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Case Report

Intracardiac large floating thrombus with transiting to left atrium through PFO in a patient of DVT with Acute Pulmonary Thrombo Embolism : A case report

Milind Shrivastava*, Narendra Kumar Bairwa, Nitin Kansal***, Manohar Lal Gupta******

**Consultant Cardiologist and Head, **Assistant Consultant Cardiologist, ***Consultant Cardiologist*
Dept of Cardiology, Santokba Durlabhji Memorial Hospital , Jaipur , India
*****Consultant pulmonologist and Head, Dept of pulmonary medicine,*
Santokba Durlabhji Memorial Hospital , Jaipur , India

Summary

We present a rare case of acute Pulmonary Thrombo Embolism with Pulmonary arterial hyper tension followinh deep vein thrombus of lower limbs as a large thrombus in right atrium transiting in to left atrium through patient foraman ovale. Such transition of right atrial Thrombus to left atrium can lead to systemic embolisation serious complication. An early management is the need of have to avert such drastic complication, hence presented. (Indian J Cardiol 2022;25 (1-2):32-37)

Keywords : Pulmonary Thrombo Embolism, Patient foraman ovale.

Introduction

Nellessen et al. in 1985 was the first to report a case of thrombus in transit by transthoracic echocardiography (TTE)[1]. Primary etiology of thrombus in transit is deep venous thrombosis from which thrombus migrates and traversing through inferior vena cava, it reaches to right atrium then to the left atrium through an interatrial defect (atrial septal defect / patent foramen ovale)[2]. A patent foramen ovale (PFO) can persists in 25% to 35% of healthy subjects and may be responsible for frequent embolisms especially the cryptogenic stroke[3]. In the presence of a PFO,elevated right-heart filling pressures may cause paradoxical embolism to the arterial sideand significant hypoxemia.Therefore, the presence of a PFO is an independent predictor of adverse outcome in patients with PE[4].

Case report

A 35 years old male patient presented with dyspnoea on exertion and pain in left leg for one week. On physical examination, patient had swelling of left leg. Vital signs revealed sinus tachycardia (heart rate 115/ minute) and lower normal bloodpressure(93/62 mmHg), oxygen saturation was 92% on room air. Patient was evaluated for the cause and investigated. Electrocardiogram showed right bundle branch block with right ventricular strain pattern and sinus tachycardia. Venous Doppler of right lower limb was suggestive of DVT. Cardiac enzymes revealed increased troponin I (0.47 ng/ml), and increased brain natriuretic peptide (BNP) (955 pg/mL). Chest X-ray showed mild interstitial edema. Presuming a working diagnosis of pulmonary thromboembolism (PTE),patient was put on parenteral anticoagulation. Further evaluation with transthoracic echocardiogram (TTE) revealed normal left ventricular

Address for Correspondence :
Dr Milind Shrivastava, Consultant Cardiologist and Head, Santokba Durlabhji Memorial Hospital, Jaipur, India
E mail - milindshrivastava@yahoo.co.in

