

Cardiovascular-kidney-metabolic syndrome: Beyond glycemic control

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Abstract

Cardiovascular-kidney-metabolic (CKM) syndrome represents an interconnected disease continuum involving excess or dysfunctional adiposity, metabolic abnormalities, chronic kidney disease (CKD), and cardiovascular disease (CVD). Rather than viewing obesity, diabetes, hypertension, CKD, and cardiovascular disease as separate clinical entities, the CKM framework recognizes their shared pathophysiology and progressive interaction, with increasing cardiovascular risk across the disease spectrum. The American Heart Association (AHA) CKM staging framework provides a clinically relevant approach to identifying individuals at different stages of risk, from excess adiposity and metabolic dysfunction to subclinical and established cardiovascular disease. CKM syndrome highlights the central role of adipose tissue dysfunction, insulin resistance, chronic inflammation, endothelial dysfunction, hypertension, dyslipidemia, and renal impairment in the development and progression of cardiovascular complications. Stage 1 is characterized predominantly by excess or dysfunctional adiposity; Stage 2 by metabolic risk factors and/or moderate- to high-risk CKD; Stage 3 by subclinical cardiovascular disease or equivalent high cardiovascular risk; and Stage 4 by established clinical cardiovascular disease. This staging approach facilitates earlier recognition of risk and provides opportunities for prevention before irreversible cardiovascular events occur. The contemporary management of CKM syndrome increasingly emphasizes risk reduction rather than treatment of individual diseases in isolation. Lifestyle intervention, intensive weight management, glycemic control, blood-pressure and lipid management, kidney protection, and therapies with complementary cardiovascular and renal benefits form the foundation of an integrated strategy. The expanding evidence for glucagon-like peptide-1 receptor agonists, sodium-glucose cotransporter-2 inhibitors, and other metabolic therapies further strengthens this paradigm. CKM syndrome therefore provides a unifying clinical framework that connects endocrinology, nephrology, and cardiology, while shifting the focus from late-stage disease treatment toward early detection, comprehensive risk stratification, and integrated prevention across the life course. [*J Assoc Clin Endocrinol Diabetol Bangladesh*, 2026;5(Suppl 1): S33]

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