

# Imaging Findings in a Case of Carcinoma Oesophagus Presenting with an Intra-Atrial Mass on Echocardiography

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## PRESENTATION OF CASE

A 53-year-old male presented to our tertiary care center with complaints of palpitation and difficulty in breathing on exertion which was insidious in onset and gradually progressive. He had a history of back ache and significant weight loss. His physical examination and initial laboratory work up revealed no obvious abnormality. His initial radiological investigation involved chest roentgenogram which revealed cardiomegaly with mediastinal widening and haziness in left lower lung zone (Figure 1).

His (electrocardiogram) ECG revealed normal sinus rhythm. Later, patient underwent echocardiography which revealed normal systolic flow with a mass extending up to pericardium (measuring 6.9 x 4.1 cm) in left atrium obstructing mitral flow and minimal pericardial effusion.

He was sent to our department for contrast enhanced computerised tomography (CT) thorax scan to evaluate the extension of the left intra atrial mass which revealed a heterogeneously enhancing circumferential wall thickening in mid oesophagus extending from T7 - T11 for an approximate length of 8.3 cm with a single wall thickness of 2.3 cm in left lateral wall. There was also a heterogeneously enhancing lobulated soft tissue density mass with hypodense area within measuring 6.4 (CC) x 7.3 (AP) x 7.9 (TR) cm in left paraesophageal region infiltrating into adjacent pulmonary vessels and left atrium forming a large intra-cavitary mass with collapse of adjacent lung parenchyma and pericardial effusion with a maximum depth of 1.7 cm (Figure 2 & 3). Multiple enlarged lymph nodes were noted in paratracheal, pretracheal precranial and perivascular regions, largest measuring 1.2 cm in SAD in paratracheal regions (Figure 2B). Based on the imaging findings we made the diagnosis of malignant oesophageal growth with metastatic paraesophageal nodal mass infiltrating into adjacent pulmonary vessels and left atrium forming a large intra-cavitary mass.

On following up, endoscopic workup revealed a nodular growth in oesophagus extending from 33 to 38 cms with intact overlying mucosa (Figure 4). On histopathological examination of the specimen taken from the oesophageal growth revealed to be squamous cell carcinoma infiltrating to muscle coat.

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### CLINICAL DIAGNOSIS

Congestive cardiac failure

### DIFFERENTIAL DIAGNOSIS

Primary cardiac tumour  
Cardiac metastasis

### DISCUSSION

Majority of patients with primary EC present a typical clinical picture including dysphagia,<sup>1,2</sup> regurgitation, substernal distress, weight loss<sup>2</sup> and they have characteristic roentgenographic and endoscopic findings. However, when the neoplasm extends to adjacent structures or metastasizes before causing oesophageal obstruction, variety of clinical presentations may occur. Cardiac metastasis from squamous carcinoma of oesophagus is a rare event. Only few cases have been reported (14 cases).<sup>3</sup>

The incidence of cardiac metastases ranges from 2.3 % to 18.3 %, <sup>4</sup> according to imaging technique used and type of primary tumour. The distant metastasis usually involves liver, followed by lymph nodes, lung, bone, and brain.<sup>5</sup> Direct invasion, hematogenous and lymphatic spread are most frequent pathways for tumours to invade heart. Lack of serosa in oesophageal wall plays an integral role in local extension of oesophageal cancer. With no anatomical barrier, direct invasion is the usual route for EC to extend rapidly into adjacent structures of neck and thorax including thyroid gland, trachea, larynx, lung, pericardium, aorta and diaphragm.<sup>6</sup> In our case, there was invasion of paraoesophageal lymph node forming malignant mass and infiltrating into endocardium of left atrium from outside via pericardium as evidenced on contrast enhanced CT of thorax.

Like primary tumours of heart, metastases may imitate valvular heart disease or cause cardiac failure, ventricular or supraventricular heart rhythm disturbances, conduction defects, syncope, embolism, or, quite often, pericardial effusion.<sup>7</sup> Symptoms of cardiac failure were encountered in our case which prompted clinician to proceed with echocardiography since it is most readily available non-invasive imaging technique for detection of suspected cardiac masses, enabling clarification of location, size, shape, number and mobility of masses. On echocardiography of our patient, it revealed normal systolic flow with a mass extending up to pericardium obstructing mitral flow and minimal pericardial effusion.

When an intracavitary mass was detected on echocardiography, the usual diagnosis to be considered are primary cardiac tumours. Due to limitations of echocardiography in tissue characterization and decreased field of view (FOV), further imaging methods are required. Though magnetic resonance imaging (MRI) is the modality of choice in cardiac imaging, multi detector computed tomography (MDCT) is particularly useful for the evaluation

of cardiac mass due to its ability to detect calcification and fat content within the mass. The patient was thus referred to our department for a contrast enhanced CT of thorax to further delineate the intracardiac mass.

