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RESEARCH ARTICLE

ROLE OF 2D ECHO IN DIAGNOSING ACUTE PULMONARY EMBOLISM IN COPD PATIENTS

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Abstract

2d Echo is a noninvasive bedside test which can be easily done in COPD patients admitted with breathlessness and often misdiagnosed as acute exacerbation of COPD. It avoids the contrast and radiation hazards of CTPA,chest CT or conventional angiography Echocardiography is an attractive imaging modality to diagnose PTE. Also, echocardiography allows visualization of the aorta and the LV to evaluate for other etiologies of chest pain, thus making it a more attractive test.

Introduction:-

1. In patients with pulmonary embolism (newly diagnosed) right ventricular hypertrophy often occurs which an be detected by echocardiography.
2. The 60/60 sign on 2d ECHO can help in diagnosis of pulmonary embolism
3. Also McConnell's sign can be used in as an important diagnostic tool in diagnosing pulmonary embolism in patients with or without pre-existing cardiorespiratory disease

Study design:-
Prospective observational cohort study

Sample size:-
100 patients

Inclusion criteria:-
1. Patients consenting for the study
2. Patients with high probability of pulmonary embolism as evidence by clinical examination

Exclusion criteria:-
1. Patients not consenting for the study
2. Patients with active pulmonary TB
3. Patients with recent myocardial infarction
4. Age less than 35 years

Methodology:-

2D ECHO was done
1. 60/60 sign was looked for:
2. Pulmonary valve acceleration time ≤60ms

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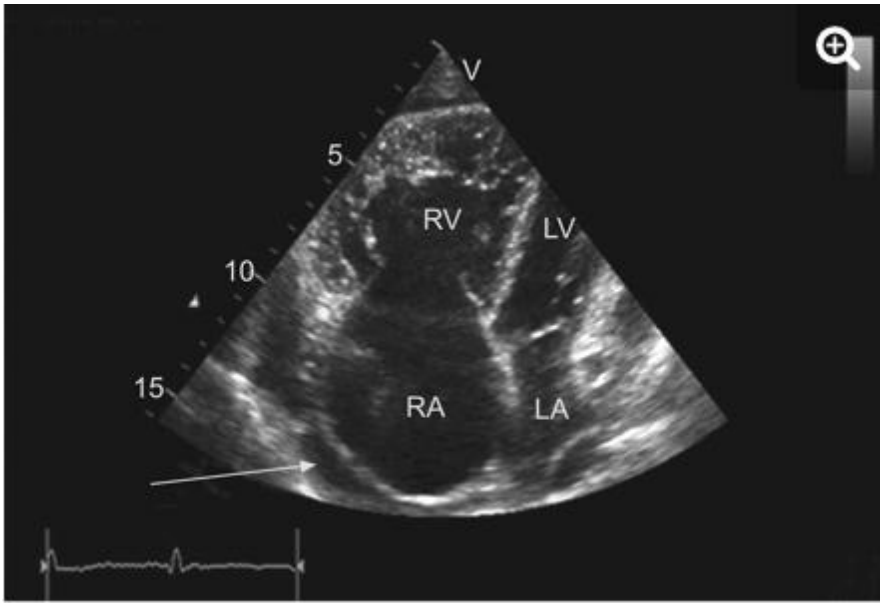
3. Tricuspid regurgitation pressure gradient ≤60mmHg
4. McConnell sign was looked for:
5. Normokinesia and hyperkinesia of the apical segment of the Right ventricle
6. Signs of Right ventricular hypertrophy

Results:-

Pulmonary embolism was confirmed in 67 patients

1. 60/60 sign
2. Seen in 17/67 patients with pulmonary embolism
3. 2 false positives were observed
4. McConnell Sign
5. Seen in 13/67 patients with pulmonary embolism
6. RV pressure hypertrophy
7. Seen in 54/67 patients with pulmonary embolism
8. 18 were false positives



Conclusion:-

2d Echo is thus helpful and an handy tool in correctly diagnosing pulmonary embolism.

Discussion:-

Patients with COPD develop right ventricular hypertrophy and pulmonary hypertension and are at a risk of developing pulmonary embolism. 2D Echo is an important tool in diagnosing pulmonary hypertension and cardiac function.The most important variables in 2D Echo includes RA area,PASP,pericardial effusion, eccentricity index and TAPSE. PAH patients who have RA area ≥27 cm2 are at higher risk of mortality or the need for heart transplant than those with a smaller RA area.The 2015 ESC/ERS guidelines recommend that RA area be used to stratify patients with PAH who are at risk of clinical worsening or death ; RA area <18 cm2 is suggested to confer low risk (<5%), 18–26 cm2 intermediate risk (5–10%), and >26 cm2 high risk (>10%). RA area indexed to BSA was shown to be an independent predictor of mortality in patients with PAH with WHO FC III-IV. Pericardial effusion was also an independent predictor of mortality. Serial 2D Echo monitoring can measure pericardial effusion. RV function is important because it predicts survival . TAPSE provides information about the status of RV systolic function based on the longitudinal function of RV myocardial fibers.TAPSE<1.8 cm was seen in patients who had more severe RV systolic dysfunction, right heart remodeling, and disproportionate RV size relative to the LV; these patients with TAPSE <1.8 cm had significantly lower rates of survival. In PAH patients with TAPSE ≥1.8 cm, 1- and 2-year survival estimates were 94 and 88%, respectively, compared to 60 and 50%, respectively, when TAPSE <1.8 cm.

TAPSE thus can predict risk of severe disease and death in PAH.Additionally, both low pulmonary vascular capacitance and 2D strain of the basal RV free wall have been shown to be predictors of poor prognosis.

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