Breast Cancer with Metastases to Coronary Arteries

Sir,

Cardiac metastases may involve myocardium, pericardium, and major vessels or coronary arteries between 0.7% and 3.5% performed on autopsy in general and approximately up to 9.1% in patients with cancer.[1] Metastases to the heart occur *via* four different pathways: direct extension, hematogenous spread, lymphatic spread, and transvenous extension. Overall, the risk of cardiac metastasis rises with metastatic disease burden; 14.2% of patients with multiple distant metastases were found to have involvement of the heart.[1]

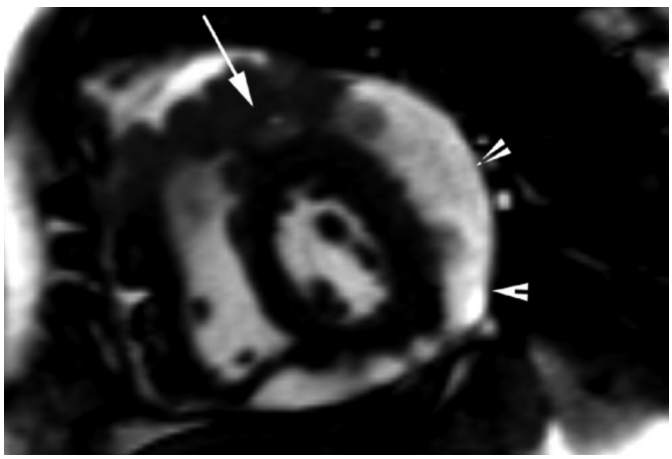

Figure 1a: Axial cine MRI using balanced steady state free precession (b-SSFP) at the level of the mid left ventricle demonstrating moderate circumferential pericardial effusion (arrow heads) and metastatic mass involving the anterior wall and infiltrating the anterior descending coronary artery (arrow).

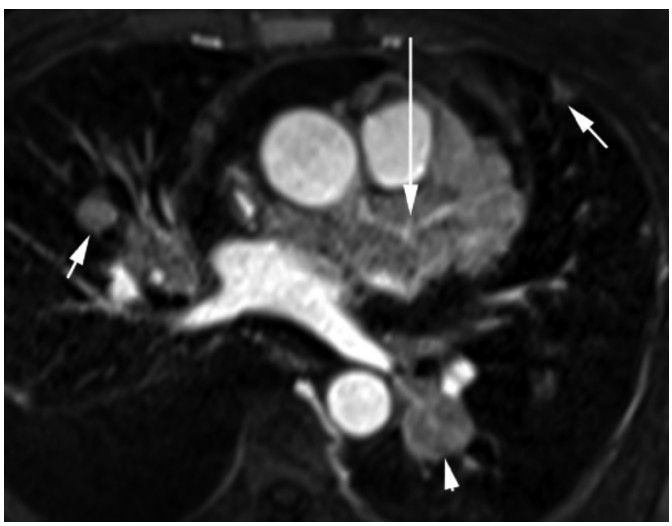

Figure 1b: Axial volumetric interpolated breath-hold examination (VIBE) demonstrating multiple metastatic pulmonary nodules (small arrows) with ill-defined metastatic nodules around the left main coronary artery and proximal left anterior descending coroary artery (large arrow).

A 56-year woman was transferred to our hospital with worsening dyspnoea that had progressed over the preceding three weeks. She was known case of metastatic breast cancer.

TNBC failed multiple lines of treatment. Upon examination, she had tachycardia, hypotension, and orthopnoea. The echocardiogram revealed the presence of large pericardial effusion with features of cardiac tamponade. Pericardial fluid was drained with symptomatic improvement; and findings on pathological assessment confirmed a diagnosis of adenocarcinoma consistent with primary breast cancer. Given the recent change in the patient's cardiac status, gadolinium-enhanced magnetic resonance imaging was performed; and it revealed metastatic deposits with vascular invasion involving the SVC, RVOT, pulmonary arteries, and pulmonary veins along with invasion of the proximal LAD (Figure 1a and b) and LCX. The patient's family was counselled about the condition and they decided to pursue palliative care. The patient died after few days.

Breast cancer constitutes 10–12% of cardiac metastases.[1,2] Its possibility should be considered in any patient with cancer and new cardiovascular symptoms, particularly in patients with distant metastases in chest.

The patient may present with diminished heart sounds, suggesting a malignant pericardial effusion; or myocardial infarction may be the result of coronary artery embolism, but also due to invasion and or compression of coronaries.[1] Echocardiography is the initial imaging modality to detect pericardial effusion and to assess for the presence of any cardiac metastasis.[3,4] Although it remains an essential imaging modality for the evaluation of metastasis to the heart, but it has its limitations, including poor image quality in individual with poor acoustic windows and limited evaluation of extracardiac structures. Cardiac magnetic resonance imaging (CMR), computed tomography (CT) and positron emission tomography (PET CT scan) can provide additional non-invasive characterisation of cardiac lesions.[5-7]

Cardiac CT and CMR may identify direct tumor extension from adjacent mediastinal structures. The administration of intravenous contrast is needed to identify intracardiac tumors; because they are often identified by filling defects. Because cardiac CT may visualise the coronary arteries, this imaging test should be considered when involvement of the coronary arteries is suspected.[6]

Cardiac tamponade requires immediate pericardiocentesis that can be lifesaving in cases of imminent hemodynamic collapse.[7] Overall prognoses of cancer with extensive cardiac metastasis is poor, although they remain clinically indolent, and diagnosed only upon autopsies.

CONFLICT OF INTEREST:
The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:
AHO: Conceived the idea and wrote the manuscript.
KS: Supervised the case study.

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