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Pancreatic Metastasis from Unresectable Lung Adenocarcinoma: A Case Report

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Abbreviations:

CA199: Carbohydrate Antigen 199; **CEA:** Carcinoembryonic Antigen; **EUS-FNA:** Endoscopic Ultrasound-Guided Fine Needle Aspiration; **TTF-1:** Thyroid Transcription Factor-1; **ERCP:** Endoscopic Retrograde Cholangiopancreatography

1. Abstract

1.1. Background: Metastatic lesions of the pancreas are uncommon, accounting for approximately 2% of pancreatic malignancies. The most common primary tumors to give rise to pancreatic metastases are lung cancer, renal cell carcinoma and carcinoma of gastrointestinal origin. Less commonly metastases from lung adenocarcinoma have been reported.

1.2. Case presentation: Here we reported a case with pancreatic and Left adrenal metastasis 6 months after chemoradiotherapy for lung adenocarcinoma who was diagnosed in July 2017, and the pancreatic tumor was diagnosed using endoscopic ultrasound-guided fine needle aspiration (EUS-FNA).

1.3. Conclusions: The blood CA19-9 level may be slightly elevated when pancreatic metastasis was found,we think that the detection of blood CA19-9 combined with EUS-FNA is of great significance in differentiating pancreatic primary tumors and metastatic tumors.

2. Background

Lung adenocarcinoma is derived from bronchial epithelium and glands. Most of them are peripheral. They often metastasized in blood, involving brain, bone, adrenal, liver, contralateral lung and pleura, etc, and usually metastasized to hilar lymph node. However, metastatic cancer infrequently involves the pancreas. Less than 5% of reported pancreas FNA contain metastatic disease [1, 2]. Yoon et al [3] reported 53 pathologicaly proven metastatic tumors of the pancreas and 14 cases were originate from non-small cell lung cancer. Metastatic tumors of the pancreas are rarely found clinically, although their incidence has been reported to be approximately 12% among malignant disease autopsies [4]. The case we report here was diagnosed using endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) and EUSFNA appears to be useful for the diagnosis of metastatic pancreatic tumors, particularly in patients with multiple cancers.

3. Case Presentation

A 49-year-old male with no relevant past medical history was referred to our department for complaining of irritate cough 2 months. He Smoked for 30 years and 20 cigarettes per day. Double J tube was implanted 20 years ago due to left ureteral stenosis and left kidney hydronephrosis. The Chest CT scan showed: 1.

The right upper lung hilar tumor was considered as lung cancer with hilar lymph node metastasis; 2. Destruction of the Side of the 10th rib bone suspicious for bone metastasis. Non-small cell cancer cells were prompted of bronchoscopy biopsy pathology, tend to adenocarcinoma (Figure 1). The diagnosis was right upper lung adenocarcinoma (stage cT3N0M1 IV). Consider of the occurrence of distant metastasis then the patient underwent four cycles of chemotherapy (pemetrexed 800mg Intravenous infusion in day1 and carboplatin 500mg intravenous infusion of the first two days, every 21 days repeated). Plus a course of the local right hilar lesions palliative radiotherapy (dose 60Gy / 30f / 6w). The blood CEA maintained at 220ng/ml, CA19-9 was normal monthly during chemoradiotherapy.

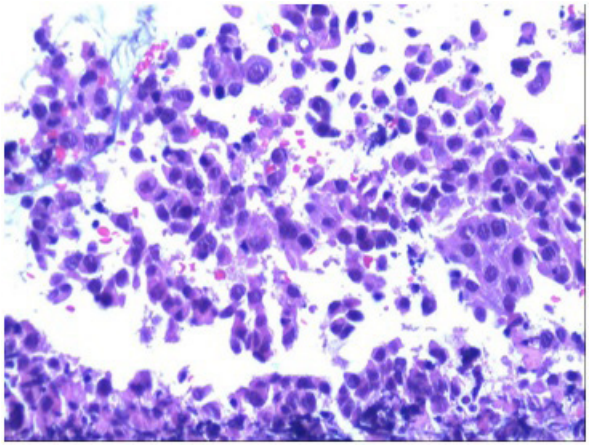

Figure 1: Microscopic findings of the lung tumor showing non-small cell cancer cells, tend to adenocarcinoma (Hematoxylin and Eosin staining, original magnification, ×200.

