MUNICH — Just when a low ankle-brachial index is gaining traction in clinical practice as a useful predictor of cardiovascular events, new evidence indicates that a high ankle-brachial index also confers significant risk.

Historically, high ankle-brachial index (ABI) values were dismissed as erroneous and were tossed out. Not anymore. They have clinical value, Dr. Denis L. Clement said at the annual congress of the European Society of Cardiology.

“Many, many studies show that the lower your ABI, the higher your risk. The second part of the ABI story is that a high ABI is also a problem. It’s a brand-new picture,” said Dr. Clement, emeritus professor of cardiology and angiography at the University of Ghent (Belgium).

He cited a recent report from the National Institute on Ageing-sponsored Health ABC (Aging and Body Composition) study. The investigators—led by Kim Sutton-Tyrrell, Dr.P.H., professor and vice-chair of the department of epidemiology at the University of Pittsburgh—concluded that among older adults, both low and high ABIs (that is, values less than 0.91 or greater than 1.30) confer similarly elevated risks for subsequent development of coronary heart disease.

The prospective study involved 2,846 adults aged 70-79 years in the Pittsburgh and Memphis areas who were followed for a mean of 6.7 years. At baseline, a normal ABI range (0.91-1.30) was present in 80% of subjects; low values were present in 14%, with higher values in 5%, and noncompressible leg arteries in 2%. After adjustment for age, sex, diabetes, and conventional cardiovascular risk factors, the risk for coronary disease events associated with a low ABI was 41% greater than in subjects with a normal ABI. A high ABI conferred a 50% increased risk, whereas noncompressible arteries carried a 65% increased risk (Stroke 2008;39:863-9).

Noncompressible arteries independent conferred particularly high risks of heart failure and stroke (2.4- and 2.1-fold increases, respectively) as well as a 78% increase in all-cause mortality. High ABIs, in contrast, were not associated with increased risks of stroke, heart failure, or total mortality only with history of events. Dr. Sutton-Tyrrell and coworkers made a case for the ABI as a particularly good test because it provides separate but complementary vascular information.

A low ABI indicates peripheral artery disease (PAD), a marker of atheromatous plaque lesions in the coronary and intracranial arteries. High ABIs indicate arteriosclerotic vessel wall stiffness, which has the hemodynamic consequences of reduced coronary filling, increased cardiac afterload, and possible microvascular damage to the brain induced by high pressures.

That’s a lot of information to be gained from such a simple test, Dr. Clement observed.

The clinical import of high ABIs was previously reported in a Native American population in the Strong Heart Study (Circulation 2004;109:733-9), and in a broader population in the Cardiovascular Health Study (Circulation 2006;113:388-93). But the Health ABC study is the first to define the prognostic import of high ABIs and noncompressible arteries on specific types of cardiovascular events.

Dr. Clement noted that within a month of the Health ABC study investigators in the department of family and preventive medicine at the University of California, San Diego, showed that a high ABI, defined in this case as 1.40 or above, was associated with increased prevalence of foot ulcers, neuropathy, stroke, and heart failure, as well as worse functional quality of life scores (J. Am. Coll. Cardiol. 2008;51:1292-8).

He cited yet another major ABI study published in recent months: a University of Edinburgh study involving the patients 29,000 supposedly normal Scottish men and women older than age 50 who were free of clinical cardiovascular disease. The prevalence of an ABI of 0.90 or less was 7.3% in men and 13.6% in women (Eur. J. Cardiovasc. Prev. Rehabil. 2008;15:370-5).

“Most of us thought PAD was primarily a man’s disease. Please correct your thinking,” Dr. Clement urged. “In this study there were more women than men with abnormal ABIs. It’s a disease of both sexes.”

He hailed as practice-changing a recent meta-analysis of nearly 50,000 men and women featuring more than 480,000 person-years of follow-up that highlighted the value in combining ABI measurement with traditional risk factors.

The combined assessment markedly improved cardiovascular risk stratification, compared with the Framingham score alone. In fact, in each 10-year Framingham risk category, patients associated with roughly a doubling of total and cardiovascular mortality and major coronary events, compared to what was predicted from the Framingham score alone (JAMA 2008;300:197-208).

The finding needs confirmation by examination of large numbers of patients, and by study of patients at other institutions, Dr. Aboyans said.