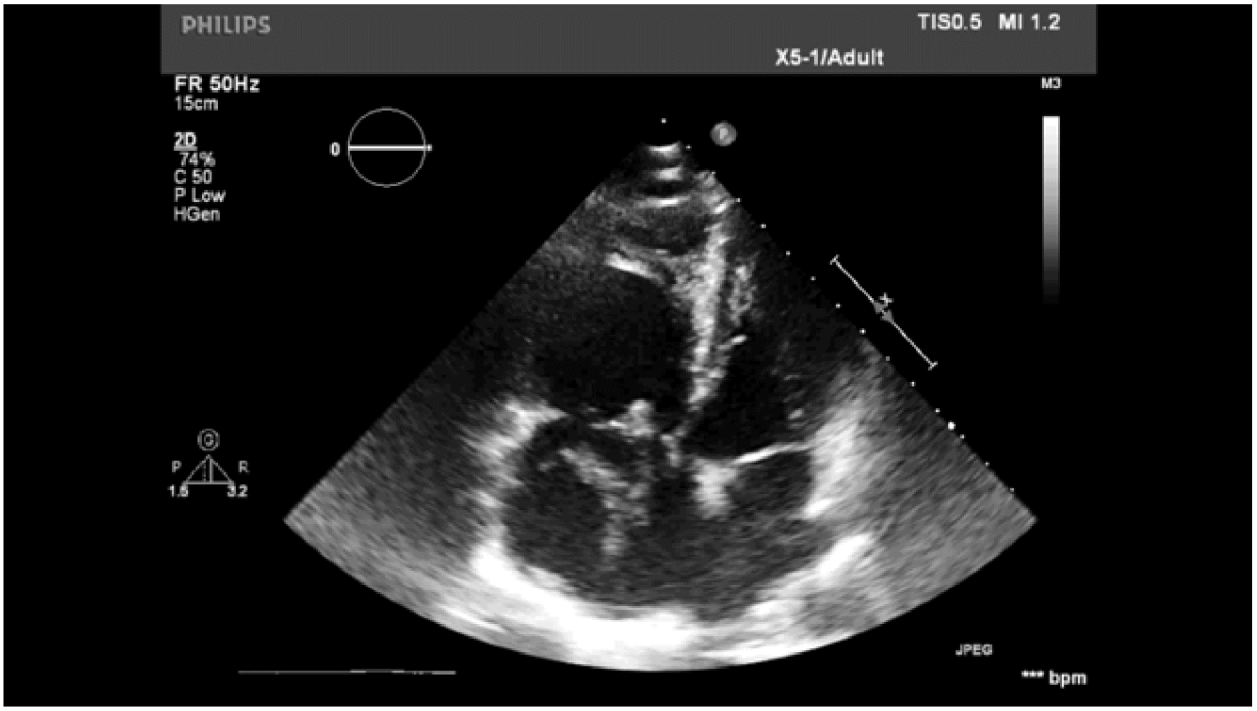

Fig. 1 : 2D echo apical 4C view showing enlarged right atrium and ventricle with large serpiginous thrombus in right atrium transiting to left atrium and right ventricle.

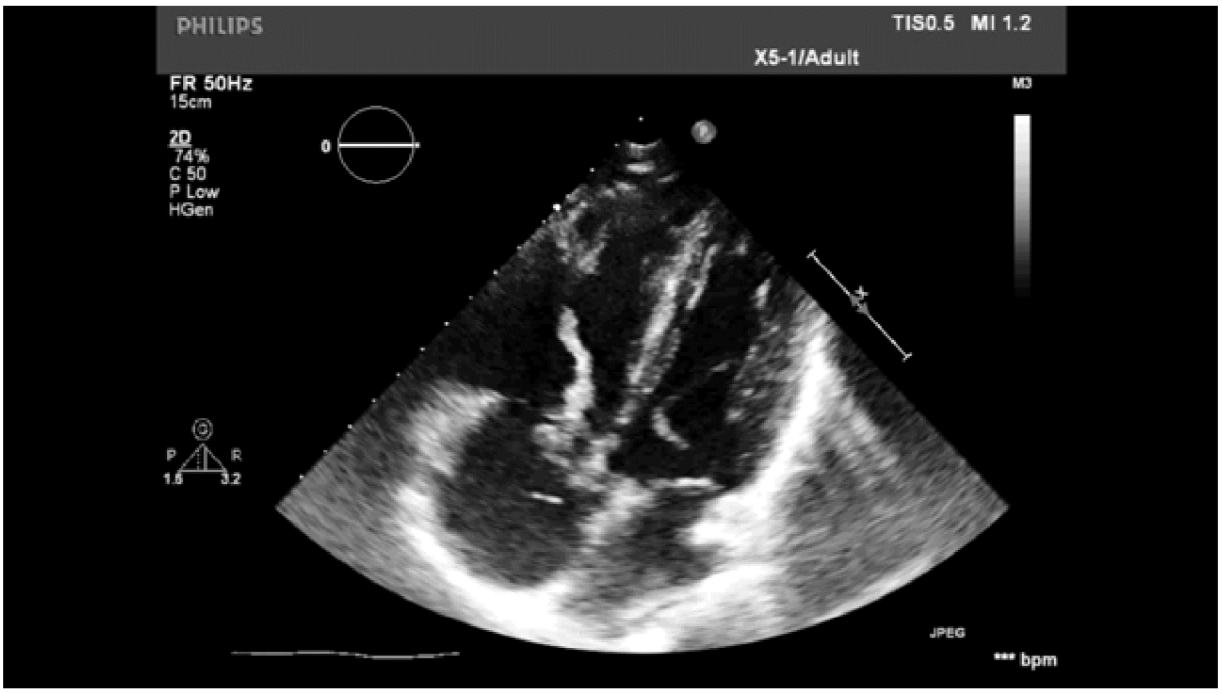

Fig. 2 : 2D echo apical 4 c view (another still image of same video) showing extension of thrombus to right ventricle.

