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Endobronchial Metastasis with Extension to the Left Atrium from Adenocarcinoma of Gastric 3 Years after Total Gastrectomy

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Abstract

Endobronchial metastases with extension to the heart from gastric cancer are very rare. This is a case report of a 69-year-old man who presented to a tertiary care hospital in Shahrekord, Iran, in 2020 with a history of cough and bloody sputum. He has a history of gastric carcinoma and underwent total gastrectomy and adjuvant chemotherapy 3 years ago. Following imaging and pathology studies, the patient was diagnosed with endobronchial metastases and extension to the left atrium. Chemoradiation regimen yielded a good response, preserving quality of life.

Keywords: Bronchial Neoplasms, Heart Atria, Metastasis, Gastrectomy, Adenocarcinoma, Case Report, Iran.

Introduction

Common reason for death in people with malignant tumors is metastasis.1 Diagnosis between metastasis and primary bronchogenic carcinoma can be difficult based on radiological, and clinical results. Immunohistochemistry is essential to establish diagnosis of endobronchial metastasis (EBM) following treatment for gastric adenocarcinoma. findings supported the diagnosis. Endobronchial metastasis has a dismal prognosis. However, multidisciplinary

decisions can result in long-term survival. We report a case of gastric carcinoma with metachronous metastasis to the endobronchus that invaded the the pulmonary vein and extended to the left atrium. Purpose of this case report was to emphasis early diagnosis of EBM by bronchoscopy and echocardiography in patients presenting with respiratory symptoms post treatment for gastric adenocarcinoma.

Case Report

A 69-year-old man presented to a tertiary care hospital in Shahrekord, Iran, in August 2022, with 3 weeks history of cough and haemoptysis. He had undergone total gastrectomy 3-years ago for poorly differentiated gastric adenocarcinoma (stage 2 B: T3, N1, M0). Surgery was followed by adjuvant chemotherapy (5-fluorouracil, lecovorin, oxaliplatin, docetaxel). Physical examination was normal. Blood showed leukocytosis with neutrophilia. Echocardiography showed a large lobulate mass involving the left atrium along with the middle and inferior pulmonary veins, suggesting metastases [Figure 1 A]. Chest computed tomography (CT) showed a reticular lymphangitic carcinomatosis. There was a soft tissue mass with irregular borders measuring 49 x 76 mm, involving the right main bronchus and the right pulmonary vein, extending to the left atrium [Figure 2 A]. On the right side, moderate pleural effusion is visible. Fiberoptic bronchoscopy showed an infiltrative lesion in the right middle and lower bronchus with partial obstruction [Figure 3]. Biopsy showed poorly differentiated adenocarcinoma in favor of metastasis [Figure 4]. Immunohistochemical staining was performed. The tumor cells were negative for thyroid transcription factor- 1 (TTF-1), and HER-2. Caudal-type homeobox 2 (CDX2), cytokeratin 7 (CK7), and CK 20 were positive and confirmed the metastasis from gastric carcinoma. Multidisciplinary team recommended surgical resection of the EBM followed by combination of irradiation and chemotherapy. Patient refused surgery. He was commenced on weekly 24 hours infusions of cisplatin (75 mg/m2/day) and 5-Fluorouracil (800 mg/m2/day) for 6 cycles. Concurrent radiation therapy was delivered to the chest to a total dose of 5040 GY at 180 GY per fraction. Repeat echocardiograms after 6 months showed resolution of the left atrial mass [Figure 1 B]. After the treatment, chest CT showed that the size of the tumor decreased to 16x31 mm [Figure 2 B]. Patient at 12-months post treatment is asymptomatic and well, although not disease free. The patient gave his consent for the publication of this case report and accompanying image.

Discussion

Endobronchial metastases (EBM) with extension to the heart from primary gastric malignancies are extremely rare. The probability of primary gastric cancer extended to the heart via endobronchus is uncommon compared with the other organs. Noncardiac malignancies can move to the heart through hematogenous, direct extension, and unusually, through the pulmonary veins. Tumors invading the left atrium may occupy a large part of the atrial cavity and they can lead to mitral valve dysfunction and place the patient at a high risk of thromboembolic events. Echocardiography plays an important diagnostic role in monitoring tumor progression or regression within the heart.

