New research shows benefits of ultrasound contrast agents outweigh potential risk to heart patients

March 31 2008

A Saint Louis University cardiologist called upon the U.S. Food and Drug Administration (FDA) today to reconsider a strong warning it recently placed on a diagnostic tool, stating that the warning could prevent doctors from detecting life-threatening cardiac events.

In October 2007, the FDA placed a black box warning on ultrasound contrast agents, which are used to improve the quality of echocardiography images in patients who do not otherwise have optimal images, after receiving reports of four deaths and serious reactions shortly after or during the infusion.

A black box warning is given to drugs that carry a significant risk of serious or even life-threatening adverse effects. The warning placed on ultrasound contrast agents was issued without a formal examination of the risks and benefits of using them, says Melda Dolan, M.D., associate professor of cardiology at Saint Louis University School of Medicine.

Dolan's research shows that the contrast agents are indeed safe, and withholding their use, which has occurred since the FDA warning, would make diagnosis of life-threatening heart disease more difficult.

"Based on the results of our study, we believe the FDA should reconsider its stance on contrast agents because the benefits outweigh the potential, although not established, risk," says Dolan, who is the primary

investigator of the study.

Dolan presented the research findings today at the 57th annual American College of Cardiology Scientific Session in Chicago, Ill.

Routinely used to determine the strength of the heart, echocardiography enables cardiologists to monitor a patient's cardiac function, determine if treatment plans are working and can be used to pursue further modes of therapy. However, various factors can prevent the echocardiogram from obtaining optimal images.

In 1997, after significant scrutiny, the FDA approved the use of ultrasound contrast agents, which are gas-filled microbubbles that are administered intravenously into the blood, for these cases. The use of contrast agents to get optimal images is necessary in approximately one out of five individuals, says Arthur Labovitz, M.D., director of the division of cardiology at Saint Louis University and a contributing researcher to the project.

Ultrasound contrast agents are important because they greatly enhance not only the quality of the images taken with the echocardiogram, but also the doctors' ability to assess the function of the heart, Dolan explained.

The purpose of this study was to evaluate the overall risk and benefits of ultrasound contrast agents. Using results from two university hospitals, the researchers examined the clinical outcomes of nearly 24,000 patients who received contrast agents during an echocardiogram and compared their results to those from a group of approximately 6,000 patients who did not need to receive contrast agents.

To test the safety of contrast agents, the researchers looked at the short-term (within 30 minutes of the infusion) and long-term (within 24 hours)

outcomes and noted any serious adverse events or deaths. Of the nearly 24,000 individuals to receive the contrast agents, not one experienced an adverse event within 30 minutes. One death and three non-fatal heart attacks occurred within 24 hours; however these could not be attributed to the contrast agents.

“Our research indicates that contrast agents can be safely used in these patients to provide optimal imaging,” Labovitz said.

To test the efficacy of ultrasound contrast agents, the researchers compared echocardiogram images, which were enhanced by contrast agents, with images of patients who did not need contrast agents. They found the images of both equally clear.

Optimal echocardiography images make it possible for cardiologists to detect and treat potentially fatal coronary heart disease. This ability, Dolan says, is the most significant benefit of ultrasound contrast agents.

To test this benefit, the researchers looked at the long-term survival rate of patients who received contrast agents during pharmaceutical stress echocardiogram exams and those who did not. They found nearly identical rates of death between both groups.

“The message that patients should take home from our study is that there are risks to every treatment, from medications to surgery. In the field of health care, there are no guarantees. But when the benefits of a treatment or test greatly outweigh the risks, it may be worthwhile to take a small risk for a great benefit,” Dolan said.

Source: Saint Louis University