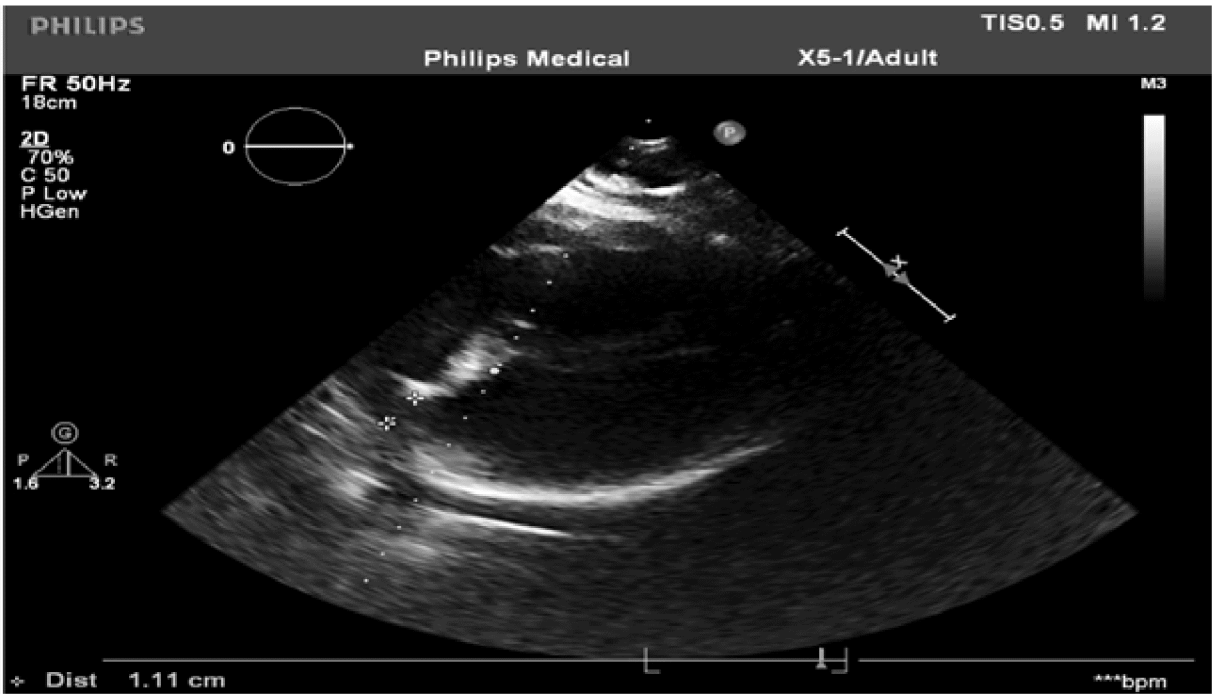

Fig. 3 : 2D echo - subcostal view showing echo drop out at interatrial septum.

Fig. 4 : Contrast 2D echo apical 4 C view showing confirmation of PFO.

