

The heart and lung are intimately associated with each other. I will be presenting a series of cases that highlight their interplay.

These can be divided into situations where the interplay is purely anatomic and those where the physiologic dependence is predominant. I am leaving out complex congenital heart disease where in the presence of asplenia and hyposplenia there may be associated lung and tracheo-bronchial pathologies as well, since this is not a subject for this meeting.

PHYSIOLOGIC

Pulmonary edema

Patients with left sided cardiac dysfunction typically have interstitial or frank pulmonary edema, which manifests with effusions, septal thickening and ground-glass attenuation. This may simulate interstitial lung disease or lymphangitis carcinomatosa, but the ability to pick up LV or LA dilatation or other clues that point to cardiac disease helps in establishing the diagnosis.

Pulmonary hypertension

Pulmonary hypertension may be related to cardiac disease to pulmonary disease, to shunts or may be idiopathic. When it is related to cardiac disease, there is pulmonary edema and pulmonary hypertension.

PH also affects the right ventricle and right atrium causing pressure and volume overload that can be seen on CT scan.

PH due to pulmonary thromboembolism can present with lung infarcts and effusion along with cardiac changes.

Anomalous pulmonary venous drainage and associated syndromes like the hypogenetic lung syndrome also affect the heart and the pulmonary arteries causing plethora and other associated lung changes such as hypoplasia

ANATOMIC

Direct extension of disease

Tumors and infection that affect the lung and mediastinum can directly affect the heart and the pericardium. Lymphoma, bronchogenic carcinoma and tuberculosis do this commonly (Figure 1).

Granulomatous cardiomyopathy

This refers to patients who have monomorphic ventricular tachycardia along with lymphadenopathy and possible lung lesions with myocardial fibrosis or edema on cardiac

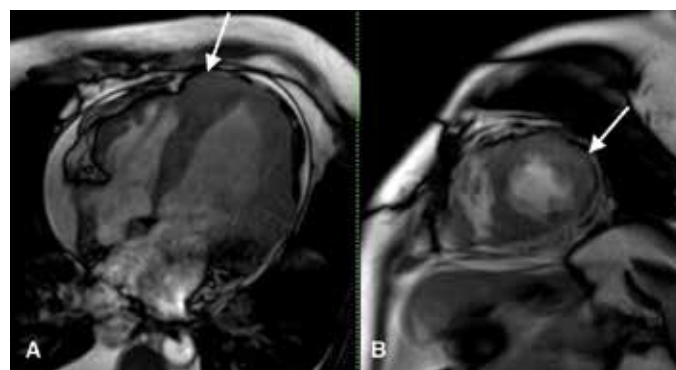


Fig. 2 (A,B): Lymphoma. End-diastolic four-chamber (A) and short-axis (B) images in a 52-years old man show nodular thickening of the LV and RV myocardium (arrows). This eventually turned out to be lymphoma



Fig. 1: Squamous cell carcinoma of lung. End-diastolic axial cine images show a squamous cell carcinoma of the left hilum involving the left pulmonary artery

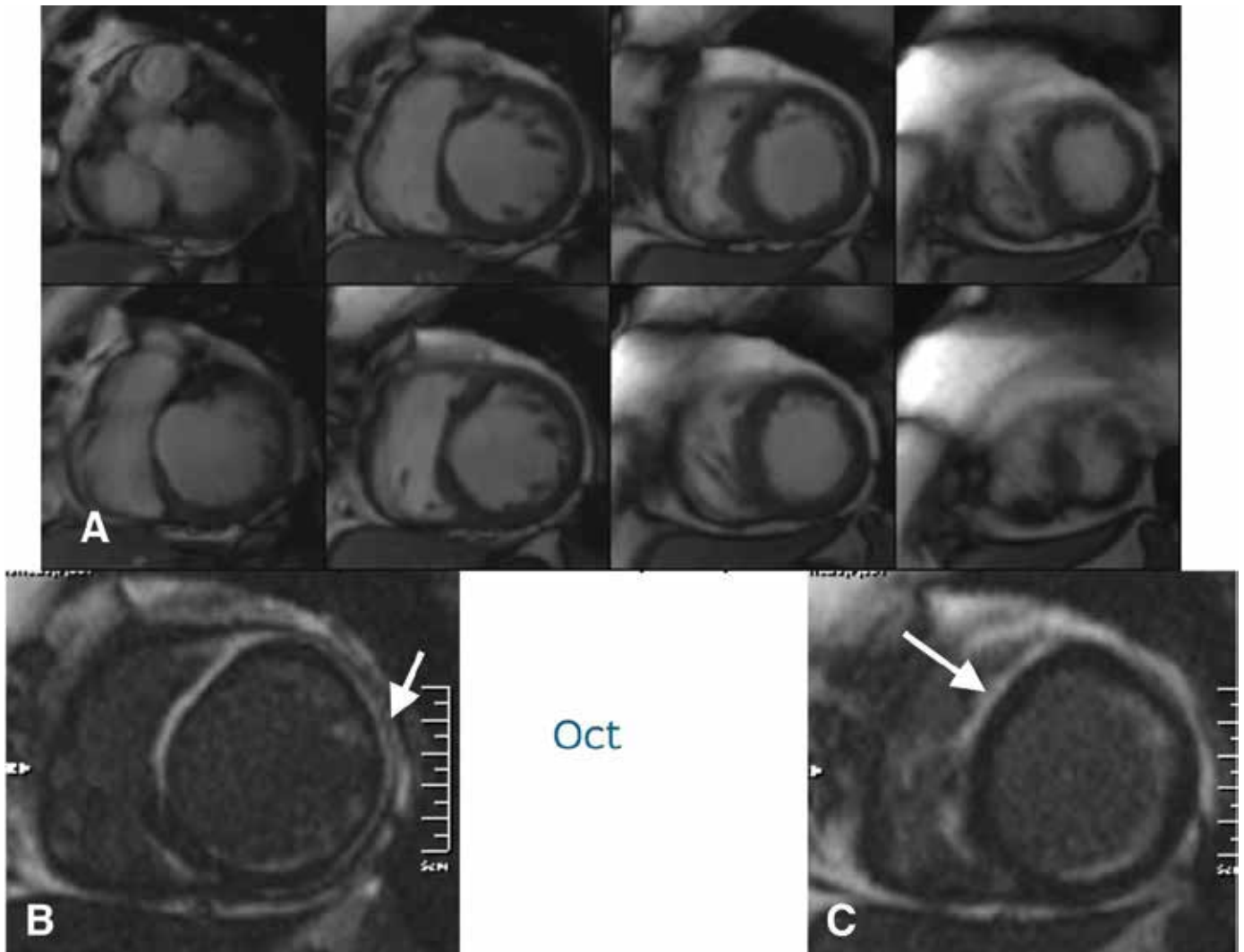


Fig. 3 (A-C): Sarcoidosis. End-diastolic cine short axis series (A) shows dilatation of the LV. Delayed enhanced short axis (B,C) images show abnormal mid-myocardial, epicardial and subendocardial enhancement in different LV segments (arrows)

MRI. Sarcoidosis and tuberculosis present in this manner (Figure 2)

Metachronous / synchronous disease

Metastases, lymphoma and conditions like amyloidosis can simultaneously affect the heart and the lungs and mediastinum (Figure 3).