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Mediastinal lymphadenopathy in ampullary adenocarcinoma: not always metastatic

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Abstract

Malignancies can metastasize through hematogenous or lymphatic routes. Enlarged lymph nodes in a known case of malignancy do not always imply metastasis. A middle-aged female patient presented to us with abdominal pain and jaundice. Investigation revealed ampullary growth due to adenocarcinoma. Positron emission tomography-computerized tomography scan revealed uptake of the tracer in the ampullary region as well as in enlarged mediastinal lymph nodes. Endoscopic ultrasound-guided fine needle aspiration cytology of the mediastinal lymphadenopathy revealed it to be tuberculous. Mere radiologic evidence of a distant nodal spread must not be regarded as final evidence and obtaining a tissue diagnosis should be strongly considered, as potentially curative therapy may be offered.

Keywords Endoscopic ultrasound, tuberculosis, adenocarcinoma, pancreas, lymph node

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Introduction

Ampullary neoplasms are among the rare tumors of the periampullary region. Because of their propensity to cause early biliary obstruction, they may be recognized in the initial stages [1]. However, metastasis through hematogenous and lymphatic routes is not uncommon and only palliative therapy can be offered in such cases [2,3]. Common sites of spread are liver, lung (hematogenous) and regional lymph nodes in the peripancreatic region (lymphatic). Spread to distant lymph nodes is rarely seen [4,5].

Though contrast-enhanced computerized tomographic (CECT) scan or magnetic resonance imaging (MRI) are recommended to detect distant metastases of an ampullary cancer, Positron Emission Tomography-Computerized Tomographic (PET-CT) scan has an important role in picking up the positive uptake at distant sites (solid organs or lymph nodes) [6]. Moreover, it can identify the tracer uptake in the primary tumor and is also useful in detecting the postoperative recurrences [7].

Due to a high degree of overlap in the standardized uptake value (SUV) max, a positive uptake on PET-CT scan may not always indicate metastatic lymph node and it may be difficult to differentiate from a benign or an inflammatory lymph node [8]. We herein present a patient who had an ampullary adenocarcinoma along with mediastinal lymphadenopathy not because of metastatic disease but due to a benign disease.

Case report

A 65-year-old female presented to our clinic with a two-month history of painless progressive jaundice with pruritus and clay colored stools, anorexia and weight loss. On examination she had icterus and a palpable gallbladder which was cystic in consistency. She had normal hematological parameters. Serum bilirubin was 16.9 mg/dL (0.2-1.1 mg/dL) with a conjugated fraction of 13.3 mg/dL, serum alkaline phosphatase was 678 IU/mL (<128 IU/mL), serum aspartate aminotransferase (AST) was 76 IU/mL (<35 IU/mL) and serum alanine aminotransferase (ALT) was 57 IU/mL (<40 IU/mL). She had normal coagulation parameters. Transabdominal ultrasound showed hugely distended gallbladder, dilated common bile duct up to its lower end along with dilated intrahepatic biliary radicles (IHBR). CECT of the abdomen showed dilated pancreatic duct and biliary system. However, a definite cause of the distal

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Conflict of Interest: None

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obstruction could not be identified. Side viewing endoscopy showed a bulky ulcerated papilla. Biopsies from the papilla showed adenocarcinoma of the ampulla. PET-CT scan was done to look for metastatic disease before surgery. It showed increased [18F]-Fluoro-Deoxy-Glucose (FDG) tracer uptake in the periampullary region (SUV max 4.1) (Fig. 1) as well as in the enlarged subcarinal nodes (SUV max 14.7) (Fig. 2). There were no positive loco-regional lymph nodes on PET-CT scan. Endoscopic ultrasound (EUS) showed a small hypoechoic lesion in the ampullary region with dilated common bile duct and IHBR (Fig. 3). Also large hypoechoic subcarinal nodes with echogenic foci were noted (Fig. 4, 5) and fine needle aspiration of the node was done using a 22 Gauge needle (EchoTip, Wilson–Cook, Winston–Salem, North Carolina, USA) was performed (Fig. 5). Cytological examination of the aspirate showed granulomatous inflammation consistent with tuberculosis. Stain for AFB was negative but PCR (polymerase chain reaction) was positive for *Mycobacterium tuberculosis*. She underwent pancreatioco-duodenectomy and achieved complete resection. Following six months of tuberculosis treatment she improved and is asymptomatic after 1 year of follow up.

