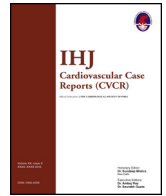




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An interesting case of right ventricular mass

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Case history

37year old farmer presented with pain in right lower limb and dyspnea on exertion class III since 2 days prior to admission. He was comfortable at rest with sinus tachycardia and reduced breath sounds in right infrascapular region. Chest x ray showed cardiomegaly. Echocardiogram showed large pericardial effusion with no evidence of tamponade. A mobile echogenic mass was seen in mid RV with possible attachment to RV free wall. Serial ECHO after admission showed evidence of tamponade after 2 days (Fig. 1). Patient underwent pericardiocentesis and 1500 ml of hemorrhagic fluid was aspirated. In view of the RV mass, lower limb Doppler was done to rule out DVT, which was normal.

Cardiac MRI was done for tissue characterisation of RV mass and to assess the right ventricular site of attachment. MRI showed a 20 × 10 mm altered signal intense lesion adjacent to ventricular wall with possible attachment to tricuspid valve or the chordae tendinae. The lesion was isointense to myocardium on T1 and T2 images (Fig. 2). No contrast enhancement was seen even with delayed images. This finding was suggestive of possible thrombus or myxoma. CT chest with contrast showed bilateral minimal pleural effusion with sub segmental atelectasis in the posterior basal segments of both lower lobes. Pericardial fluid cytology showed hyperchromatic nuclei with cells arranged in acinar and 3 dimensional cell clusters in background of haemorrhage, suggestive of malignancy.

The patient had one episode of pulmonary embolism; this was suspected to be due to tumour/thrombus embolism from right ventricular mass, as the doppler study of both lower limb veins was normal. Hence surgery for excision of the RV mass was contemplated both for relief from recurrent pulmonary embolism and also

for histopathological diagnosis of the RV mass. Patient underwent partial pericardiectomy and excision of RV mass, which correlated with the pre-op estimation of RV mass size. The histopathology of RV mass showed necrotic material with few scattered neutrophils only and no viable tissue was seen. Histopathology of the excised pericardium showed malignant cells with amphophilic cytoplasm, pleomorphic nucleus with prominent nucleoli, arranged in clusters and glandular pattern, which were also seen in blood & lymphatic vessels (Fig. 3).

PET scan screening revealed metabolically active nodular lesion in medial segment of left lower lobe representing primary tumour (Fig. 4). Few small mediastinal, right hilar and supraclavicular lymph nodes showed mild increase in metabolic activity. Mild diffuse pericardial thickening was seen with minimal metabolic activity, suggestive of mediastinal, hilar, supraclavicular lymph nodal spread.

During the 3rd post op day, he developed pain and swelling in right thigh with progressively worsening dyspnea. Repeat Doppler of lower limb revealed evidence of deep vein thrombosis in right deep femoral vein. Repeat CT pulmonary angiogram revealed embolism involving right lower lobe pulmonary artery and its segmental branches. Patient was started on heparin and continued on warfarin to maintain INR between 2 to 2.5. On advice of medical oncologist he was started on Paclitaxel, Cisplatin and steroid induction therapy followed by maintenance Penetrexate. Patient is now on follow up and is having stable disease.

Discussion

Secondary tumours of the heart are more common than primary tumours. Carcinomas of the lung, breast, esophagus, malignant lymphoma, leukemia, and malignant melanoma, can metastasise to the heart and incidence varies from 5%–18.3%.^{1,2} Malignant melanomas have the highest rate of metastases to heart with more than 50% cardiac involvement.³ In an autopsy series by Klatt et al.,

