ABI Undervalued in Assessing Cardiovascular Risk

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Contributing Writer

The ankle-brachial index, a measurement that is commonly used by vascular specialists but not by other providers, adds such important information to cardiovascular risk assessment that it could now be incorporated into that process routinely, according to investigators who performed a meta-analysis of longitudinal studies of the index and the incidence of cardiovascular events.

The index is the ratio of systolic blood pressure taken at the ankle to that in the arm. It is routinely used to assess the severity of peripheral artery disease but is also a good indicator of generalized atherosclerosis. A low ankle-brachial index (ABI) is thought to predict coronary and cerebrovascular events and mortality.

The ABI is quick and easy to measure in the primary care setting. It can be done by a nurse and involves the use of a relatively inexpensive hand-held device.

To determine whether the ABI improves cardiovascular risk assessment independently of the Framingham score in the general population, the Ankle Brachial Index Collaboration was formed, comprising investigators from all major observational studies that had "investigated longitudinally the ABI and incidence of cardiovascular events and mortality in general populations."

The collaboration performed a meta-analysis of 16 population-based cohort studies in Europe, Australia, and the United States, said Dr. Gerry Fowkes of the University of Edinburgh's School of Public Health Sciences and corresponding author for the collaboration.

Data processing and statistical analysis in this meta-analysis was provided by a grant from Sanofi-Aventis/Bristol-Myers Squibb Co.

The meta-analysis included 24,955 men and 23,339 women aged 47-78 years who had no known cardiovascular disease at baseline and who were followed for a median of 3-17 years.

There were more than 9,000 deaths overall, and about one-fourth of those were due to coronary heart disease or stroke.

"We found that the ABI provided independent risk information compared with the Framingham score and, when combined with the Framingham score, a low ABI approximately doubled the risk of total mortality, [cardiovascular] mortality, and major coronary events across all Framingham risk categories," Dr. Fowkes and his associates reported (JAMA 2008;300:197-208).

An estimated 20% of the male subjects would have had their category of risk lowered if their ABI had been added to their Framingham score, which "would likely have an effect on decisions to commence preventive treatment such as lipid-lowering therapy," the authors wrote.

More important, in an estimated 1 in 3 female subjects, the category of risk would have risen from low to a higher level if their ABI had been added to their Framingham score, Dr. Fowkes and his associates noted.

The ABI is "quick and easy" to measure in the primary care or community clinic setting, can be performed by a trained nurse or other support staff, and requires only the use of a relatively inexpensive ($600) hand-held Doppler device, the researchers said.

Nevertheless, it is rarely used in routine clinical practice outside of vascular specialties, primarily because most providers are unaware of its value in predicting cardiovascular risk and do not know how to perform it.

The findings of this study, together with those of other recent studies, demonstrate that the incorporation of the ABI into routine cardiovascular risk assessment "may indeed be justified."

"A new risk equation incorporating the ABI and relevant Framingham risk variables could more accurately predict risk, and our intention is to develop and validate such a model in our combined data set," Dr. Fowkes and his associates asserted.

Dr. Fowkes has received honoraria and consulting fees from Sanofi-Aventis/Bristol-Myers Squibb. ■