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Adrenal Metastasis from an Esophageal Squamous Cell Carcinoma - A Case Report and Review of Literature

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Abstract: *Adrenal metastasis from esophageal carcinoma is quite uncommon. The identification of adrenal metastasis and their differentiation from incidentally detected benign adrenal tumors is challenging especially when functional imaging facilities are unavailable.*
Here we present a case report of a 43 year old male presenting with adrenal metastasis from an esophageal squamous cell carcinoma. The use of minimally invasive surgery to confirm the metastatic nature of disease in a resource limited setup has been described.
Keywords: *adrenal metastasis, adrenalectomy, esophageal squamous cell carcinoma*

I. Introduction

Adrenal metastases have been reported in various malignancies; most commonly from cancers of lung, breast but uncommonly from esophageal primary. The diagnostic difficulties in the identification of adrenal secondaries are due to the small size of the lesion, difficulty in differentiating benign from malignant adrenal lesions based on computed tomography findings alone and the anatomical position of adrenal making it difficult to target for biopsy under image guidance.

The functional scans (PET CT) not only reliably differentiate metastatic adrenal lesions, but also light up other areas of metastasis. Such information is definitely needed before deciding on the intent of treatment and the surgery for the primary lesion. In places where the facilities for these scans are limited, it compounds problems in diagnosing and treatment.

Hence the need arises in the application of minimally invasive surgical techniques to such scenarios, thereby reliably establishing the diagnosis and at the same time avoiding morbidity of unnecessary major surgery.

II. Case Report

A 43 year old male presented to our hospital with symptoms of progressive dysphagia more for solids than liquids for 3 months. In addition patient had significant weight loss and malena. An esophago gastroduodenoscopy revealed growth in the lower third of esophagus, which was then biopsied. Histopathology was reported as moderately differentiated squamous cell carcinoma. Multislice CT of thorax and abdomen was done; revealed lower esophageal growth with periesophageal nodal disease. No coeliac or para aortic nodes were made out; but a 1.8cm sized enhancing lesion was identified in the left adrenal gland (Fig 1). It was not clearly characterised as benign tumor. Image guided biopsy of the lesion was not feasible due to the anatomical constraints. Positron emission tomography was not available.

Hence in order to resolve the diagnostic dilemma a transperitoneal laparoscopic adrenalectomy was done. Histopathological examination of the specimen confirmed metastatic disease (Fig 2).

Patient received radiotherapy to the esophagus followed by paclitaxel and cisplatin based chemotherapy. After three cycles of chemotherapy patient had disease progression - developed multiple skeletal metastases.

III. Discussion

The most common metastases in esophageal carcinoma is to abdominal lymph nodes (45%), liver (35%), lung (20%), cervical nodes (18%), bone (10%), adrenal (5%), brain and peritoneum (2% each)[1]. Most of the reported cases of adrenal metastases in various cancers are encountered during autopsy, but less commonly revealed during staging using tomographic images. In autopsy series published frequency of metastases to adrenal gland varies from 6 to 20% [2]. Adrenal gland is common site for metastasis from different cancers most commonly lung, breast, kidney, melanoma and lymphoma [3]. Esophageal carcinoma throws adrenal metastases at a frequency of 3 to 12 % according to autopsy studies [12].

An adrenal mass in a patient with extra adrenal malignancy should raise the suspicion of a possible metastatic tumor. The mode of disease dissemination is either through lymphatic or hematogenous pathway. Adrenal metastasis occur in either synchronous or metachronous manner. Bilateral adrenal metastases have also been described especially in cases of lung cancer [4]. Most commonly adrenal metastases are asymptomatic; rarely they could grow to exceedingly huge sizes which can further be complicated by life threatening intratumoral haemorrhage needing prompt management in the form of adrenalectomy or chemotherapy [5]. Cases of adrenal insufficiency secondary to replacement of functional adrenal tissue by metastatic tumor have been reported.

