Heart Failure Patients Less Responsive to Aspirin

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ORLANDO — About 10% of patients who presented to a hospital emergency department with chest pain and suspected acute coronary syndrome had platelets that were nonresponsive to aspirin, in a study with about 1,000 patients.

The prevalence of aspirin nonresponsiveness was even more prevalent in patients with a history of heart failure, renal insufficiency, or anemia, and was also more prevalent in Hispanics and African Americans, Dr. Lori B. Daniels said at the annual scientific sessions of the American Heart Association.

"Aspirin responsiveness testing may become an important adjunct when assessing patients with suspected acute coronary syndrome because we may find that it can help optimize antiplatelet treatment," said Dr. Daniels, a cardiologist at the University of California, San Diego.

Patients who are less responsive to aspirin therapy may be more susceptible to thrombotic events.

DR. DANIELS

The aspirin responsiveness of each patient's platelets was measured using the VerifyNow system, a point of care test marketed by Accumetrics, a San Diego company. This study was not sponsored by Accumetrics, and Dr. Daniels and her associates had no financial disclosures for this study.

The study enrolled 1,010 consecutive patients who presented to the emergency departments of six U.S. centers with a chief complaint of chest pain or an angina equivalent, and who were suspected of having acute coronary syndrome by their treating physicians. Patients were excluded if they were on clopidogrel treatment, had recently taken an NSAID, or had contraindications to antiplatelet treatment.

Following standard practice, about 90% of patients received an oral dose of aspirin in the emergency department; the other patients said that they had taken aspirin before coming to the hospital. The specific dose varied by center, ranging from 81 mg to 650 mg. Nearly 80% of patients received either 162 mg or 350 mg. The effect of the dose on their platelets was measured 2-4 hours after treatment.

The overall prevalence of aspirin nonresponsiveness was 10.3%. In patients with a history of heart failure (22% of all patients) the rate of nonresponsiveness was 15%.

In a multivariate analysis that controlled for age, gender, smoking history, and history of alcohol or drug abuse, Hispanic patients were 2.8-fold more likely to have nonresponsive platelets, and African Americans were about twice as likely, compared with white patients. Diabetes did not affect the nonresponsiveness rate. In the multivariate analysis, a history of heart failure was a significant risk factor, increasing the likelihood of nonresponsiveness by 76%.

It is not clear why a history of heart failure is linked to a higher prevalence of aspirin nonresponsiveness. Possible explanations include that a patient has increased serum levels of catecholamines or angiotensin II, increased intracellular levels of calcium, and nitric oxide deficiency in the vascular endothelium, Dr. Daniels said.

"Physicians should be aware of the high rate of aspirin nonresponsiveness in patients with heart failure because they may be susceptible to thrombotic events," she said.

The rate of confirmed acute coronary syndrome in the entire study group was about 70%.

The aspirin responsiveness assay used in the study works by placing a specimen of whole blood in a test solution that is filled with fibrinogen-coated beads.

If the platelets in the specimen have not been affected by aspirin, then they retain a normal level of fibrinogen receptors on their surface that bind the beads and pull them out of solution, dropping the turbidity of the solution that is then measured by the test device.

Platelets that have normal aspirin responsiveness have a reduced number of fibrinogen receptors following aspirin treatment and therefore fail to substantially change the test solution's turbidity. ■