

Case Report

Esophageal Adenocarcinoma: An Unusual Pericardial and Pulmonary Metastasis – A Case Report

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Keywords

Adenocarcinoma · Esophageal cancer · Metastasis · Medical oncology · Esophageal adenocarcinoma

Abstract

Introduction: Esophageal adenocarcinoma (EAC) manifests in the glandular cells present in the lining of the esophagus and usually forms in the distal portion of the esophagus. The metastasis of EAC has been reported to occur in surrounding lymphovascular structures, the liver, brain, and bones. **Case Presentation:** We present the rare case of a 52-year-old Hispanic male with EAC metastasis to the pericardium and lungs. The patient presented with shortness of breath off and on for the last 6 weeks without any usually reported symptoms of EAC like chest pain, vomiting, or chronic cough. Respiratory examinations of this patient were significant for bilateral bronchial breathing and coarse crackles. The patient had been given numerous courses of oral antibiotics over the previous weeks with the provisional diagnosis of atypical pneumonia. Cardiac tamponade pathophysiology was also observed in this patient, for which a pericardial window was created to relieve the patient's symptoms. A final diagnosis of EAC with an unusual metastasis in the lungs and pericardium was made based on radiological and pathological findings. The patient chose palliative care instead of curative care because of the advanced stage of this cancer. The patient received cancer diagnosis counseling and was sent to hospice care for further management. **Conclusion:** The metastasis of EAC to the pericardium and lungs instead of usual sites constitutes an important prognostic factor in the overall survival of patients.

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Introduction

Approximately 1% of all the cancers diagnosed and 2.7% of all the cancer deaths in the USA are due to esophageal cancer (EC), more than 60% cases of which manifest esophageal adenocarcinoma (EAC) [1]. EAC is a tumor of the distal esophagus, and its major risk factors are GERD, obesity, and smoking. The incidence of esophageal carcinoma is constantly rising due to the increasing number of cases of GERD [2]. Localized EAC is primarily asymptomatic in the early stages but presents with difficulty in swallowing or unintentional weight loss in later stages [3]. Other less frequent symptoms of localized EAC are vomiting, chest pain, chronic cough, hoarseness, and bleeding into the esophagus. Because of its unique anatomical esophageal features, which are thought to be a major factor in understanding EAC's aggressive nature, EAC tends to unexpectedly expand at certain sites [4]. EAC mostly metastasizes to the liver, lungs, lymph nodes, adrenal glands, brain, and bones. Reporting of metastasis of EAC to the unusual sites is constantly increasing, which has been affecting EAC diagnosis and treatment protocols [5]. Here, we describe a unique case of EAC with metastatic spread to the pericardium. The CARE Checklist has been completed by the authors for this case report, attached as online supplementary material (for all online suppl. material, see <https://doi.org/10.1159/000534359>).

Case Presentation

A 52-year-old Hispanic male presented to the emergency department with a complaint of shortness of breath off and on for the last 6 weeks. He had a past medical history of hypertension, mild obesity, and borderline diabetes mellitus. On initial evaluation, he had a temperature of 98.1°F, blood pressure of 123/87 mm of Hg, respiratory rate of 28 per min, and heart rate of 111 beats per minute. Cardiovascular examination showed normal rate and rhythm; normal heart sounds; no thrill, murmur, rub, or gallop. Respiratory examination findings were bilateral bronchial breathing and coarse crackles. All other examinations, including gastroenterology, were unremarkable. Social history included no smoking and alcohol use. He had been treated with the provisional diagnosis of atypical pneumonia with multiple courses of peroral antibiotics over the last weeks, but his condition deteriorated with time. Table 1 summarizes the results of the initial blood tests of this patient.

Diagnostic Assessment

Initial chest X-ray showed ill-defined interstitial and alveolar opacities throughout both lungs. A computed tomography scan of the chest was performed, which showed bilateral ground-glass opacities, scattered pulmonary nodules, some interseptal and intraseptal pulmonary thickening, and small bilateral pulmonary effusions. In addition, a circumferentially thickened mid-distal esophagus with some surrounding lymph nodes was also observed (Fig. 1).

Findings were concerning for possible metastatic disease, which could potentially be esophageal in origin. Atypical pneumonia was less likely in the proper clinical setting if the patient had an elevated WBC or fever.