Endobronchial masses have many different sources. About 1.1% of endobronchial masses are metastatic.2 Cancers of the colon, breast, and kidney are the most frequent EBM.3 The symptoms of EBM with extension to the heart consist of Cough, hemoptysis, arrhythmia, and heart failure. Approximately 9 months to 5 years pass between the diagnosis of the primary tumor and the onset of EBM.4 In this case, relapse occurred three years after resection and treatment of the primary tumor. Biopsy is essential to distinguish between EBM and primary bronchogenic carcinoma. The prognosis of EBM is very poor. The median survival after diagnosis is 19 months.5 The likelihood of Survival in endobronchial metastasis relies on the behavior of the initial tumor if it has spread to another organ, and if the hilar lymph nodes have been involved. Diagnosis between bronchogenic carcinoma and metastasis from extrathoracic malignancies is difficult but essential. Previous reports suggest that the right side is involved more frequently than the left. 6 Why the right bronchial tree has endobronchial metastases with greater frequency is unknown. EBM from extrapulmonary malignancies is more common in women (66.7%).6

As there are no standard protocols for treating EBM, accurate diagnosis is imperative. There is no standard treatment. The criteria for surgery include technical resectability, patient performance, control of the primary tumor, and the absence of other metastatic sites. The case report highlights: 1. Primary gastric carcinoma metastasis to the EBM and extension to the left

atrium. 2. The metastatic behavior of adenocarcinoma of the stomach, and 3. CDX2 positivity as a marker for a relatively good prognosis. It is well known that these have a better prognosis.7

Conclusion

Intracardiac mass can represent a metastatic lesion. It is important to consider the possibility of endobronchial metastasis for a lung mass in a patient with a history of gastric cancer. Diagnosis is confirmed based on biopsy, morphology and immunohistochemistry. Involvement of the bronchus with extension to the heart in gastric cancer is associated with poor prognosis, and many surgeons consider such tumors inoperable. Based on the pathology of the primary tumor, the anatomic location of the metastasis, the occurrence of other metastases, and the patient's general health, a multidisciplinary team should design the patient's treatment. Chemoradiation regimen for EBM post gastric adenocarcinoma treatment yielded a good response, preserving quality of life. Patient remains asymptomatic despite presence of residual tumour.

Authors' Contribution

BS wrote the manuscript and MHM revised it. All authors approved the final version of the manuscript.

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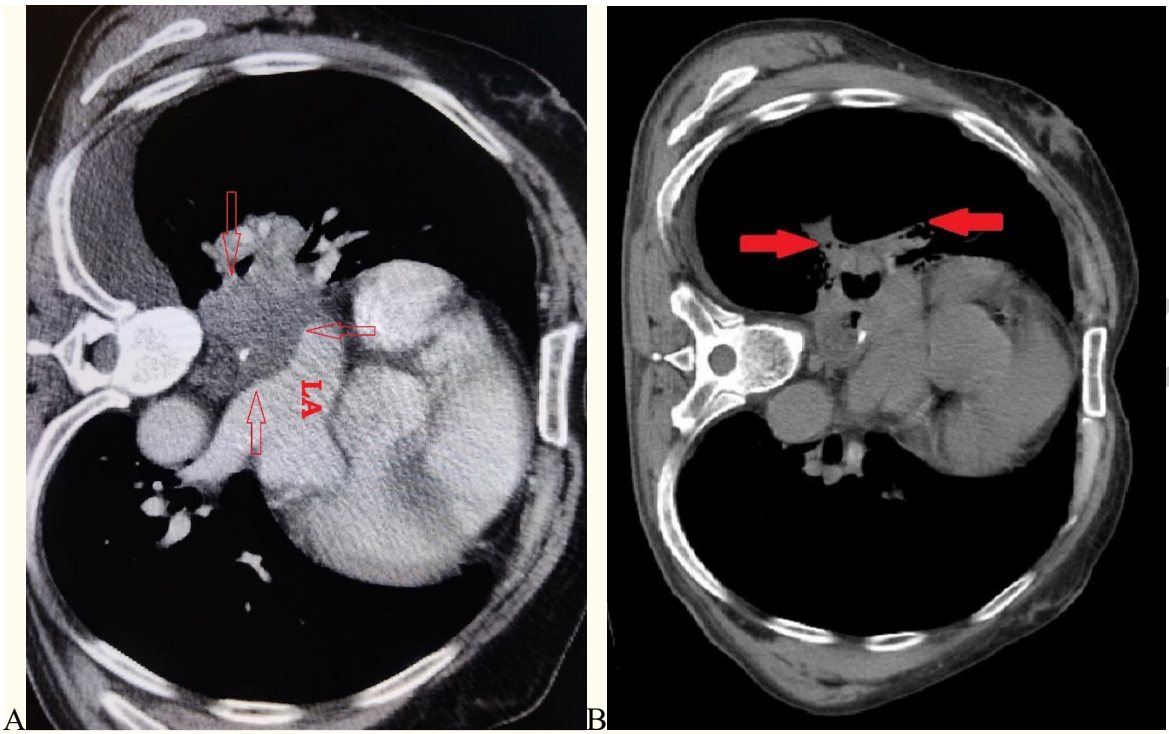
Figure 1: Echocardiography showed a large mass in the left atrium (arrows) (**A**) and after treatment showed resolution of the left atrial mass (**B**).