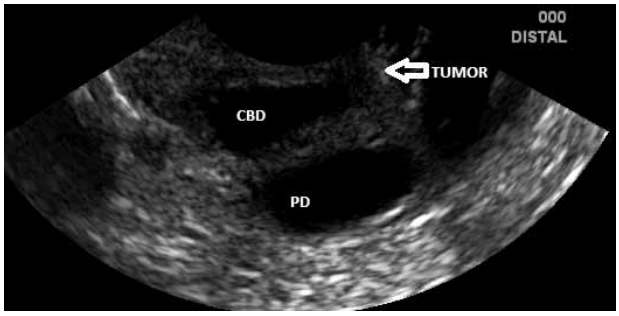

Figure 3 Endoscopic ultrasound showing a small ampullary tumor (arrow) with dilated common bile duct and pancreatic duct

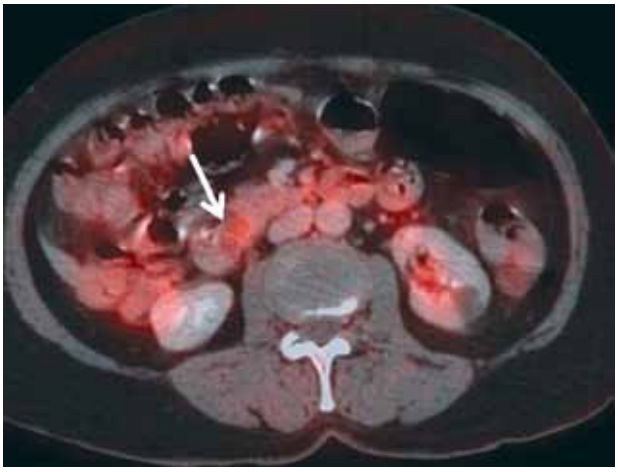

Figure 1 Primary ampullary tumor is noted with increased uptake (SUV max 4.1)

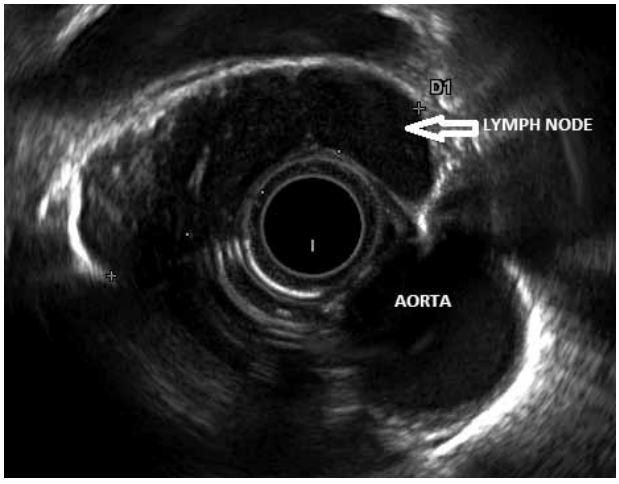

Figure 4 Large subcarinal lymph node

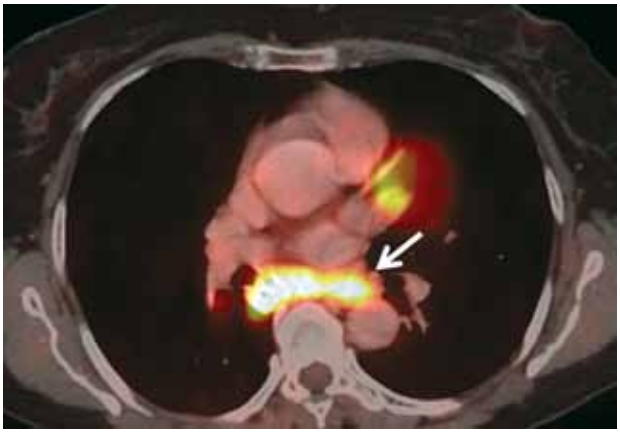

Figure 2 Positron emission tomography-computerized tomography scan images of the patient showing enlarged hypodense subcarinal lymph nodes with a positive tracer uptake (SUV max 14.7)

