

Pectoralis Major Metastasis of Esophageal Adenocarcinoma: An Unusual Site

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Abstract

Case Report

Esophageal cancer is a tumor of poor prognosis and its most common sites of metastases are lymph nodes, lung, liver and bones. However, it has also been reported some unexpected metastasis to uncommon sites which has consequently affected the pathway of diagnosis, management and staging. We report the case of a 31year old man patient with history of dysphagia, weight loss and induration in the left pectoral region. Endoscopic, radiological and pathological examination confirmed the diagnosis of Esophageal adenocarcinoma with pectoralis major metastasis. The patient was qualified for radiotherapy and concurrent systemic chemotherapy. Unfortunately, the patient died 3 months after the first CRT.

Keywords: Esophageal adenocarcinoma, metastasis, pectoralis major.

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INTRODUCTION

Esophageal cancer is the 8th most common cancer worldwide [1]. It's characterized by a poor prognosis, with 5-year relative survival rate ranging between 40% for localized tumor (N0-M0) and 4% for advanced distal metastasis tumors (M1) [2]. In general, skeletal muscle metastases of esophageal adenocarcinoma are asymptomatic and exceedingly rare. They're detected with imaging modalities during the tumor staging. Pectoral muscle metastasis in particular are even rarer. Unfortunately, and because of its anatomic inaccessibility, diagnosing esophageal cancer is often delayed. But with the advent of endoscopic modalities, it has become easier to explore this organ and thus diagnose its malignancy. Combining endoscopic and imaging modalities such as CT SCAN and MRI has also facilitated tumor staging and distant metastases findings. Through reporting the case of this 31year old man, we highlight the existence of pectoral metastases as a rare site of metastasis of esophageal adenocarcinoma as it has a poor prognosis.

CASE REPORT

We report the case of 31year old man with 6-month history of progressive dysphagia for solids then liquids and recurrent vomiting in a context of weight loss and asthenia. He did not used to consume tobacco

or alcohol and had no particular pathological nor surgical history.

Clinical examination revealed a cachectic patient and showed the presence of induration in the left pectoral region. Vital parameters were within the normal range; without any abdominal sensitivity or defense. The complete serum electrolyte panel and blood count were within normal limits. Esophageal endoscopy (Figure 1) revealed an intramural tumor located in the lower esophagus, totally stenosing, irregular and ulcerated, with significant upstream dilation. Histopathological examination of the specimen obtained by biopsy during our endoscopic examination showed a moderately differentiated oesophageal adenocarcinoma (Figure 2). As part of the extension assessment, a contrast-enhanced CT scan of the chest, abdomen and pelvis was performed revealing a circumferential and irregular wall thickening in the thoracic esophagus obstructing the lumen responsible of a dilated fluid- and debris-filled oesophageal lumen above (Figure 3a). These findings were associated to a nodule sitting in the left pectoralis major muscle, solid, with annular enhancement in favor of secondary localization (Figure 3c). The patient underwent a biopsy of that nodule with the histopathological examination showing indeed a metastatic muscular localization of an Esophageal Adenocarcinoma (figure 2). No other

metastases were detected. The patient's case was discussed during a multidisciplinary staffing and was qualified to local radiation therapy (50 Gy) and

concurrent systemic chemotherapy (5-FU + CDDP). Unfortunately, he died 3 months after the first CRT.



Figure 1: Esophageal endoscopic showing lower esophagus totally stenosing: irregular, ulcerated, with significant upstream dilation

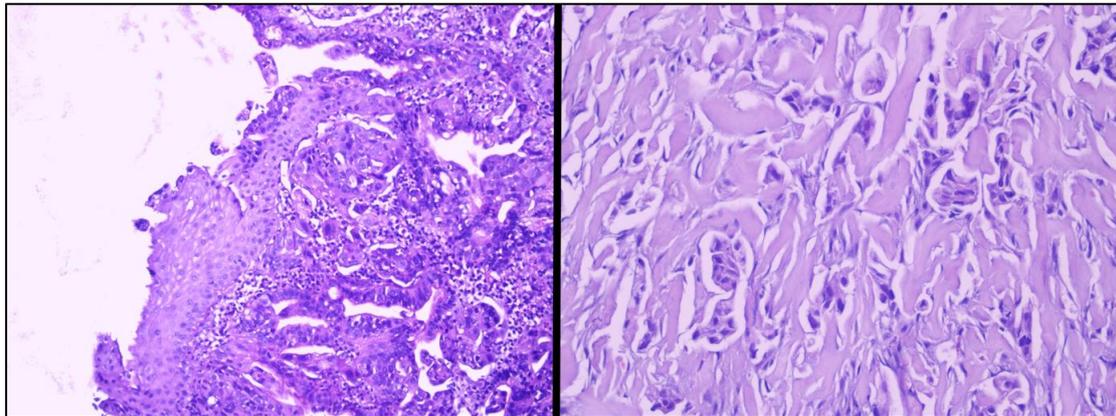


Figure 2: (Left) Hematoxylin and eosin staining (HE) medium magnification, showing moderately differentiated adenocarcinomatous tumor proliferation with the presence of an esophageal squamous lining. (Right) HE staining high magnification: Presence of adenocarcinomatous tumor proliferation within the muscle fibers