Contrast enhanced CT of thorax in our case revealed abnormally enhancing wall thickening in mid oesophagus with large paraoesophageal mass having necrotic areas within that was noted to infiltrate the left superior and inferior pulmonary veins and reaching up to left atrium with a huge component protruding well into left atrial cavity. Left atrial involvement can lead to symptoms mimicking congestive heart failure which was the cause of clinical presentation in our patient.

Cardiac involvement of EC makes the prognosis worse and treatment is usually limited to palliative care. Chemotherapy and radiotherapy are treatment option if operation is not indicated to relieve symptoms, produce local control and stabilizing hemodynamic disturbances. Surgery is usually not indicated in most cases due to diffuse involvement of cardiac tissue frequently. When indicated surgery is usually followed by chemotherapy and/or radiotherapy.<sup>3</sup>

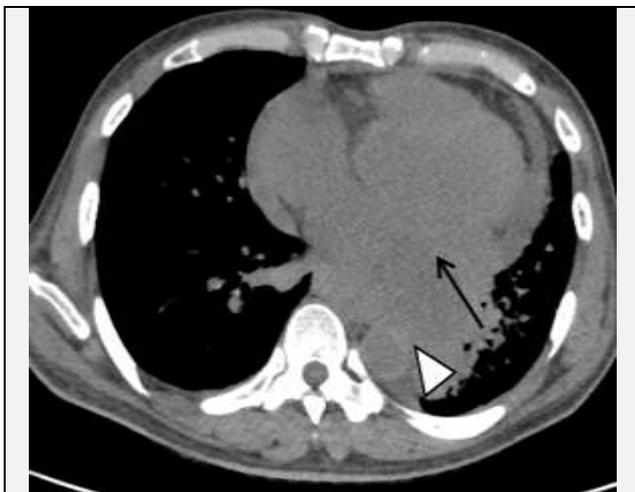
Thus, an unusual case of cardiac involvement (presenting as an intra-atrial mass on echocardiography), of an unsuspected primary malignancy of oesophagus is described. Thorough imaging evaluation and histological confirmation were fundamental to a correct diagnosis considering the challenging presentation. Early recognition of cardiac involvement could have important therapeutic and prognostic implications.

### FINAL DIAGNOSIS

Squamous cell carcinoma of oesophagus with metastatic paraoesophageal nodal mass infiltrating into adjacent pulmonary vessels and left atrium forming a large intracavitary mass.



**Figure 1. Chest Roentgenogram (PA View) Reveals Enlarged Cardiac Silhouette, Widening of Mediastinum, Splaying of the Carina, Homogenous Opacity in Left Lower Lung Zone, Apparently Normal Diaphragmatic Contours and Bowel Gas Pattern**



**Figure 2a. NCCT Axial Section at the Level of Heart Reveals a Mass of Heterogenous Attenuation with Hypodense Area (Arrow Head), Suggestive of Necrosis within in Left Paraesophageal Region, Loss of Fat Plane of the Mass with that of Oesophagus and the Left Atrium (Arrow)**



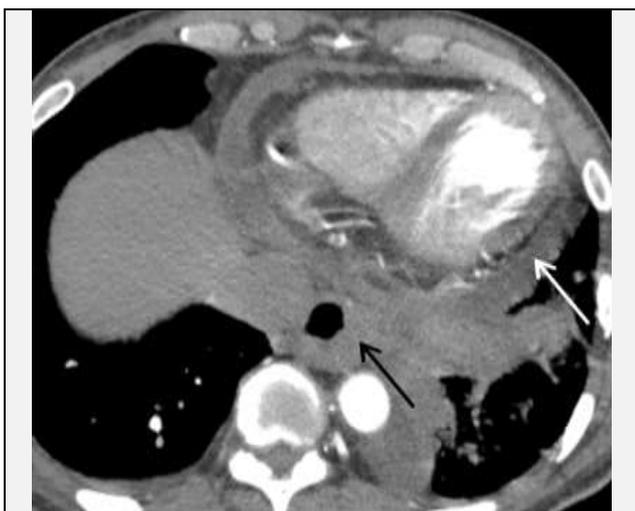
**Figure 3b. Sagittal Reconstructed CECT Image in Soft Tissue Window Shows Heterogeneously Enhancing Thickening of Mid Oesophageal Wall (White Arrow), Heterogeneously Enhancing Mass Protruding into the Cavity of Left Atrium with Loss of Fat Plane with the Oesophagus (Black Arrow)**



**Figure 2b. Reconstructed Coronal NCCT Imaging Showing Enlarged Lymph Node in Pretracheal Region (Short Arrow), Enlarged Left Atrium (Long Arrow) and Pericardial Effusion (Arrow Head)**