Six months after treatment, MRI of the upper abdomen showed: Nodular abnormal signal shadow showed in pancreatic body(1.6x1.6cm), metastatic tumor was possible (Figure 2). The blood CEA showed 700 ng/ml and CA19-9 showed 61.4U/ml (Figure 3). We performed EUS-FNA to diagnose the pancreatic tumor because the chemotherapy protocol would be different depending on whether the pancreatic tumor was primary pancreatic cancer or metastasis from lung cancer (Figure 4). No signs or symptoms were noted of the patient during or after the procedure. The pathologic diagnosis of the biopsy specimen of the pancreas strongly suggested metastatic poorly differentiated adenocarcinomaa (Figure 5). γ-knife was performed to liver and stomach space + pancreatic body + retroperitoneal + left adrenal metastasis and the patient received four cycles of chemotherapy (docetaxel, 120mg, iv, D1+bevacizumab, 400mg, iv, D1*q21 days). In summary，combined with the patient's history and pathological results, he was Confirmed as lung adenocarcinoma with pancreatic metastasis.

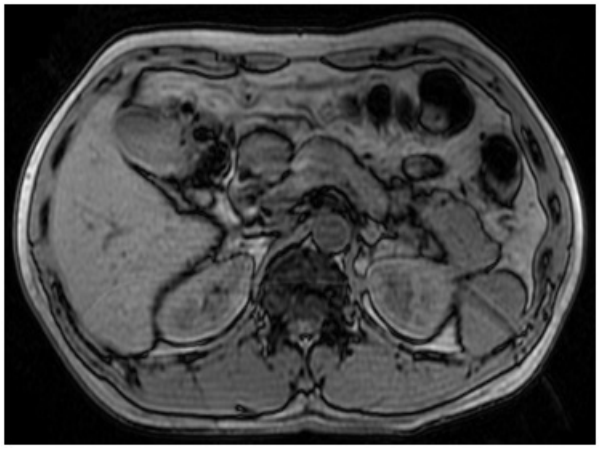

Figure 2: MRI shows nodular abnormal signal shadow in the pancreatic body(1.6x1.6cm)

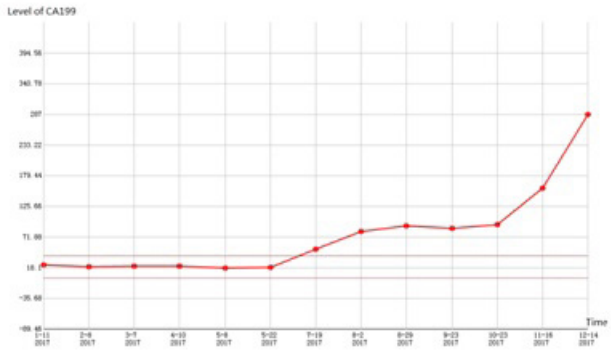

Figure 3: Changes of CA19-9 in the course of disease

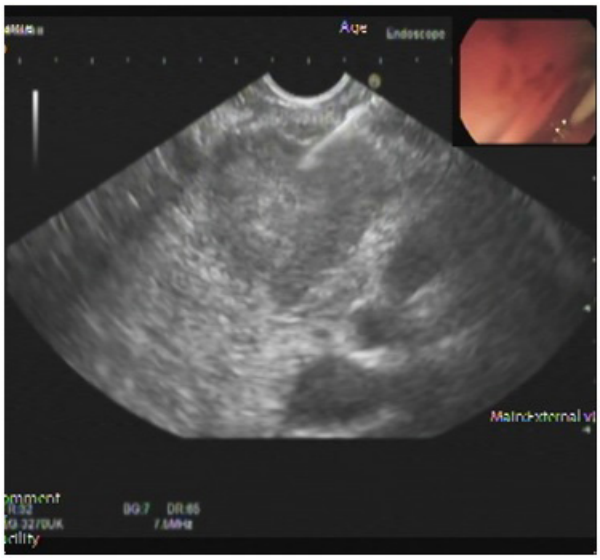

Figure 4: Endoscopic ultrasound showed a mass in the pancreas body with a diameter of 18 mm. The border of the mass was relatively clear, and the internal echo was low and approximately heterogeneous

