

CASE REPORT

An Unusual Cause of Pancreatic Metastasis: Pleomorphic Sarcomatoid Carcinoma of the Lung

Tariq Hammad¹, Yaseen Alastal¹, Muhammad Ali Khan¹, Weihong Li²,
Luis DeLasCasas², Osama H Alaradi¹, Ali Nawras¹

Department of ¹Internal Medicine and ²Pathology, University of Toledo, USA

ABSTRACT

Context Sarcomatoid carcinomas are rare malignant neoplasms that have both carcinomatous and sarcomatous components and involve mostly lungs, kidneys and pancreas. **Case report** In this case report we present a rare case of 60-year-old male patient with pleomorphic sarcomatoid carcinoma of the lung presenting with obstructive jaundice. The biliary obstruction was caused by head of pancreas lesion metastasized from the lung. The diagnosis was made by the endoscopic ultrasound-guided fine-needle aspiration of the pancreatic head metastatic lesion. Thyroid transcription factor-1 immunostain confirmed the lung origin of the pancreatic head lesion. Among lung cancers, small cell carcinoma and adenocarcinoma have been associated with pancreatic metastasis. **Conclusion** To the best of our knowledge we hereby present the fourth reported case of pleomorphic sarcomatoid carcinoma of the lung with metastasis to the pancreas.

INTRODUCTION

Sarcomatoid carcinomas (SC's) are rare malignant neoplasms that have both carcinomatous and sarcomatous components [1]. Organs like lung, kidney and pancreas can be involved. Primary sarcomatoid carcinoma of the pancreas was reported in less than ten cases in the literature [1]. Secondary sarcomatoid carcinoma of the pancreas is extremely rare. Pleomorphic sarcomatoid carcinoma of the lung with metastasis to the pancreas has been reported only in three cases [2-4]. We hereby present a rare case of pleomorphic sarcomatoid carcinoma of the lung with metastasis to the pancreas where the diagnosis was confirmed by endoscopic ultrasound-guided fine-needle aspiration (EUS-FNA) and immunostain.

CASE REPORT

A 60-year-old male presented with biopsy proven stage T4N2M1b poorly differentiated pleomorphic SC of the left lung 3 months prior to presentation. The patient had been on chemotherapy since then. Over the past few weeks he was noticed to have worsening jaundice. Abdominal computed tomography showed 12 mm right liver lobe mass, intra and extra-hepatic biliary ductal dilatation,

questionable small ill-defined pancreatic head lesion and severely distended gallbladder. The patient was referred to our endoscopy unit for evaluation and possible palliative biliary stenting. EUS exam showed distended Courvoisier gallbladder measuring 109 mm x 54.9 mm. EUS exam of the head of the pancreas revealed hypoechoic and poorly demarcated mass measuring 27.4 mm x 29.9 mm (**Figure 1**). The mass was invading the distal common bile duct (CBD) leading to severe distal biliary obstruction and significant proximal CBD dilatation of 27.3 mm (**Figure 1**). EUS-FNA of the pancreatic head mass was done. Rapid on site evaluation by a cytopathologist showed a poorly differentiated malignant neoplasm mostly composed of undifferentiated and spindle tumor cells. Areas of necrosis and brisk mitotic activity were also noted (**Figure 2a**). Biliary obstruction was treated with sphincterotomy and placement of a 10 mm x 80 mm partially covered metallic stent for palliative biliary drainage. Later thyroid transcription factor-1 (TTF-1) immunostain performed with satisfactory positive and negative controls revealed diffuse and strong nuclear immunoreactivity of tumor cells (**Figure 2b**). These findings, in conjunction with the clinical presentation and tumor cytomorphology confirmed lung origin for this tumor which most likely represents metastatic disease from lung cancer. Lung tumor biopsy slides were reviewed as well and showed similar histological and immunostain findings (**Figures 2c & 2d**). Given the overall poor prognosis of the patient, palliative care team was involved and the patient was discharged to hospice.

DISCUSSION

Secondary tumors of the pancreas are rare [5]. The vast majority of pancreatic cancers are primary

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Correspondence Ali Nawras

Program Director Gastroenterology Fellowship

University of Toledo.

3000 Arlington Avenue

Toledo, OH 43614

Phone + 419-383-1669

Fax + 419-383-6197

E-mail ali.nawras@utoledo.edu



Figure 1. Shows a 27.4 x 29.9 mm hypoechoic and poorly demarcated pancreatic head mass obstructing the common bile duct and causing a high-grade distal common bile duct stricture and severe proximal common bile duct dilatation.