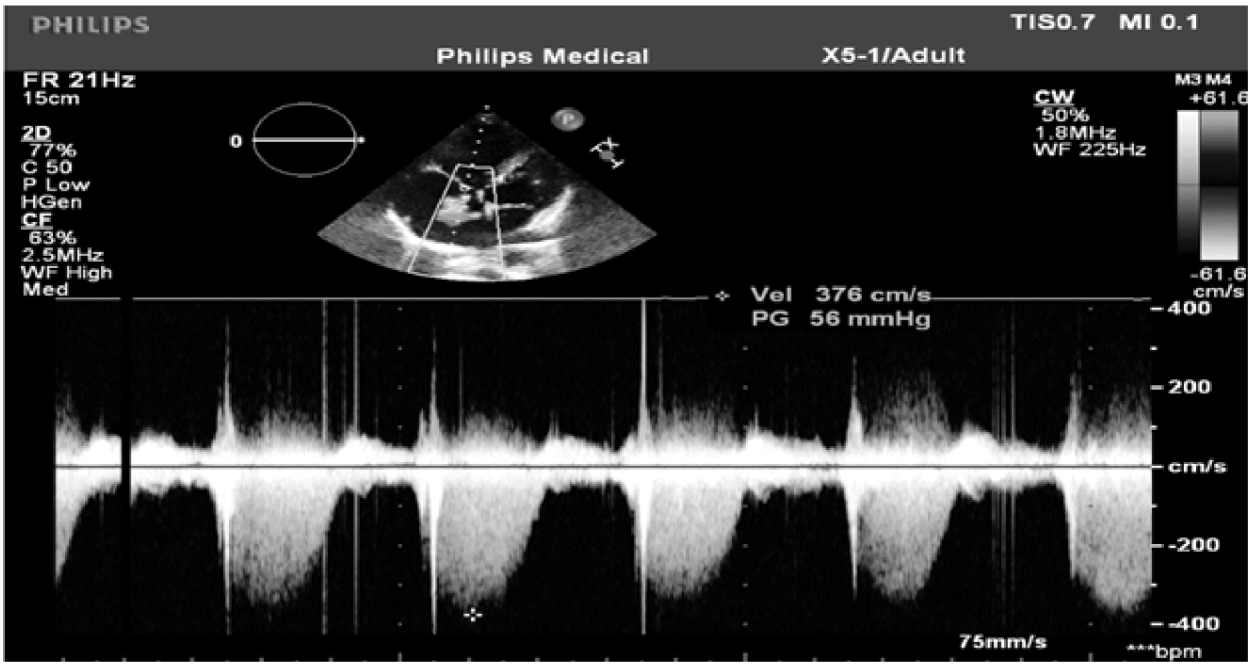

Fig. 5 : 2D echo color doppler image at tricuspid valve showing moderately raised pulmonary artery systolic pressure.

Fig. 6 : CT pulmonary angiogram axial view - showing large pulmonary thrombus in main pulmonary artery and left pulmonary artery.

Fig. 7 : CT pulmonary angiogram coronal view - showing large pulmonary thrombus in main pulmonary artery and left pulmonary artery.

