Controversial imaging diagnosis of cardiac cause of recurrent pulmonary embolism

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A 44 years old lady with a past medical history of asthma and pulmonary emboli receiving adjuvant cytotoxic chemotherapy via a PICC line for a triple negative grade 3 invasive ductal carcinoma of right breast, presented to emergency with acute shortness of breath. She was managed initially as asthma, but 2 days later was hospitalised due to worsening symptoms. An urgent V/Q scan confirmed further multiple pulmonary emboli despite therapy dose low molecular weight heparin. A trans-thoracic echocardiography revealed a large 2.6 x 2.5cm mass attached to the tricuspid valve. Inflammatory markers were elevated and a blood culture and sensitivity confirmed coagulase-negative staphylococcus which, in the presence of PICC line (Fig 2) raised the suspicion of endocarditis. A trans-oesophageal echocardiogram (Fig 1,2,3,4) and CT chest were both in favour of possible intra cardiac neoplasm or metastases. Further investigation with cardiac MRI and PET were not in favour of metastasis or primary neoplasm. The patient was treated for PICC line infection with i.v. antibiotics and i.v. heparin resulting initially in reduced mass size but subsequent progression. Despite adequate anticoagulation the patient had further pulmonary embolism and subsequently proceeded to surgical removal of the mass. The histopathology analysis at the tertiary care centre confirmed fibrin core and large amount of neutrophils consistent with thrombus with no features of neoplasm or malignancy. The patient made good post-operative recovery and was commenced on long term low molecular weight heparin as per protocol.

The four cardiac imaging modalities agreed on the presence of the mass as the most likely cause for the recurrent pulmonary embolism but disagreed on the exact diagnosis regarding the nature of the mass. The differential diagnosis was intracardiac metastases from the breast cancer, PICC line associated endocarditis particularly with a positive blood culture or intracardiac thrombus. The latter was confirmed following surgical excision. Justifiably, imaging experts consider the shape and position of masses as well as patient’s other related conditions and past history to obtain a diagnosis but histopathological confirmation remains the ultimate diagnostic tool.