Prošireni sažetak / Extended abstract

Bedside echocardiography in right ventricular dysfunction assessment in hemodynamically stable patients with pulmonary embolism

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Recent studies show that echocardiography has a high diagnostic and prognostic value in patients with pulmonary embolism (PE) since almost 50% of patients have some echocardiographic signs of the right heart deformation. Anyway, we should bear in mind that the sensitivity of the method in normotensive patients is up to 60%, so a negative result may not exclude the disease. European Society of Cardiology in its guidelines for diagnosis and treatment of patients with pulmonary embolism suggests echocardiography as a diagnostic method of choice in hemodynamically unstable patients for whom it is not possible to perform urgent CT angiography of pulmonary artery.[1]

The role of echocardiography in hemodynamically stable patients is primarily reserved for additional evaluation of the early risk mortality, since right ventricular dysfunction (RVD) due to pulmonary embolism predicts increased PE-related mortality in normotensive and hypotensive patients. This was illustrated by a meta-analysis of seven studies (3,395 normotensive or hypotensive patients with PE), which found that RV dysfunction was associated with a twofold to treefold increase in PE-related mortality.[2]

The aim of our study was to investigate the role of bedside echocardiography in RVD assessment in hemodynamically stable PE patients. The study population included 104 ICU patients with confirmed diagnosis of PE using CT pulmonary angiography. Mean age of the patients was 68.7 ±13.4 years with female predominance (63.5%). Patients were, according to ESC guidelines, divided into three severity groups: high-risk (n=33; 31.7%), intermediate-risk (n=51; 49.1%) and low-risk (n=20; 19.2%). Echocardiographic signs of RVD was positive in 61 (85.9%) of 71 hemodynamically stable patients with strong statistical significance (P<0.001). Sensitivity of echocardiography in RVD assessment was 98.04% with specificity of 45%. To measure the effectiveness of echocardiography as a diagnostic test in RVD assessment, diagnostic odds ratio was calculated [OR: 40.09 (95% CI 4.54 do 1,826.84)]. Among specific echocardiographic signs, right ventricular dilatation, free wall motion abnormalities, tricuspid regurgitation, pulmonary hypertension and paradoxical movement of interventricular septum showed strongest correlation with RVD (P value for all <0.001).

We can conclude that echocardiography represents excellent tool for detecting RVD in hemodynamically stable PE patients.

KEYWORDS: bedside echocardiography, pulmonary embolism, right ventricle.

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