ICU
MANAGEMENT & PRACTICE

Two Biomarkers Predict Increased Risk For "Silent" Strokes

Two biomarkers widely being investigated as predictors of heart and vascular disease appear to indicate risk for "silent" strokes and other causes of mild brain damage that present no symptoms, report researchers from The Methodist Hospital and several other institutions in an upcoming issue of *Stroke* (now online).

The researchers found high blood levels of troponin T and NT-proBNP were associated with as much as 3 and 3.5 times the amount of damaged brain tissue, respectively. The findings are part of the large-scale Atherosclerosis Risk in Communities (ARIC) study, funded by the National Heart, Lung, and Blood Institute.

"The concept of prevention is expanding," said principal investigator Christie Ballantyne, M.D., director of the Center for Cardiovascular Disease Prevention at The Methodist Hospital. "It's not good enough to simply do a few tests and try to assess risk for heart attack. What we need to do is assess the risk for heart attack, stroke, heart failure and also asymptomatic disease so we can start preventive efforts earlier. Waiting to correct problems until after a symptomatic stroke may be too late."

One possible outcome is that patients determined to be in high-risk groups could be started on anti-stroke medications sooner.

In another ARIC paper published two months ago in Stroke, Ballantyne and coauthors reported a strong association between blood levels of troponin T and NT-proBNP and more severe instances of stroke, called symptomatic stroke. The current study looked at the two biomarkers and "subclinical," asymptomatic events in the brain that are usually caused by a lack of blood flow.

"Taken together, these two papers show the biomarkers are effective at identifying people who are likely to have mild brain disease and stroke well before damage is done," said Ballantyne, who also is a Baylor College of Medicine professor. "This hopefully will give doctors more time to help patients take corrective steps to protect their brains."

For the subclinical brain disease study, researchers gleaned data from about 1,100 patient volunteers who agreed to have blood drawn and two MRI scans eleven years apart to look for silent brain infarcts and also white matter lesions (WMLs) caused by chronic inflammation.

Statistical analysis showed a strong relationship between high NTproBNP and the likelihood of brain infarcts and WMLs. Study participants with the highest levels of NT-proBNP had as much as 3.5 times the number of brain infarcts as participants with low NT-proBNP levels, and more WMLs. Those with the highest levels of troponin T had as much as 3.0 times the number of brain infarcts and more WMLs.

The protein troponin T is part of the troponin complex and its presence is often used to diagnose recent heart attacks. NT-proBNP is an inactive peptide fragment left over from the production of brain natiuretic peptide (BNP), a small neuropeptide hormone that has been shown to have value in diagnosing recent and ongoing congestive heart failure.

"The highly sensitive troponin T test we used is not approved for general clinical use in the US yet, but the NT-proBNP test is just now starting to be used more widely beyond making a diagnosis for heart failure," Ballantyne said.

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