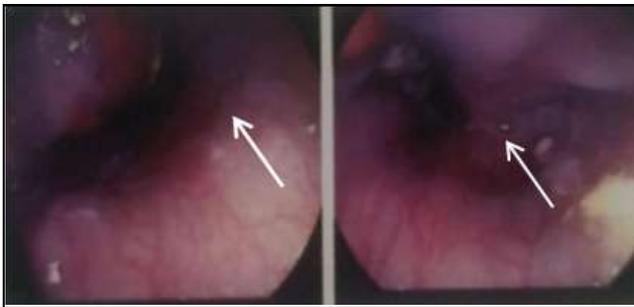
**Figure 4a. CECT Image at the Level of Left Atrium Showing a Large Heterogeneous Enhancing Mass in Left Paraesophageal Region Extending up to the Left Atrial Cavity Forming a Lobulated Intra Cavitary Mass with a Hypodense Area within (Black Arrow). The Fat Plane of the Mass with that of the Thickened Oesophagus is Lost (White Arrow).**



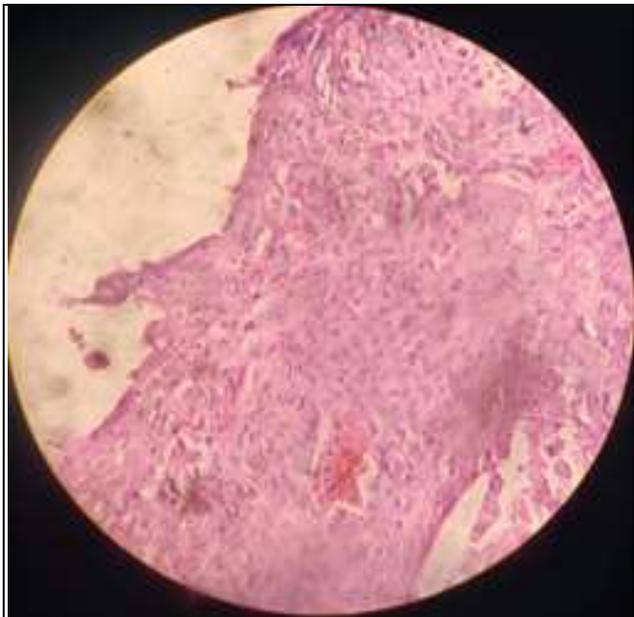
**Figure 3a. Contrast Enhanced CT (CECT) at the Level of Heart Image Depicts Heterogeneously Enhancing Circumferential Wall Thickening of the Oesophagus (White Arrow) and Pericardial Effusion (Black Arrow).**



**Figure 4b. Reconstructed Coronal Image Shows a Mass Protruding into the Left Atrial Cavity Occupying the Whole of Left Atrium and Extending in to the Pericardium (White Arrow). The Mass is Obstructing the Mitral Flow (Black Arrow)**



**Figure 5. Upper GI Endoscopic Images Showing a Nodular Growth in the Mid Oesophagus (White Arrow)**



**Figure 6. Histopathological Image Showing Features Consistent with Squamous Cell Carcinoma from the Specimen Taken**

Financial or other competing interests: None.  
Disclosure forms provided by the authors are available with the full text of this article at jebmh.com.

## REFERENCES

- [1] Yacoub AT, Frants R, Bank L, et al. An unusual presentation of esophageal cancer: a case report and review of literature. *Journal of Medical Cases* 2016;7(2):60-65.
- [2] Orlicka K, Maynard S, Bouin M. Unusual presentation of a metastatic esophageal carcinoma. *Case Reports in Gastroenterology* 2012;6(2):273-278.
- [3] Chandna P, Siddesh MB, Jeevika MU, et al. CT imaging and staging of carcinoma oesophagus. *Int J Res Med Sci* 2017;5(5):2021-2029.
- [4] Bussani R, De-Giorgio F, Abbate A, et al. Cardiac metastases. *Journal of Clinical Pathology* 2007;60(1):27-34.
- [5] Wu SG, Zhang WW, He ZY, et al. Sites of metastasis and overall survival in esophageal cancer: a population-based study. *Cancer Management and Research* 2017;9:781-788.
- [6] Napier KJ, Scheerer M, Misra S. Esophageal cancer: a review of epidemiology, pathogenesis, staging workup and treatment modalities. *World Journal of Gastrointestinal Oncology* 2014;6(5):112-120.
- [7] Cheng MF, Huang TC, Yen RF, et al. Left ventricle metastasis of esophageal cancer mimicking myocardial infarction in myocardial perfusion scintigraphy. *International Journal of Cardiology* 2013;167(6):e184-e186.