

Big BP Variation Between Arms Raises Red Flag

by Crystal Phend, Senior Staff Writer, MedPage Today 2012-01-29



A substantial difference in blood pressure from one arm to the other could be a warning sign for overall cardiovascular and mortality risk, a meta-analysis determined.

A systolic pressure difference of 15 mm Hg or more between the right and left arm was linked to a 70% elevated risk of death from cardiovascular causes ($P=0.01$), Christopher E. Clark, MSc, of the University of Exeter, U.K., and colleagues found.

That pressure differential also pointed to a 60% higher likelihood of dying from any cause ($P=0.02$), the group reported online in *The Lancet*.

The reason appeared to be the close correlation with peripheral vascular disease and cerebrovascular disease, for which a 15 mm Hg-difference had high specificity of 96% and 93%, respectively.

Action Points

- A substantial difference in blood pressure from one arm to the other could be a warning sign for overall cardiovascular and mortality risk.
- Point out that a pressure differential of 15 mm Hg or more between the right and left arm also pointed to a 60% higher likelihood of dying from any cause.

Such patients would likely benefit from further cardiovascular assessment and aggressive risk factor management as a high-risk group, Clark's group concluded.

Measuring both arms should become part of routine care, argued Richard J. McManus, MSc, MBBS, of the University of Oxford, U.K., and Jonathan Mant, MD, of the University of Cambridge, U.K., in an accompanying commentary.

National and international guidelines already recommend dual measurement, though without much impact on primary care, perhaps because of the poor justification for it largely as a means to reduce measurement error, they noted.

But the link to mortality and the high specificity for peripheral vascular disease, which justifies between-arm pressure difference as a sign of disease, give good reason for paying attention, McManus and Mant wrote.

Most peripheral vascular disease is clinically silent and the gold-standard measure of ankle-brachial pressure index takes time and training that render it uncommon in routine primary care for hypertensive patients, Clark's group added.

"Early detection of the disease is important because interventions to promote smoking cessation, lower blood pressure, or offer statin therapy can reduce mortality," they explained.

An easy strategy for between-arm pressure differential measurement would be to use the specialized sphygmomanometer available in most clinics along with a spare digital blood pressure monitor for the other arm simultaneously, thus avoiding a potential white-coat hypertension effect, the commentators suggested.

The commentary recommended against using a pressure difference between arms to screen for peripheral vascular disease, though, given the low sensitivity of either a 10- or 15-mm Hg difference in the meta-analysis (32% and 15%, respectively).

Guidelines suggest that such a difference between arms when measuring blood pressure is rare, but the prevalence reached 12% to 15% in the researchers' results.

The meta-analysis included 20 studies of adults over age 18, five studies of which included invasive angiography.

In cases where invasive angiography proved asymptomatic subclavian stenosis, the average difference in systolic blood pressure between arms was 49 mm Hg.

A difference of at least 10 mm Hg predicted 8.8-fold higher risk of a subclavian artery blockage ($P < 0.0001$) with 65% sensitivity and 85% specificity.

In the noninvasive studies, peripheral arterial disease was 2.4-fold more likely with a difference of at least 10-mm Hg or higher and 2.5-fold more likely with a difference of 15-mm Hg or more between arms ($P = 0.0002$ and $P < 0.0001$, respectively).

It also pointed to 63% elevated likelihood of a history of stroke or other cerebrovascular disease ($P = 0.01$), with a sensitivity of 8% and specificity of 93, but didn't significantly correlate with a history of coronary artery disease ($P = 0.52$).

Most of the studies examined populations at elevated cardiovascular risk, such as those getting cardiac surgery or those with known peripheral vascular disease. Nine looked at primary care or community-based populations.

While "results should be interpreted in this context," the investigators noted, "subgroup analyses, however, indicated little difference in association with difference in systolic blood pressure between these cohorts."

They cautioned that the upper limit of normal in blood pressure difference between arms needs to be better defined as does what constitutes a clinically important difference.

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McManus and Mant reported no conflicts of interest.

Primary Source

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Secondary Source

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