

The vulnerable plaque: Current concepts and future perspectives on coronary morphology, composition and wall stress imaging

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Abstract

Cardiovascular imaging plays an important role in the identification and characterization of the vulnerable plaque. A major goal is the ability to identify individuals at risk of plaque rupture and developing an acute coronary syndrome. Early recognition of rupture-prone atherosclerotic plaques may lead to the development of pharmacologic and interventional strategies to reduce acute coronary events.

We review state-of-the-art cardiovascular imaging for identification of the vulnerable plaque. There is ample evidence of a close relationship between plaque morphology and patient outcome, but molecular imaging can add significant information on tissue characterization, inflammation and subclinical thrombosis. Additionally, identifying arterial wall exposed to high shear stress may further identify rupture-prone arterial segments. These new modalities may help reduce the individual, social and economic burden of cardiovascular disease.

Keywords

Atherosclerosis, Vulnerable plaque, Molecular imaging, Acute coronary syndromes