For further evaluation, esophagogastroduodenoscopy (EGD) and echocardiography were advised. EGD was planned to investigate esophageal thickening further. EGD revealed a 6 cm distal esophageal mass circumferentially at the gastroesophageal junction. An endoscope could be passed through this narrowing into the stomach. Cardia was unremarkable. The rest of the upper endoscope evaluation was normal until the distal and second part of the duodenum.

Table 1. The results of relevant initial blood tests

Name	Results	Normal range
Hgb	15.1 g/dL	14.5–17.7 g/dL
WBCs	$8.6 \times 10^3/\mu\text{L}$	$4\text{--}10.6 \times 10^3/\mu\text{L}$
Neutrophils	$7.1 \times 10^3/\mu\text{L}$	$1.8\text{--}7 \times 10^3/\mu\text{L}$
Alkaline phosphatase	296 U/L	50–136 U/L
AST	66 U/L	15–37 U/L
ALT	101 U/L	16–63 U/L
CRP	60.10 mg/dL	0.00–2.99 mg/dL

Echocardiography revealed moderate anterior and posterior pericardial effusion. This pericardial effusion led to cardiac tamponade pathophysiology contributing to the patient's dyspnea. The rest of the cardiac parameters were unremarkable, including left ventricular ejection fraction. To further manage the patient, the cardiothoracic surgeon created a pericardial window, using video-assisted thoracoscopic surgery, to relieve the patient's symptoms. A pericardial biopsy was obtained for further analysis and the pericardial fluid was sent for cytology.

Biopsies were taken for histologic examination to rule out malignancy. On histopathology, the specimen of the esophageal biopsy showed invasive, poorly differentiated adenocarcinoma in the background of Barrett's esophagitis and dysplasia (Fig. 2). Furthermore, pericardial biopsy showed metastatic poorly differentiated EAC (Fig. 3) and pericardial fluid analysis was negative for malignant cells. Lung metastasis was presumed to be from adenocarcinoma based on radiological findings on the chest X-ray and the initial respiratory exam findings in the patient.

Diagnosis and Follow-Up

Based on the radiological and pathological findings, we made the final diagnosis of EAC with an unusual metastasis in the lungs and pericardium. The patient received cancer diagnosis counseling and decided to go for palliative care instead of curative care due to the advanced stage of cancer. Therefore, he was sent to hospice care for further management.

Discussion

EC is one of the deadliest and most aggressive cancers and the 6th leading cause of death from cancer. There are two types of esophageal carcinoma: squamous cell carcinoma and adenocarcinoma, but EAC is the prevalent form among the American and European populations [6]. Barrett's esophagus is one of the most significant risk factors for developing EAC. It serves as the precursor lesion for adenocarcinoma of the esophagus and the gastroesophageal junction. Barrett's esophagus is characterized by the substitution of the squamous mucosa of the distal esophagus by columnar mucosa, specifically intestinal metaplasia [7]. This preneoplastic condition requires regular and careful monitoring and treatment to prevent the development of EAC. Therefore, endoscopic surveillance of Barrett's esophagus has an important diagnostic and management role for EAC. Localized EAC with no lymphovascular involvement is treated with endoscopic resection with curative intent [8]. EAC is asymptomatic in the early stages, but many cases are diagnosed at advanced stages and at the time of diagnosis, it mostly has severe loco-regional invasion and distant metastasis (DM). Despite the use of aggressive therapeutic interventions to achieve the potential cure for EC, it has been observed that approximately 50% of patients ultimately experience a recurrence of

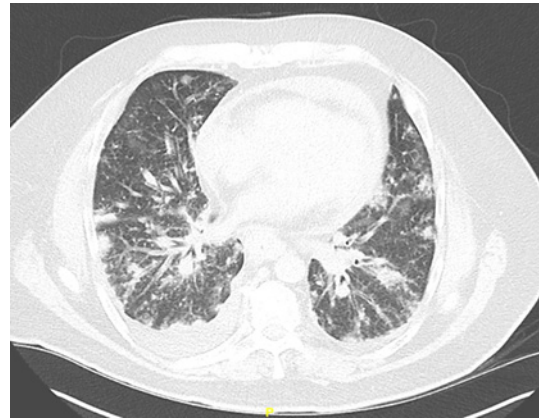


Fig. 1. A computed tomography (CT) scan of the chest.

