptom-driven approaches and towards measures that detect illness at its earliest and most controllable phases. When used appropriately and within standardised frameworks, CIMT screening is a significant step towards more equitable, proactive, and successful cardiovascular treatment for diabetic women.

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REFERENCES

1. Peters SA, Woodward M, Rumley A. Diabetes as a risk factor for cardiovascular disease in women. Lancet. 2019;393(10174):531–540.
2. Nambi V, Bhatt DL, Nasir K. Subclinical atherosclerosis screening for preventive cardiology. Journal of the American College of Cardiology. 2021;78(8):801–817.
3. Gurunathan S, Senior R. Subclinical atherosclerosis imaging in preventive cardiology. European Heart Journal – Cardiovascular Imaging. 2022;23(4):543–555.
4. Lorenz MW, Gao L, Ziegelbauer K. Predictive value of carotid intima–media thickness progression. Atherosclerosis. 2020;307:1–8.
5. Simental-Mendía LE, et al. Statins and CIMT changes in diabetes: A systematic review. Cardiovascular Diabetology. 2021;20(1):1–12.
6. Zhang X, Zhang Y. Carotid ultrasound in predictive cardiovascular medicine. Current Atherosclerosis Reports. 2024;26(1):22–34.
7. Stein JH, Tzou WS, DeCara J. Use of carotid ultrasound to identify subclinical vascular disease. Journal of the American Society of Echocardiography. 2022;35(2):119–130.
8. Pignoli P, Fantini L, Tremoli E. Standardization of CIMT for atherosclerosis risk evaluation. Journal of Vascular Ultrasound. 2023;47(2):55–68.