Generally these types of metastases are identified on routine tomographic imaging. In computed tomography, adrenal metastases have variable appearances; usually demonstrate less than 50% washout.[11]. The percentage enhancement washout of adrenal metastases could be similar to that of lipid poor adenoma. A CT attenuation value of less than 10 Hounsfield units(HU) indicate a benign tumor(adenoma), whereas attenuation more than 10HU could either be adenoma or metastases. In magnetic resonance imaging these typically show low signal on T1 sequences and high signal intensity on T2 sequences. On injection of gadolinium contrast these metastatic tumors show progressive enhancement.

It is difficult to differentiate metastatic adrenal involvement from an adrenal adenoma but metastases could be diagnosed with increased certainty with the presence of bilateral adrenal disease or simultaneous presence of a primary. An important contradistinction to adenoma is the lack of signal loss on out of phase images [16].

Value of FDG-PET CT is that it differentiates benign from malignant adrenal lesion. SUV (max)>2.5 has been reported to be 88% sensitive, 95% specific and 91% accurate [14].

Generally cancers with adrenal metastasis carry a poor prognosis and patients eventually die of progression from the disease. Curable adrenal metastases are considered as rare events. They usually represent advanced malignancy and disseminated disease for most cancers; more so for esophageal cancers [11].

But when there exists no other metastases i.e. in solitary adrenal metastasis, several authors report surgical resection of the adrenal gland along with the primary tumor with improved survival rates[8]. Surgical resection for adrenal metastases has been adopted particularly in cases of carcinoma lung and renal cell carcinoma. As against patients who undergo non surgical treatment, surgically treated patients have better survival. Open surgical approach for adrenal metastatectomy is preferred to laparoscopic approach for metastasis greater 5cm in size due to the possible risk of intraperitoneal dissemination with laparoscopy. In spite of this, overall 5 year survival for such patients is still poor- 13%-29%[13].

Table 1: Adrenalectomy for Metastatic disease- case reports

Author	Primary site of cancer	No.of Patients	Survival
Saito et al[6]	Esophageal adenocarcinoma	1	5 years 11 months
Mokuno et al[7]	Gastric adenocarcinoma	1	40 months
Fumagalli[8]	Esophago-gastric junction carcinoma	5	3 patients survived beyond 5 years
Branum et al[9]	Melanoma	8	Mean survival 59 months
Katayama et al[10]	Colorectal carcinoma	1	3 years & 5 months

In the absence of a randomised clinical trial or large case-controlled series, any patient who achieve long-term disease free survival could be assumed to have derived a clinically significant benefit.

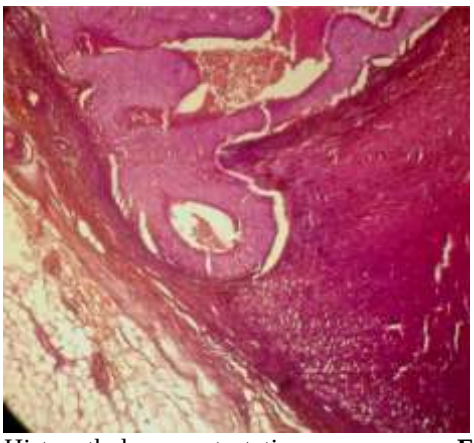

Fig 1: Histopathology: metastatic squamous cells in the background of adrenal tissue

Fig 2: Computed Tomography showing mass lesion involving the left adrenal gland

IV. Conclusions

The following conclusions may be drawn based on this case report. Adrenal metastases must be anticipated and investigated in patients with esophageal carcinoma. Ideally a PETCT must be done to confirm the malignant nature of the adrenal lesion. Any adrenal mass in a patient known to have a malignancy must be considered metastatic unless proved otherwise. Adrenal metastasis is generally associated with poor prognosis. Isolated adrenal metastasis is extremely rare; hence treating them with a curative intent must be done on a case to case basis.

The appropriate use of minimally invasive surgical technique in this patient, in a resource constrained setup, has helped to resolve the diagnostic dilemma and at the same time has avoided a unnecessary morbid surgery for the primary tumour.

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