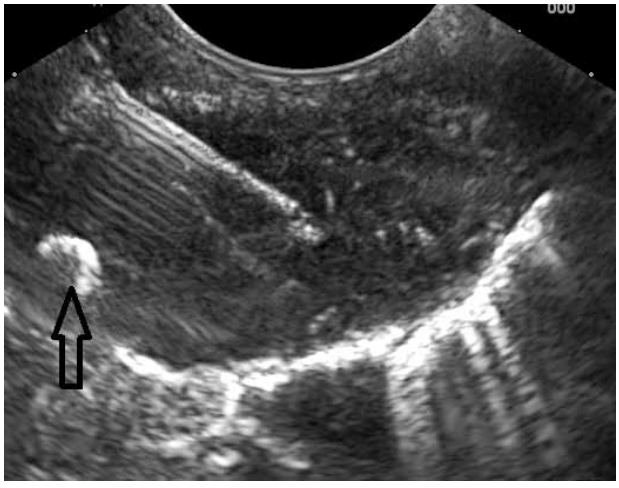

Figure 5 Endoscopic ultrasound-guided fine needle aspiration cytology being performed from the subcarinal lymph node. Large hyperechoic foci noted (arrow)

Discussion

PET-CT scan is useful in identifying the primary as well as metastatic ampullary cancer. In a study by Sperti et al, PET-CT identified the primary tumor in seven of nine cases. Four of these patients had negative CECT and MRI of the abdomen thus influencing the management in around 50% of cases. They found that an SUV of more than or equal to 2.7 is seen in all invasive cancers compared to noninvasive cancers and carcinoma *in situ*. Our patient had an SUV max of 4.1 suggestive of invasive cancer. Also it detected 6 patients (of 25 patients with non pancreatic periampullary tumors) with lymph node metastases, missed on CT scan [9].

The perplexing issue in our patient was presence of mediastinal lymphadenopathy as detected by the positive tracer uptake on PET-CT scan. Although mediastinum is not a site of primary lymphatic drainage of ampullary neoplasms, its positivity on PET scan complicated the issue, since a possibility of this representing a distant spread was likely. Various studies from developed countries showed that an SUV max cut-off of 2.5 has been shown to differentiate between benign and malignant lymph nodes [10]. But recently Kumar et al had found that 12 of their patients with benign conditions had an SUV max of more than the proposed 2.5 cut off [11]. They noted a sensitivity, specificity, and accuracy of 87%, 70%, and 77%, respectively, using SUV max cut-off value of 6.2. So there is a need to increase the cut-off SUV max in developing countries like India where granulomatous pathologies are commonly encountered. The maximum SUV max seen in one of their patients with tuberculous mediastinal lymphadenopathy was 11.8. However, due to a high degree of overlap on SUV max of benign and malignant conditions, a pathological diagnosis is often mandatory to differentiate between the two conditions. Obtaining a tissue diagnosis from a suspected lymph node may convert a metastatic disease into a potentially curable malignancy as in our case. The mediastinal lymphadenopathy in our case showed an SUV max of 14.7. EUS is an important tool for evaluation of mediastinal lymphadenopathy. We had earlier shown that EUS morphological features can also help to diagnose tuberculosis, since, on EUS, patchy anechoic or hypoechoic areas and hyperechoic foci in the mediastinal lymph nodes are important signs of mediastinal tuberculous lymphadenopathy [12]. In the current case, echogenic foci were also noted in the mediastinal lymph nodes.

This case is important for two reasons: firstly, it highlights co-existence of two diseases i.e., ampullary adenocarcinoma and mediastinal tuberculous lymphadenitis and secondly, it suggests that mere radiologic evidence of a distant nodal spread must not be regarded as final evidence and obtaining a tissue diagnosis should be strongly considered ~~as~~ since potentially curative therapy may be offered.

Coexistence of tuberculosis with malignancy is not an unknown entity. A metachronous malignancy is reported to occur between 11 months to 20 years at a site of healed tuberculosis [13]. Tuberculosis is reported to occur at the same site or close to ampullary carcinomas [14,15]. Apart from these, there are various reports of coexistence of abdominal tuberculosis in a case of other intraabdominal cancers [14]. Also we see tuberculosis and malignancy mimicking each other clinically and radiologically causing diagnostic dilemma to the clinician [13]. But in the present case a tuberculous lymph node at a distant site from the primary malignancy masqueraded as a metastatic disease radiologically. The increased risk for tuberculosis in patients with malignancy may be related to the underlying immune dysfunction. Furthermore, tuberculosis, as in the present case with the 'positive' PET, can be a masquerader of malignancy both clinically and radiologically.

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