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## **Tiny bubbles help doctors predict risk of heart attack and stroke**

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CHICAGO--(BUSINESS WIRE)-- Doctors are using tiny microscopic bubbles to help them predict whether patients are at risk for a heart attack or stroke.

These gas-filled bubbles, known as ultrasound contrast agents or enhancement agents, can help doctors detect “vulnerable plaque” in the carotid arteries leading to the brain, according to findings of a study involving 459 patients at Queens University in Kingston, Ontario (Canada). The findings were presented Thursday at an international medical conference in Chicago.

“Most heart attacks and strokes are likely caused by vulnerable plaque,” explained Dr. Amer Johri, who spoke about the study. Dr. Johri is Director of the Cardiovascular Imaging Network at Queens University.

Unlike stable plaque, vulnerable plaque is prone to sudden hemorrhage and rupture, which in turn can acutely block blood flow and prevent delivery of oxygen to the heart or brain,” Dr. Johri explained.

“Vulnerable plaque is associated with increased blood supply to the plaque, and microbubble contrast agents provide a very safe and reliable tool for tracing blood flow patterns throughout the body,” according to Dr. Steven Feinstein, an expert on the use of microbubble contrast agents and a co-investigator of the study. Dr. Feinstein is a professor of cardiology at Rush University Medical Center in Chicago and is Co-President of the International Contrast Ultrasound Society.

Ultrasound contrast agents are liquid suspensions of tiny microbubbles that reflect ultrasound signals. When an ultrasound contrast agent is administered intravenously during an ultrasound scan, the microbubbles flow through the body's circulation mimicking the flow patterns of red blood cells. They are expelled from the body within minutes.

“This study shows that a simple, minimally-invasive CEUS scan can effectively help doctors predict serious and complex coronary artery disease and stratify risk of future heart attacks and strokes,” Dr. Feinstein said.

“Since cardiovascular disease is systemic, a person with vulnerable carotid plaque most likely has vulnerable plaque in the arteries leading to his heart, too,” Dr. Feinstein said.

“This sets up CEUS as a practical screening option that can be used alongside traditional imaging, with the ultimate goal of earlier intervention to prevent these potentially life-threatening cardiovascular events,” he added.

Ultrasound contrast agents are FDA-approved for enhancing the clarity and functionality of ultrasound images of the heart and liver, according to Dr. Feinstein, but doctors throughout Europe, Canada, South America and Asia also use these agents to enhance images of the carotid arteries, kidneys, and other organs and tumors throughout the body. In addition, Dr. Feinstein said that US doctors are increasingly using microbubble contrast agents for these additional imaging indications, and new organ-agnostic payment models are permitting reimbursement.

“There is an urgent need to develop tools that can identify which patients need early, aggressive treatment, and which do not,” said Dr. Johri, adding “CEUS is an inexpensive, safe, and rapid method of characterizing plaque vulnerability in the carotid artery.”

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#### ABOUT ICUS:

The International Contrast Ultrasound Society (ICUS) is an international medical society dedicated to advancing the appropriate use of contrast enhanced ultrasound (CEUS) to improve patient care. ICUS members include physicians, scientists, and other ultrasound imaging professionals around the world. For more information about ICUS, please visit [www.icus-society.org](http://www.icus-society.org).

#### CONTACTS:

International Contrast Ultrasound Society

Linda M. Feinstein, 847-624-1844 or 312-876-2563, [Linda.Feinstein@Dentons.com](mailto:Linda.Feinstein@Dentons.com)

Robin J. Adams, 202-408-3946, [Robin.Adams@dentons.com](mailto:Robin.Adams@dentons.com)

