

# Carotid Intima-Media Thickness as a Marker of Atherosclerosis in Hemodialysis Patients

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The intima-media thickness, also called intimal medial thickness, is a measurement of the thickness of the artery walls, used in ultrasonography studies, to detect the presence and to follow up progression of atherosclerotic plaques.<sup>1,2</sup> Since 1990s, carotid intima-media thickness (CIMT) has been used in many medical research studies for evaluating the regression or progression of atherosclerotic cardiovascular diseases. Many studies have found the relation between the CIMT and the presence of atherosclerotic changes. This measurement is regarded as a marker of atherosclerosis and its following risks.<sup>1,2</sup> In addition, several studies have shown that changes in CIMT during the years is a marker of progression of atherosclerotic diseases and a determinant of cardiovascular risk over time.<sup>3-5</sup> Although several investigations show the prognostic value of CIMT for predicting atherosclerosis, there are also studies that dispute these findings. Observational studies show that

CIMT is a measurement of the intima and media layers, but changes in early phases of atherosclerotic process are in the intimal layer. Furthermore, there are some studies which revealed the weak correlation between CIMT and atherosclerosis of the coronary arteries.<sup>6</sup>

Patients with chronic kidney disease are at a high risk for developing the cardiovascular atherosclerotic disease, and CIMT is an independent predictor of cardiovascular mortality in hemodialysis patients.<sup>7,8</sup> In the current issue of the *Iranian Journal of Kidney Diseases*, Nassiri and coworkers<sup>9</sup> report the relationship between the maximum and the mean CIMT in 75 hemodialysis patients on maintenance hemodialysis for at least 3 months with different cardiovascular disease risk factors. They conclude that the effects of cardiovascular risk factors on the mean and maximum CIMT might be different in dialysis patients. They found that 22 of the 75 patients had carotid atheroma plaques. The mean

and maximum values of CIMT measurements were 0.5 mm (range, 0.2 mm to 1 mm) and 3.4 mm (range, 1.4 mm to 5.6 mm). They also found that age, high-sensitivity C-reactive protein, mean arterial blood pressure, and diabetes mellitus had a significant correlation with the mean CIMT, while only age and serum creatinine were significantly associated with the maximum CIMT. Of interest is their finding that a positive but nonsignificant correlation existed between the mean and maximum CIMT values.

In this study, Nassiri and coworkers found a significant correlation between the mean arterial blood pressure and the mean CIMT.<sup>9</sup> Intimal thickening is a process dependent on a variety of factors, related not only to atherosclerosis, but also to local changes due to high blood pressure.<sup>10</sup> Changes in blood pressure may cause facilitated transportation of particles into the arterial wall and cause some changes which result in thickening of the arterial wall. The authors, however, did not report any significant correlations between the mean arterial blood pressure and maximum CIMT.<sup>9</sup> This finding is a good reason for doing ambulatory blood pressure monitoring.

Although there was not any relation between lipid abnormalities and maximum and mean CIMT values, this could be due to abnormalities of lipoprotein composition rather than the level of low-density lipoprotein cholesterol. Nassiri and coworkers have carried out a promising study for evaluation of the effect of different risk factors on the mean and maximum CIMT values that could be regarded as a useful study for evaluating the atherosclerotic progression in hemodialysis patients.<sup>9</sup>

### CONFLICT OF INTEREST

None declared.

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