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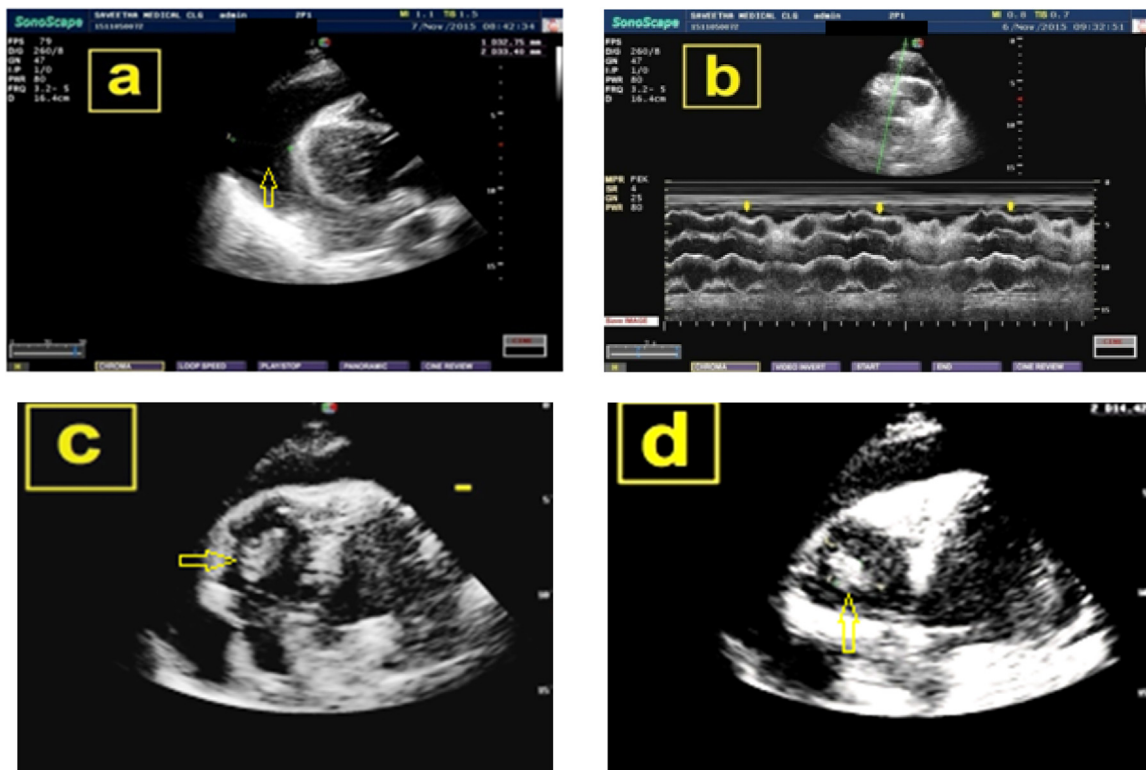


Fig. 1. a) Shows significant circumscribed pericardial effusion (arrow). b) M- mode showing diastolic RVOT collapse. c) 4 chamber view & d) 4 chamber view with anterior tilt showing well defined echogenic nearly homogenous irregular ovoid mass in RV which was mobile and had a possible attachment to RV lateral wall (arrow).

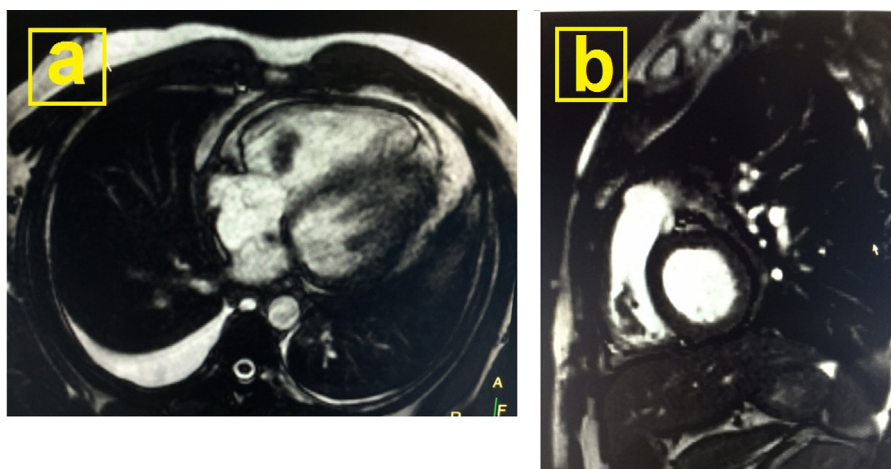


Fig. 2. a) Cardiac MRI T2 weighted image showed a 20 × 10 mm mass in RV which was iso-intense to the myocardium, with possible attachment to the chordae or the RV free wall. b) contrast MRI showed no contrast enhancement of the mass or the adjacent myocardial wall.

the lung was the commonest primary site (36.4%) and adenocarcinoma was the most frequent cell type (36.4%) of neoplasms metastatic to heart,⁴ probably because of proximity to the heart.⁶ Better imaging techniques permit increasing diagnosis in vivo and better treatment helps more prolonged survival of such patients.⁶

About two thirds of all cardiac metastases involve the pericardium (69.4%), epicardium (34.2%) or the myocardium (31.8%) and endocardial metastasis is only 5%.^{1,5} The tumours most often involving the pericardium were mesothelioma followed by adenocarcinoma of the lung, ovary, stomach and prostate. The epicardium was involved most often by melanoma, lung squamous cell carcinoma and bronchoalveolar carcinoma. The myocardium was most often involved by melanoma and lymphomeliproliferative pro-

cesses, whereas the endocardium was involved by melanoma, carcinoma of lungs & kidney.

The mechanism of metastasis depends on the site of involvement. Pericardial involvement is due to direct spread of intrathoracic or mediastinal tumour, retrograde lymphatic spread through tracheal or bronchomediastinal lymphatic channels, or secondary involvement of the pericardium through spread from myocardial or epicardial metastases. Myocardial metastasis is almost always due to spread by retrograde lymphatic spread. Endocardial metastasis is usually due to hematogenous seeding of the tumour.⁵

The presentation may vary from non-specific symptoms including chest pain, malaise, weight loss, or features of congestive heart

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