

Role of cardiac imaging in acute chest pain

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The article discusses the role of cardiac imaging in the evaluation of acute chest pain, which is the second most common ED presentation in the United States, accounting for millions of annual visits and significant healthcare costs. The article emphasizes that early differential of cardiac vs. non-cardiac causes using clinical assessment, EKG, and high sensitivity troponin assays (hs-cTn) is critical for risk stratification.

Initial evaluation of chest pain involves obtaining a thorough clinical history and physical exam, along with basic EKG and hs-cTn testing. Patients are then categorized into risk groups to guide further testing. For low risk patients, further testing offers little to no benefit, whereas intermediate and high risk patients may benefit from targeted non-invasive imaging, including point of care ultrasound, echocardiography, myocardial perfusion imaging, cardiac MRI, coronary computed tomography angiography (CCTA), and novel CT applications such as CT based fractional flow reserve.

Echocardiography is highlighted for assessing wall motion abnormalities, valvular disease, pericardial effusions, pulmonary embolism, and aortic pathology, with high sensitivity and specificity for multiple conditions. CCTA is useful for rapidly ruling out obstructive CAD in intermediate risk patients, reducing the need for invasive coronary angiography in selected cases, while cardiac MRI provides detailed tissue characterization, detection of myocarditis, Takotsubo cardiomyopathy, and evaluation of myocardial salvage post infarction. The article also addresses coronary plaque imaging being supported in use in low-risk symptomatic patients. It can assess features, such as low attenuation plaque volume, outward vessel remodeling, and spotty calcification.

Additionally, real-world considerations must be addressed when evaluating chest pain, including accessibility, costs, and the impact of hs-cTn on imaging utility, highlighting that the selection of imaging modality must balance diagnostic performance, patient indications, availability and cost effectiveness. Overall, cardiac imaging is an important part of a risk stratified approach to acute chest pain.

Reference:

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