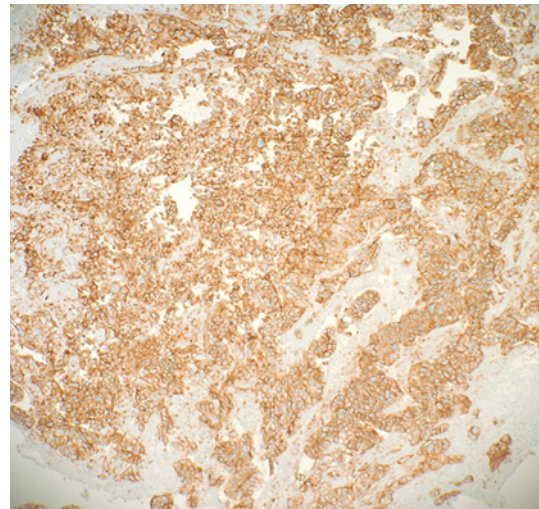


Fig. 2. Esophageal biopsy.

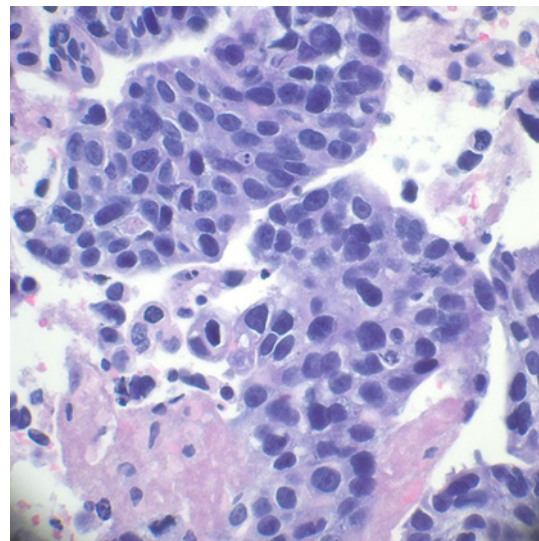


Fig. 3. Pericardial biopsy showed metastatic poorly differentiated esophageal adenocarcinoma (EAC).

the disease [9]. Systemic therapy plays a pivotal role in the management of patients. Several predictive biomarkers having the potential to predict treatment options and outcomes for patients diagnosed with EAC have been identified. These include human epidermal growth factor receptor 2 (HER 2) amplification, mismatch repair deficiency/microsatellite instability, and program death-ligand 1 (PD-L1) [9]. Although recently, there have been many advancements in chemo-radiotherapy and surgical interventions for DM, the overall 5-year survival rate is still 10–15% [10]. In the case of EAC, overall survival (OS) depends on the site of DM. If we use liver metastasis as a reference, distant lymph node metastasis has better OS than bone metastasis. Lung and brain metastases have a similar OS to liver metastasis [11]. The OS also depends upon the number of sites of DM. The OS of multiple DMs is poor compared to single DM [12]. EAC usually metastasizes to lymph nodes, liver, adrenal glands, brain, and bones. We searched PubMed using the keywords “Esophageal adenocarcinoma AND unusual metastasis OR metastases AND case reports,” and this search yielded three detailed case reports. One such case reported the metastasis of EAC to the skin in which the tumor metastasized to the skin of the head, neck, and abdominal region [13]. Other cases of unusual metastasis were EAC with metastasis to the prostatic urethra [14] and the urinary bladder [15]. However, the mechanism of metastasis of EC is still unknown. Nevertheless, there exists a proposed mechanism of dissemination in which an embolus originating from an esophageal tumor is released and subsequently travels through major artery to reach distant terminal organs [4]. EAC in different topographies presents peculiarities in DM; therefore, physicians must be aware of these unusual presentations while managing EAC patients [16].

Conclusion

We presented the case of EAC with an unusual metastasis to the pericardium and lungs concurrently. This case demonstrated the unfamiliar presentation of DM of EAC that delayed the diagnosis. Hence, DM of EAC constitutes an important prognostic factor in the OS of the patient.

Acknowledgment

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Statement of Ethics

The article describes a case report. The Ethics Committee at Texas Tech University Health Sciences Center, Amarillo, waived the ethical approval. Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Waqas Rasheed, MD: conceptualization and supervision. Omer Usman, MD: writing – original draft and supervision. Obaid Ur Rehman and Eeshal Fatima: writing – review and editing. Abdulqadir Nashwan: supervision and writing – review and editing.

Data Availability Statement

All data generated or analyzed during this study are included in this article and its online supplementary material. Further inquiries can be directed to the corresponding author.

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