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Surgical strategy in abnormally increased Fluorine-18 fluorodeoxyglucose uptake in an asymptomatic lower esophageal submucosal tumor – Report of a case

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ABSTRACT

INTRODUCTION: Leiomyoma is the most common benign tumor of the esophagus (67–80%), it represents 0.4–1% of all esophageal tumors.
PRESENTATION OF CASE: An incidentally discovered gastro-esophageal submucosal tumor was found to have increased fluorine-18-fluorodeoxyglucose (FDG) uptake on positron emission computed tomography (PET/CT). After laparoscopic surgical exploration and local enucleation the tumor turned out to be a benign esophageal leiomyoma.
DISCUSSION: There are few reports of esophageal leiomyomas with a positive uptake on (PET/CT) and even fewer adopting our combination of a minimally invasive approach and frozen section examination as a management plan. Our approach avoided excessive morbid surgical resections and underestimation of a malignant disease.
CONCLUSION: We report this case hoping to expand the existing literature on the topic and to highlight the limitations of PET/CT in guiding the diagnosis and subsequently the management of esophageal submucosal tumors.

1. Introduction

Leiomyoma is the most common benign tumor of the esophagus (67–80%); it represents 0.4–1% of all esophageal tumors.[1]

Its differential diagnosis should be established with gastrointestinal stromal tumors (GIST), and other benign tumors. The criteria to resect or not a leiomyoma is based on the symptoms it produces, especially dysphagia, and on the need to exclude malignancy. Positron emission computed tomography (PET/CT) using fluorine-18-fluorodeoxyglucose (FDG) provides information on tissue metabolic activity and can help in the differential diagnosis.

We report a case of esophageal submucosal tumor that showed a markedly increased FDG uptake on initial preoperative workup PET/CT. Based on this information we opted for a surgical mini-invasive exploration.

2. Presentation of case

A 54 year old man was admitted to another hospital for abdominal trauma following a motor vehicle accident. His past medical history includes hepatic steatosis secondary to excess alcohol intake but no history of tobacco smoking.

On admission a thoraco-abdominal CT showed several fractured ribs, an incidental gastro-esophageal tumor and a ruptured spleen for which the patient underwent a splenectomy via open midline laparotomy.

The tumor was described as a bulky partially calcified mass measuring $45 \times 52 \times 29$ mm, poorly vascularized and seemingly extrinsic to the esophageal lumen coming in contact with the anterior pericardium (Fig. 1). Radiological diagnosis was that of a likely malignant process. Multiple celiac lymph nodes were also noted, the largest measuring 16 mm.

Following the patient's postoperative recovery, a follow-up CT showed the same unchanged celiac lymph nodes and an increase in size of 4 mm of the previously described tumor.

Further investigations included an upper endoscopy confirming the submucosal location of the tumor. An endoscopic ultrasonography (Fig. 2) disclosed a heterogeneous submucosal tumor with well-defined margins in the muscularis mucosa located at

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Fig. 1. Admission CT-scan showing the gastro-esophageal calcified mass (white arrow) along with the perisplenic collection (red arrow).

35–40 cm from the dental arcade. This mass was hypoechoic with multiple hyperechoic foci inside of it. A differential diagnosis of degenerated GIST versus leiomyoma/leiomyosarcoma or post-traumatic hematoma was made. No abnormal lymph nodes were detected. After undergoing the above mentioned investigations namely the endoscopic ultrasound and both abdomino-pelvic tomodensitometries the patient was referred to our institute for further management.

A PET/CT scan (Fig. 3) showed an abnormally increased FDG uptake (SUV = 6.1) in the tumor with no other metabolically active lesion detected. Both the elevated SUV and the tomodensitometric appearance were more in favor of a malignant process. A Fine Needle Aspiration (FNA) was performed after the positive PET/CT result to rule out a malignancy and was inconclusive.

Fig. 2. Endoscopic ultrasound showing the submucosal tumor with well-defined margins in the muscularis mucosa (black arrow).

To avoid both, missing a malignant disease and unnecessary large surgical procedures, we opted for a minimally invasive surgical exploration guided by frozen section. The different resection possibilities, tumorectomy or partial esogastrectomy with Merendino reconstruction or radical esophagogastrectomy, were comprehensively explained to the patient.

The operation was started with the patient in the supine position. Laparoscopic exploration of the abdominal cavity showed no gross anomalies except the adhesions from the previous splenectomy.

Liberation of the abdominal esophagus and progressive dissection of the thoracic esophagus revealed a multi-lobulated lesion adherent to the esophagus. This tumor was progressively dissected from the esophageal muscular layers under direct endoscopic control.

The mass was then extracted in an endo-bag via a small midline laparotomy using the superior part of the existing splenectomy incision, intraoperative histo-pathological examination revealed a benign esophageal leiomyoma. A Nissen fundoplication was performed to cover the esophageal sub-mucosa.

The postoperative course was uneventful with a normal gastrografin swallow done at day 4.

Final histo-pathological result showed macroscopically a $5 \times 3 \times 5 \times 3$ cm white homogenous mass with a lobulated aspect. Microscopically, the resected specimen showed intercrossing

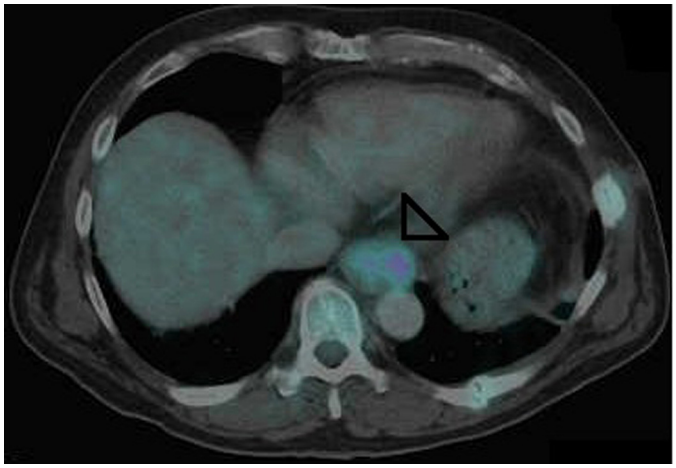

Fig. 3. FDG-F-18 PET/CT scan showed an abnormally increased FDG uptake (arrowhead) at the level of the lesion described above.