Figure 3: Sagittal (A), coronal (B) reconstructions and axial (C) CT-SCAN after contrast administration of our patient showing the irregular, circumferential wall thickening stenosing the thoracic esophagus (blue arrow) causing enormous dilation upstream with hydro-aerial level (red star). In the axial plane we note the tissular nodule located in the left pectoralis major with annular enhancement in favor of a secondary lesion

DISCUSSION

Oesophageal adenocarcinoma metastasizing to muscles is a very rare finding with the reason for this rarity remaining unclear to this date. Many hypotheses have been made such as an attribution to contractile activity, changes in pH, accumulation of metabolites, intramuscular blood pressure, and local temperature, which may inhibit cancer cells from developing in this area [3, 4]. However, intramuscular secondary lesions are invariably considered to be a sign of partial systemic hematogenous spread and signifies a terminal stage of esophageal adenocarcinoma [5].

Many studies (from 1986 to 2019) have reported skeletal muscles metastasis from esophageal cancer. Most patients had lesions in the lower limb's muscles (thigh and lower leg) [6]. The pectoral muscle location wasn't reported until now.

Clinically, the most common sign is pain with sometimes the presence of palpable tumour-like masses. In some cases, it may remain asymptomatic and only found in imaging during the extension assessment routine. If a primary tumor is not already diagnosed, then clinical examination and the patient's history should be carefully studied. In the case of oesophageal cancer, the patient may present with progressive dysphagia and a weight loss, a chronic worsening gastro-oesophageal reflux and hoarseness, a cough, a vocal cord paralysis, or other signs and symptoms of mediastinal invasion [7]. Esophageal endoscopy is of course the best modality to diagnose the disease. It may show a polypoid aspect (the most common one) with a sessile or pedunculated tumour, a lobulated surface protruding or irregular lesion. Otherwise, we may have an ulcerating form as a large ulcer niche within a bulging mass or an infiltrating form which shows a gradual narrowing of the lumen with a smooth transition [8].

Diagnosing a skeletal muscle metastasis remains difficult as it is oftenly misdiagnosed in physical examination and imaging modalities as sarcoma or other soft tissue pathologies [4]. Ultrasound may differentiate solid from cystic lesions. As for CT-scan, it most commonly shows an intramuscular hypodense lesion with peripheral enhancement. MRI features may combine a mass in similar to muscle T1 signal with heterogeneous T2 signal and peri-lesion oedema. After Gadolinium administration, we usually have a peripheral enhancement [9].

Nowadays, PET (positron emission tomography) is considered to be more effective and specific in diagnosing secondary lesions to skeletal muscles. FDG-PET (*fluorodeoxyglucose (FDG)-PET*) has been demonstrated to be more accurate than CT in particular in bodily regions that are not routinely evaluated by CT [6]. However, Wu et al studied the

association of FDG-PET to CT-scan to detect those skeletal muscle secondary lesions from esophageal adenocarcinoma and demonstrated its usefulness [10]. Unfortunately, our patient's medical condition was deteriorating rapidly and we didn't have time to address him for a PET-SCAN. Thus, we opted for an ultrasound guided biopsy of the mass. Percutaneous ultrasound-guided core needle biopsy has established itself as the best method in diagnosing musculoskeletal secondary and primary masses [11]. It goes without saying that histopathological verification is necessary to start the right treatment. This examination will demonstrate histologic and immunohistochemical findings supporting the primary tumor diagnosis.

In our review of the literature, we have noticed that the majority of patients were started on chemotherapy after the diagnosis. In other patients, we opted for radiotherapy and surgical resection of the metastasis. It seems that patients with single metastasis in skeletal muscle (as was the case of our patient) should be resected or irradiated, while patients with multiple metastases should be on chemotherapy [12, 13].

Despite the treatment modality, patients with primary oesophageal cancer with distant metastases have a poor prognosis. As we said, diagnosing skeletal muscle metastases is usually a proof of the disease's terminal stage [5]. This was the case of our patient who unfortunately died 3 months after first CRT.

CONCLUSION

Any painful soft tissue mass or sensitivity in a malignancy context should raise the question of metastasis even in the most uncommon site such as pectoral muscle. Secondary lesions of esophageal adenocarcinoma to muscles are usually a late event in disease progression, with an overall poor prognosis. Thus, clinicians, radiologists and *anatomopathologists should be aware of this kind of metastasis to look for and highlight in any extension assessment screening.*

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