Subclinical Atherosclerosis in Patients with Chronic Non-Dialytic Renal Disease

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Cardiovascular diseases are currently the major cause of morbidity and mortality. Atherosclerosis alone is their most important cause and is characterized by a progressive multifactorial disease caused by genetic and acquired factors such as lipid accumulation, development of fibrosis and artery obstruction. The risk among patients with chronic renal failure (CRF) is higher than that among the general population, with a high prevalence of coronary artery disease (40%) and mortality from 10 to 20 times higher, especially among those in a hemodialysis program, accounting for 50% of deaths in dialytic patients[1,2]. Investigation and assessment of subclinical atherosclerosis using imaging methods (calcium score in coronary CT scan, ultrasonography or angiography) may be used to identify and stratify the atherosclerotic risk, considering that the atherosclerotic plaque burden correlates with the risk of coronary events, especially in patients with chronic dialytic renal failure[3].

Measurement of the myointimal thickness is a safe, low-cost, easy-access method to identify patients with subclinical or obstructive disease. Groot et al.[4] showed that myointimal thickness of up to 0.8 mm could be considered normal, and higher values would characterize early stages of arterial wall thickening. In patients with non-dialytic CRF, there is a high prevalence of myointimal thickening in the different age ranges, thus showing an active process of subclinical atherosclerosis. However, the lack of a standard reference table for the Brazilian population is a limitation for inferences.

Keywords

Cardiovascular Diseases; Atherosclerosis; Renal Insufficiency, Chronic; Calcium/metabolism.

The risk of coronary events in asymptomatic patients may be assessed by prognostic scores, such as Framingham's, or by reclassifying the risk individually using noninvasive techniques to determine changes in the arterial wall, such as coronary calcium, myointimal thickness, and assessment of endothelial dysfunction, thus improving the identification of individuals at a low and intermediate risk.

Studies such as the Multi-Ethnic Study of Atherosclerosis (MESA) and The Heinz Nixdorf Recall Study show that risk stratification may be improved when the Coronary Calcium Score (CCS) is added to conventional risk factors such as those defined by the Framingham score. Considering that patients with chronic renal failure are at a high risk of cardiovascular events and that CCS is an independent predictor that reclassifies the individuals' cardiovascular risk, it is possible that this score be useful in risk stratification for cardiovascular events in patients with CRF[5].

Age, gender and race are important factors in the determination of CCS and CIMT. Studies show that the assessment of WC in the age range from 35 to 55 year or 60 years shows the highest specificity for the detection of coronary events risk.

Raggi et al.[6] compared type-2 diabetic patients with non-diabetic patients with calcium score zero and reported that both groups had the same time of survival. Although CCS plays a role in risk stratification for coronary events in the general population, further prospective studies are necessary to define its prognostic importance in diabetics.

Noninvasive tests, such as CCS and myointimal thickness, may identify subclinical atherosclerosis in patients with non-dialytic CRF. However, further studies with larger samples are required to define whether this could interfere with the clinical and prognostic outcomes.

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