Right Atrial Invasion by Metastatic Esophageal Adenocarcinoma with Direct Connection to Liver
Ali Zohair Nomani and Kaleem Ullah Toori

ABSTRACT
Common causes of right sided intra-cardiac atrial masses include primary cardiac tumors (atrial myxoma), atrial thrombus, tumor thrombus with hepatocellular or other thoracoabdominal cancers and metastatic lesions. Invasion of atria by gastrointestinal tumors is rare and that with esophageal ones seldom observed. Esophageal cancers rather present with dysphagia, odynophagia or systemic symptoms. Due to the lack of a serosal layer, esophageal tumors usually spread early in their course. Typical sites of spread include liver, gut, mediastinum, lungs and draining lymph nodes. We report a case of metastatic esophageal adenocarcinoma presenting with direct extension of metastatic tumor thrombus from liver to right atrium via inferior vena cava.


INTRODUCTION
Esophageal cancer is the eighth most common cancer in the world and ranks sixth among all cancers in mortality comprising 7% of all gastrointestinal cancers. Historically reliable records marking the discovery of esophageal carcinoma date well back to the beginning of the 19th century.1-4 Lack of a serosa layer in the esophagus and the location of this conduit in a very narrow mediastinal space allows early tumor invasion into neighboring organs such as trachea, bronchus, lung, liver and aorta.3 Metastasis of esophageal carcinomas into the liver has been well recognized but to our observation, direct extension of metastatic lesions from liver into the right atrium has never been explained before.

We report a case of metastatic esophageal adenocarcinoma presenting with direct extension of metastatic tumor thrombus from liver to right atrium via inferior vena cava (IVC).

CASE REPORT
A 42 years gentleman presented to outpatient department of KRL Hospital with complaints of dyspepsia, epigastric discomfort, nausea, grade 1 dysphagia and more than 10 kg weight loss in the last 2 months. He had been a chain smoker with more than 40 pack years history of cigarette smoking but non-alcoholic. He was a driver by profession. His family history was significant only for ischemic heart disease. Upon examination, he was cachexic, pale, dehydrated and had a weight of 54 kg. His systemic examination did not reveal any significant clinical signs. Upon initial investigations, he had hemoglobin of 9.8 g/dl and had normocytic normochromic anemia. He had a raised ESR (erythrocyte sedimentation rate) of 70 mm in first hour. Rest of the laboratory tests including liver function tests, renal functions tests, neutrophil and platelet count, coagulation profile, serum albumin, serum electrolytes, chest radiograph and ultrasound abdomen and pelvis were all normal. He was advised a diagnostic upper GI (gastrointestinal) endoscopy as part of further workup.

It revealed an irregular pedunculated friable growth at the gastroesophageal junction commencing at 35 cm and extending up to 39 cm from the upper central incisors (Figure 1A). A punch biopsy from the lesion revealed moderately differentiated adenocarcinoma with basal palisading (Figure 1B) and accompanying areas of necrotic tissue (Figure 1C). A subsequent endoscopic ultrasound showed extramural extension of the mass lesion. In order to stage the disease, non-contrast and contrast enhanced abdominal CT (computed tomography) were performed. The CT showed hypodense lesions on non-contrast imaging. Contrast CT showed early arterial enhancement after intravenous contrast and characteristic delayed (portal) venous washout suggesting metastasis (Figure 1D). On CT, a well-defined polypoidal mass was also delineated arising from the liver. The mass was followed and seen to be extending into right atrium via IVC (Figure 1E). The mass lesion was seen to be extending half way across into the right atrium on transthoracic echocardiography. It was a mobile circular structure measuring 5.3 x 5.6 cm² in size and mimicked atrial myxoma. Transesophageal echocardiography confirmed the presence of mass inside the right atrium but the patient did not have any cardiovascular signs or
Symptoms. The lesion was traced back up to the left lobe of liver with IVC as conduit and defined as tumor thrombus (Figure 1F). The patient did not show any cardiac or respiratory symptoms afterwards as well as on follow-up.

Keeping in view the grave prognosis of stage IV esophageal carcinoma and essentially non-curable stage of disease, the patient was immediately put on combination chemotherapy with epirubicin, cisplatin and 5-fluorouracil (ECF) with the aim to improve survival and achieve palliation of symptoms. Upon consensus, it was decided to conservatively treat the intra-cardiac lesion rather than surgery in the light of otherwise poor prognosis of the primary tumor. The patient was started on prophylactic dose of heparin to reduce the risk of pulmonary embolism secondary to tumor thrombus. He did well with palliation of symptoms and presented in reasonably good health on follow-up after 60 days.

DISCUSSION

Esophageal cancer is the eighth most common cancer in the world. Although significant advancements have been made in the treatment of esophageal cancer, this aggressive malignancy commonly presents as locally advanced disease with a dismal prognosis.1,4 Despite improvements in the detection of premalignant pathology, newer preventive strategies, and the development of more effective combination therapies, the overall incidence of esophageal carcinomas has risen.5 The most common histological types are squamous cell carcinoma and adenocarcinoma, which together constitute more than 90% of esophageal malignancies.5 Progressive dysphagia or odynophagia are the most common presenting complaints of patients with esophageal cancer.5 The lack of a serosa layer in the esophagus and the location of this conduit in a very narrow mediastinal space allows early tumor invasion into neighboring organs such as trachea, bronchus, lung, and aorta.3

Computed tomography is presently the standard procedure for the detection of distant metastases in patients with esophageal cancer.6 For inoperable tumors, cisplatin with fluorouracil remains the most commonly used regimen, and the combination has been shown to be an integral part of primary management of patients with locally defined disease, as well as palliation.5 High response rates have been reported in the treatment of advanced gastric cancer with epirubicin, cisplatin and continuous infusion 5-fluorouracil, including instances of unresectable disease being rendered operable by chemotherapy.7

Common causes of right sided intra-cardiac atrial masses include primary cardiac tumors (atrial myxoma), atrial thrombus, tumor thrombus with hepatocellular or other thoracoabdominal cancers and metastatic lesions.8 Invasion of atria by GI tumors is rare and particularly that with esophageal carcinoma are seldom observed.6 Metastasis of esophageal carcinomas into the liver has been well recognized but to our observation, direct extension of metastatic lesions from liver into the right atrium has never been explained before. We report a case of metastatic esophageal adenocarcinoma presenting with direct extension of metastatic tumor thrombus from liver to right atrium via IVC.

Treatment of choice in patients with mobile thrombi in the right heart chambers is still controversial owing to the increased risk of recurrent pulmonary embolism. Thrombolysis and surgical or catheter embolectomy are the preferred options.9 However, anticoagulation with heparin has been shown to be a successful treatment option with the aim to reduce the risk of pulmonary embolism and can be the treatment of choice in otherwise inoperable cases.9,10 This report further
supports the conservative approach towards treatment of intra-atrial tumor thrombus in selective patients.

REFERENCES