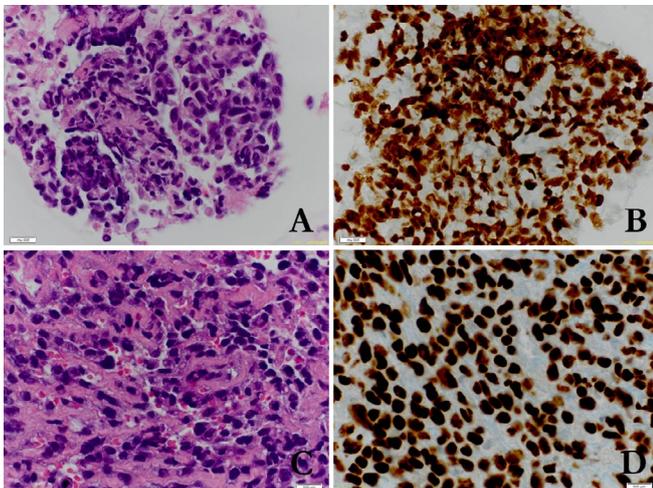


Figure 2. (a.) Aspirated material from the pancreatic tumor displays a cluster of poorly differentiated tumor cells. Cell block. Hematoxylin & Eosin stain. **(b.)** Aspirated material from the pancreatic tumor displays strong and diffuse nuclear immunoreactivity for TTF-1. Cell block. Immunoperoxidase stain. **(c.)** Microscopic image of the lung tumor displaying poorly differentiated enlarged tumor cells with hyperchromatic nuclei and irregular profiles. Tissue section. Hematoxylin & Eosin stain. **(d.)** Microscopic image of the lung tumor displaying strong and diffuse nuclear immunoreactivity for TTF-1. Tissue section. Immunoperoxidase stain. All the images are of original magnification x600.

adenocarcinoma of the pancreas [6]. Few case series studies evaluated the prevalence of metastatic tumors in the pancreas [5]. Based on two main retrospective studies on pancreatic surgical specimens; renal cell carcinoma, gastric cancer and lymphomas (Non-Hodgkins Lymphoma) were the most common primary tumors metastasized to pancreas [5, 7]. Among lung cancers, small cell carcinoma and adenocarcinoma have been associated with pancreatic metastasis during late stages of the disease [8]. It is usually diagnosed during autopsy. Two retrospective studies showed that lung and stomach cancers were the most common source of pancreatic metastasis found at autopsies [7, 9]. Nakamura *et al.* [9] showed the prevalence of pancreatic metastasis secondary to lung cancers was 17% (18/103). On the other hand, Adsay *et al.* [7] reported that 42% (34/81) of pancreatic metastasis came from primary lung cancer. In both studies

non-small cell lung cancers were more common than small cell lung cancer with almost the same ratio in both studies (13:5 and 24:10) [7, 9].

Sarcomatoid carcinomas of the lung are a group of poorly differentiated non-small cell carcinomas which contains a sarcoma or sarcoma-like components. According to the 2004 World Health Organization (WHO) classification of lung tumors; there have been five histological subtypes SC's of the lung [10]. Pleomorphic carcinoma, spindle cell carcinoma, giant cell carcinoma, carcinosarcoma, and pulmonary blastoma have been recognized under SC's of the lung. Sarcomatoid lung cancers account for 2-3 % of all lung cancers [11]. As whole, the SC's of the lung are more prevalent in male gender and heavy smokers with mean age at presentation of 60 years [11]. SC of the lung do usually have more aggressive behavior with tendency for recurrent and distant metastasis. The pleomorphic carcinoma variant of SC represents 0.1 to 0.3% of all lung cancers [12]. Histopathology of pleomorphic SC reveals poorly differentiated non-small cell carcinoma, adenocarcinoma or large cell carcinoma containing at least 10% of spindle cells [10]. Diagnosis is mainly dependent on the hematoxylin-eosin stained sections of adequate samples. Immunostaining helps to further highlight on the epithelial and sarcomatous components [11].

There have been very few reports of pancreatic metastasis from the different histological subtypes of the sarcomatoid lung cancers. So far, there have been three reports of pleomorphic carcinoma [2-4], one report of spindle cell carcinoma [13], one report of carcinosarcoma [14] and two reports of pulmonary blastoma [15, 16] with metastasis to the pancreas. Our case represents the fourth reported case of pleomorphic SC of the lung with metastasis to the pancreas.

In context of the metastatic lung cancer; the pancreatic lesion was most likely originating from the lung. The diagnosis was confirmed by the EUS-FNA and the thyroid transcription factor-1 immunostain. Furthermore, the pancreatic tissue cytopathology and immunostain were compared with the lung tissue sample showed very similar findings.

In summary, biliary obstruction secondary to pancreatic head mass in patients with sarcomatoid carcinomas of the lung could represent metastasis from the lung cancer.

Author contributions

Tariq Hammad and Yaseen Alastal conducted wrote the manuscript and did the literature review. Osama Alaradi and Muhammad Ali Khan did critical revision of the article for important intellectual content. Weihong Li and Luis De Las Casas prepared the cytopathology slides. Ali Nawras supervised the process, did critical revision of the article

for important intellectual content and did the final approval of the article. Tariq Hammad is the article guarantor.

Conflict of interest

The authors have no conflict of interest to declare.

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