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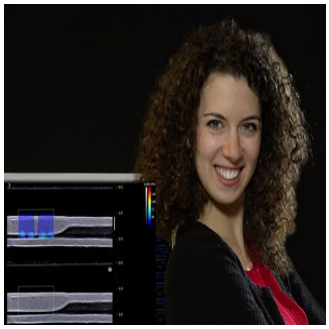
New Technique For Earlier CVD Diagnosis



A new technique has been developed at Sweden's KTH Royal Institute of Technology that shows significant promise for early diagnosis and treatment of cardiovascular disease.

Atherosclerosis is a common disorder that can lead to heart attacks and strokes. Doctors rely on ultrasonic grayscale images to visually assess vascular function as well as determine the movement of large arteries. If mobility is reduced, the case of atherosclerosis may be more developed. However, ultrasonic images are an indirect measurement tool.

According to Elira Maksuti, a researcher at the Department of Medical Imaging Technology at KTH, diagnosis can be improved if doctors are able to gauge the stiffness of blood vessels. Maksuti and colleague Erik Widmanh have combined the technologies of shear wave elastography and ultrasound and have developed an inexpensive and non-invasive method that is not only able to check the stiffness of blood vessels but can also analyse the type of plaque present in the artery.

Maksuti points out that this new technique offers a more effective way to diagnose atherosclerosis, and that the ultrasound technology that it employs is less expensive and safer than other imaging alternatives such as MRI and CT. The technique has been used on artificial blood vessels to test stiffness, pressure and flow. The next step is to test the technique with blood vessels from pigs.

Maksuti says, “We see two major future applications before us. The first is to determine when a patient's blood vessels are becoming rigid, that is, when the atherosclerosis process begins. The second application is to be able to diagnose the type of calcification – or plaque – present in the blood vessel.”

Plaque can be soft or hard. Soft plaque with a thin hard shell is more likely to come loose inside the vessel. It is often a difficult distinction but the information can be critical when determining whether to perform surgery or not. This technique could potentially improve cardiovascular diagnosis and treatment decision.

Source: KTH Royal Institute of Technology

Image Credit: KTH Royal Institute of Technology

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