A B

Figure 2: Axial chest computed tomography scan obtained at the pulmonary window of the lower region of the thorax showing an ill-defined mass measuring 49 x 76 mm, encasing the right main bronchus and the right pulmonary vein and extends to the left atrium (arrows) (**A**) and showing a mass measuring 16 x 31 mm, encasing the right main bronchus after treatment (arrows) (**B**).

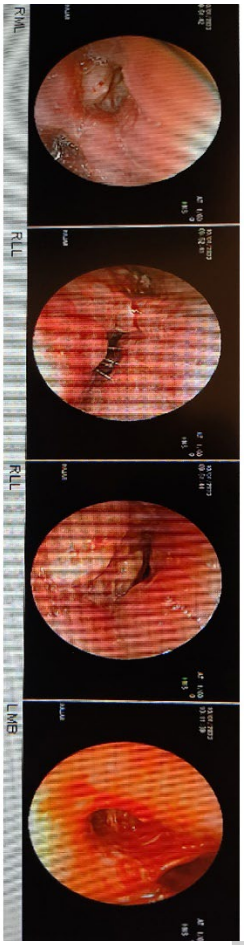


Figure 3: Bronchoscopy showed an infiltrative lesion in the right middle and lower bronchus (arrows).

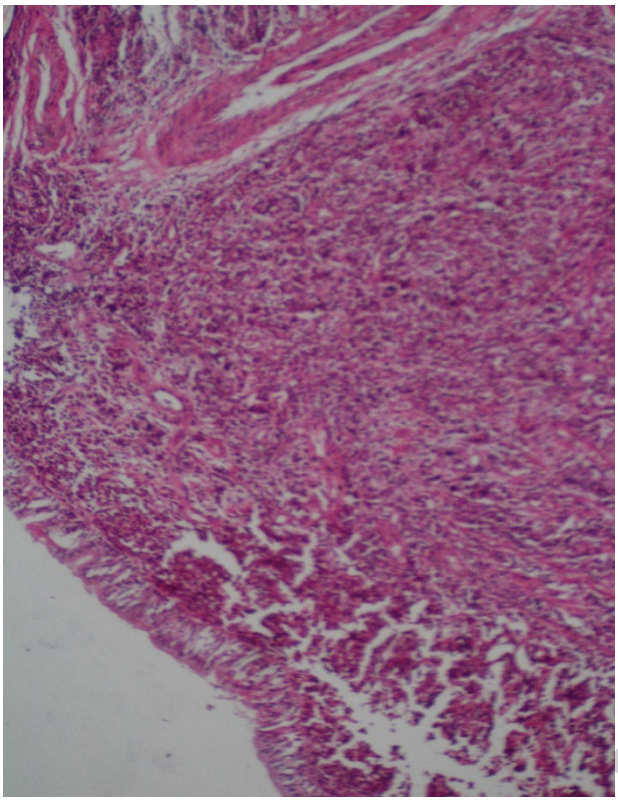


Figure 4: The biopsy specimen showed histologically identical to the gastric poorly differentiated adenocarcinoma in favor of metastasis (×100).