Critical Analysis and Limitations of Resting Ankle-Brachial Index in Diagnosis of Symptomatic Peripheral Arterial Disease Patients and Role of Diabetes Mellitus and Chronic Kidney Disease

CHICAGO, Ill., Feb. 24, 2020 – A large, single-center study published in the March edition of the Journal of Vascular Surgery highlights the limitations of using the resting ankle-brachial index (ABI) in the diagnosis of symptomatic peripheral arterial disease (PAD), particularly in those with diabetes mellitus (DM) and chronic kidney disease (CKD).

The ABI is an important part of the non-invasive evaluation of patients suspected to have PAD. Because of its commonality, particularly its ease of use in an office setting, some clinicians and non-vascular specialists rely on it heavily to rule out the diagnosis of PAD.

Those at high-risk for the development of PAD, including patients with DM and CKD, may have falsely elevated ABIs due to non-compressible lower extremity arteries. In these cases, blind reliance on the results of the ABI can lead to misdiagnosis and mistreatment of patients with symptomatic PAD. Researchers from West Virginia University led by vascular surgeon Ali AbuRahma, MD, quantitatively addressed this problem by retrospectively evaluating their large single-center, prospectively collected non-invasive vascular database.

The study encompassed 2,226 ABIs and 1,383 duplex ultrasound (DUS) examinations in patients with symptomatic PAD. In this study population, the prevalence of DM was 46 percent and CKD was 16 percent.

For patients with limb-threatening ischemia, the resting ABIs were found to be 40 percent normal, 40 percent abnormal and 20 percent inconclusive. With regard to detecting a greater than 50 percent stenosis by DUS in symptomatic patients, the sensitivity of the ABI was:

- Overall series: 57 percent (95 percent CI, 54-61 percent)
- DM patients: 51 percent (95 percent CI, 46-56 percent)
- CKD patients: 43 percent (95 percent CI, 34-53 percent)

The value of adding the toe-brachial index (TBI) in detecting a greater than 50 percent stenosis in this series was also evaluated. The sensitivity of this test was:

- Overall series: 85 percent (95 percent CI, 79-90 percent)
- DM patients: 84 percent (95 percent CI, 76-90 percent)
- CKD patients: 77 percent (95 percent CI, 61-88 percent)

“Because of the sometimes-artefactual elevation in resting ABIs, it is not uncommon to miss the diagnosis of PAD in patients with DM and CKD during ABI screening, said Dr. AbuRahma. “As a result, patients with symptomatic PAD but an ABI within the normal range may be deprived of the benefits of intervention.”

“The present study confirmed that a normal ABI can mask the presence of PAD of the lower extremities of symptomatic patients with PAD with a less than 50 percent stenosis by DUS,” continued Dr. AbuRahma. “The addition of the TBI, particularly in those with inconclusive ABIs, appears to increase the accuracy of this non-invasive evaluation.”

Blind reliance on screening tests is dangerous. This study underscores the importance of understanding the limitations of using the resting ABI in the diagnosis of symptomatic PAD, especially in patients prone to having falsely elevated results such as in diabetics and those with kidney disease.

To download the complete article visit: http://pages.today/jvsABI.

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