

Many stroke, heart attack patients may not benefit from aspirin

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Up to 20 percent of patients taking aspirin to lower the risk of suffering a second cerebrovascular event do not have an antiplatelet response from aspirin, the effect thought to produce the protective effect, researchers at the University at Buffalo have shown.

“Millions of people use low-dose aspirin either for prevention of a second stroke, second heart attack or second episode of peripheral artery disease,” said Francis M. Gengo, Pharm.D., lead researcher on the study.

Gengo is professor of neurology in the UB School of Medicine and Biomedical Sciences and professor of pharmacy practice in the UB School of Pharmacy and Pharmaceutical Sciences.

“In those three indications, it’s crystal clear that aspirin reduces the risk of a second heart attack or stroke in most patients. But we have known for years that in some stroke and heart attack patients, aspirin has no preventive effect.”

With no definitive data on the frequency of this condition, known as aspirin resistance, physicians were left with a best guess of between 5 and 50 percent, said Gengo.

UB researchers now have confirmed the 20 percent figure through a strictly controlled study conducted over 29 months in 653 consecutive stroke patients seen at Dent Neurologic Institute offices in the Buffalo suburbs Amherst and Orchard Park.

Results of the study were published Jan. 28 on the *Journal of Clinical Pharmacology's* website as a “document of interest” and will appear in a future issue of the journal.

Aspirin lowers the risk of a cardiovascular event by preventing blood platelets from aggregating in the arteries and obstructing blood flow. If blood drawn from a patient taking aspirin shows that platelets are still aggregating, that patient is diagnosed as being aspirin resistant. If a stroke patient has a second stroke while on aspirin, the patient has experienced what is known as clinical aspirin failure.

“We’ve known about clinical aspirin failure for many years,” said Gengo. “We’re just beginning to understand clinical aspirin resistance. The major question recently has been, ‘If you are aspirin resistant, does that mean you are more likely to be a clinical aspirin failure? Is one related to the other?’ The answer is, likely, “yes.”

“That’s one of the critical pieces of information provided by this paper,” he said. “We looked at how frequently aspirin resistance occurred in all patients and its prevalence in patients who suffered clinical aspirin failure. What we found was, across the board, about 80 percent of the patients in our study, were aspirin sensitive -- their platelets did not aggregate in arteries -- and 20 percent were aspirin resistant.

“However, when we asked the same question of the data from patients who had a second stroke while on aspirin [clinical aspirin failures], 80 percent were aspirin resistant,” said Gengo.

A large meta-analysis published nearly simultaneously in the online version of the British Medical Journal (BMJ) reached a similar finding. However, Gengo noted that while the BMJ paper is a very important review, the UB/DENT study provides more definitive information on the issue.

The number of patients was nearly 6 times larger than in any of the individual studies included in the meta-analysis, he said. “More importantly, all patients in the UB/DENT study had their aspirin responder status confirmed, not once, but multiple times. And lastly,” he noted “it was determined objectively by urinalysis that all patients were actually taking their prescribed aspirin.”

Of the 20 studies included in the BMJ meta-analysis, compliance was confirmed by telephone or interviews in three studies and was not able to be assessed in three more due to insufficient information, according to the report.

In addition to quantifying the prevalence of aspirin resistance and identifying the relationship between aspirin resistance and clinical aspirin failure, the UB/DENT study provided other data of clinical importance.

The researchers found that patients with coronary artery disease are more likely to be aspirin resistant, as well as patients with diabetes and those who suffered an earlier stroke, but not a transient ischemic attack (TIA), known as a “mini-stroke.”

However, they did not find a relationship between aspirin resistance and hypertension or high cholesterol in their study population. Gengo said this finding likely was due to the fact that patients at the Dent Neurologic Institute are from an affluent suburban population, and their hypertension and lipid levels tend to be extremely well controlled.

The study also found that the younger the patient when the first stroke or heart attack occurs, the higher the risk of being aspirin resistant.

“You can think about that in a couple ways,” noted Gengo. “If you have a stroke when you’re 50, you probably have much worse vascular disease

than the patient who has a stroke at 70, so you are more likely to be aspirin resistant on that basis.

“Also, the younger you are the faster you turn your platelets over,” he said. “If you are making platelets faster, you may need more aspirin, and the faster you make them, the faster you’re going to overwhelm the aspirin. We don’t really know for sure, but we speculate the higher risk factor in our younger patients is based on one of those two reasons.”

The findings in the paper need to be confirmed in a larger study population followed over 1-2 years, Gengo stated. In the meantime, he suggested that clinicians could test a patient’s responsiveness to aspirin early on and prescribe accordingly.

Source: University at Buffalo

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