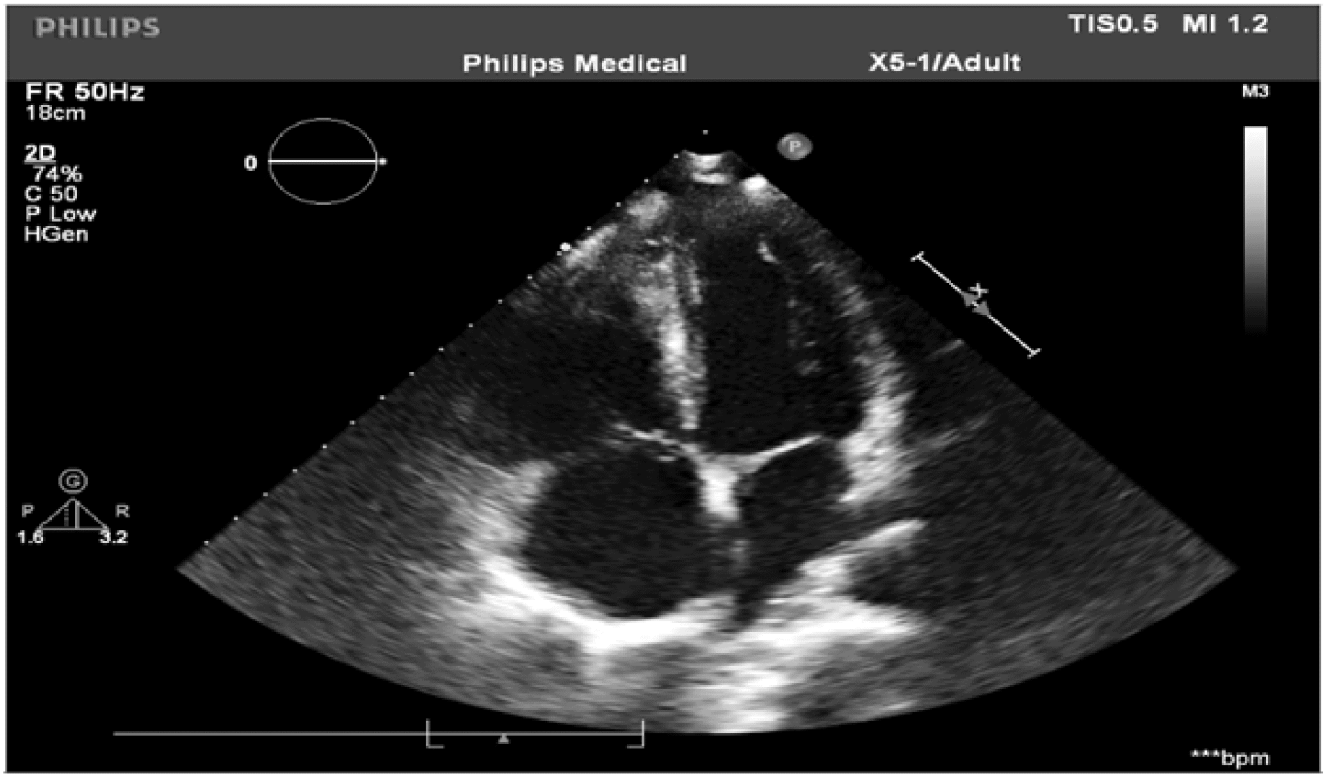

Fig. 8 : 2D echo - apical 4C view of same patient after thrombolysis suggestive of dissolved thrombus in heart.

systolic function, dilated right atrium and right ventricle with paradoxical motion of the inter ventricular septum and D-shaped left ventricular cavity. RV dysfunction with apical sparing (Mc Connell sign) was highly suggestive of PTE. A large serpiginous thrombus was seen in the RA which was extending across the tricuspid valve up to the RV.(Figure 1, 2). A small ECHO drop out was seen at the level of interatrial septum in subcostal view. (Figure 3) Confirmation of PFO was done with contrast echocardiogram study (Figure 4). Unusual findings we got was thrombus extending from RA to left atrium (LA) through patent foramen ovale (PFO). Pulmonary artery systolic pressure was elevated moderately. (Figure 5). Venous Doppler of both lower extremities showed left side popliteal and tibial vein thrombus. Lung perfusion scan showed perfusion defects consistent with PTE. Being a gold standard test for pulmonary thromboembolism, computed tomography of pulmonary arteries was done which revealed large thrombus in main pulmonary artery and left side pulmonary artery (Figures 6,7).

After definitive diagnosis patient was thrombolysed with Inj Streptokinase as per PTE protocol. After few hours of starting thrombolysis patient's clinical parameters improved.Review 2D echo, after 48 hours has shown no residual thrombus in cardiac chambers. Patient improved significantly and had no systemic embolization.After few days of observation patient was discharged on NOAC (Rivaroxaban) with stable state.

Discussion

A thrombus migrating from the right to the left atrium across PFO can develop thrombus in transit which can lead to acute pulmonary embolism and systemic embolization. Prevalence of thrombus in transit may be underestimated because there is small window period to detect it by 2D echo, although this is an uncommon event. Prevalence of right heart thrombus is quite variable and most of the studies suggest this is more commonly associated with massive pulmonary embolism than stable pulmonary embolism[5,6]. In our case patient had DVT followed by massive pulmonary embolism, which lead to dilatation of RA and RV along with moderate pulmonary hypertension. Due to increased right sided pressures, thrombus migrated to left side through patent and stretched PFO. We did bubble contrast echo for confirmation of PFO and to exclude any possibility of small ostium secundum atrial septal defect.

Conclusion

Diagnosing thrombus in transit is a challenging job for a cardiologist and echo cardiographer as this can be missed frequently. Appropriate management with diagnostic imaging followed by thrombolysis, thrombectomy with multidisciplinary approach is life saving for a patient.

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