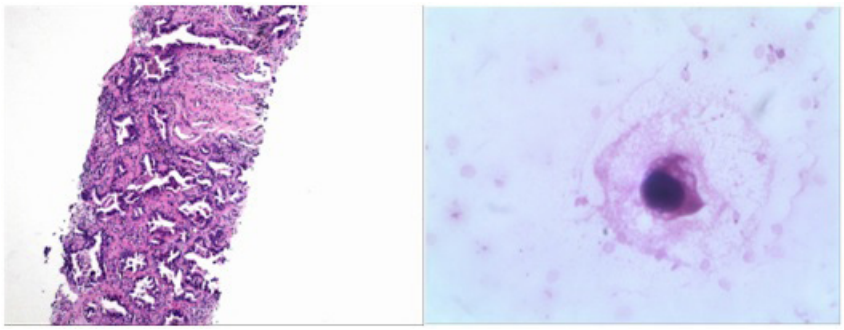

Figure 5: Microscopic findings of the pancreatic tumor, showing metastatic poorly differentiated adenocarcinoma（Hematoxylin and Eosin staining, original magnification, ×100（left) ×400（right)).

4. Discussion and Conclusions

The clinical and imaging features of most metastatic pancreatic malignancies are similar to those of primary pancreatic tumors which may easily lead to misdiagnosis. So clear history of malignant tumor is important for diagnosis. Pancreatic head metastasis with less expansion of the bile duct and pancreatic duct, which may be related to the primary tumor cells metastasized to the pancreas by blood or lymph node and do not infiltrates the wall of pancreatic duct, it would cause the dilatation of the obstructive biliary and pancreatic duct only when the tumor occurs oppression. In our case, there was no dilation of the bile and pancreatic duct. It is believed that acute pancreatitis and obstructive jaundice in biliary malignancies results from infiltration of the metastatic tumor into the pancreatic ducts. In such instances, ERCP with stent insertion can be a plausible palliative therapy for biliary drainage [5].

PET-CT helps to understand the systemic metastasis and recurrence of primary lesions which has a certain significance in reducing unnecessary surgical exploration, but its clinical value is mainly reflected in the level of tumor glucose metabolism, and cannot be clear about the histological and biological types of tumors. EUS-FNA plays a extremely important role in the diagnosis of pancreatic metastatic malignant tumors. On US and EUS, a metastatic pancreas tumor often shows an internally heterogeneous low echo mass image, as conventional pancreatic cancer does. The border of a metastatic pancreatic tumor is often clear, and this is useful for differentiation [6]. The EUS results of this case are the same as above. So EUS-FNA with high sensitivity and specificity in differentiating pancreatic cancer. Moreover, it is also a safe diagnostic modality with little complications [7].

It is necessary to consider pancreatic neoplasm in the differential diagnosis of pancreatic tumors if the patient has a past history of malignancy. The blood CA19-9 with high value in the diagnosis of primary pancreatic cancer, but it may be expressed as normal and elevated only in a few cases in patients with pancreatic metastases. The blood CA19-9 level in this patient has been elevated when pancreatic metastasis was found. Therefore, the detection of blood CA19-9 combined with EUS-FNA is of great significance in differentiating pancreatic primary tumors and metastatic tumors.

Thyroid transcription factor 1 (TTF-1) is one of the most commonly utilized immunohistochemical markers in the diagnosis of lung cancers. It is expressed in 60-90% of lung adenocarcinomas, 90% of small cell lung cancers and the majority of thyroid carcinomas, but is rarely expressed in adenocarcinomas of other sites or in squamous cell lung carcinomas [8, 9]. In general, TTF-1 is negative and CA199 is positive in pancreatic cancer, whereas TTF-1 is positive in lung adenocarcinoma.TTF-1 is primarily used to distinguish adenocarcinomas of lung (and thyroid) origin from carcinomas of other sites and to distinguish lung adenocarcinomas and small cell lung cancers from squamous cell carcinomas [10]. In this case, TTF-1 is positive and which is more likely to indicate that pancreatic tumor is metastasis of lung cancer in combination with CA 19-9.

Secondary pancreatic tumors are advanced tumors and how to choose different modes of comprehensive treatment should be based on the biological characteristics of their primary tumors. The response of pancreatic metastases to radiotherapy and chemotherapy is consistent with its primary tumor. In our case,the relationship between adrenal metastasis and pancreatic metastasis is still unknown. It was found that the median survival time of pancreatic metastases was 57.6 months after operation which was much higher than that of primary pancreatic cancer. The prognosis of patients is not only related to the completeness of surgical resection, but also the biological characteristics of primary tumors and the effect of comprehensive treatment.

5. Declarations

Ethics approval and consent to participate: The study was approved by the relevant ethics committee (the name of the ethics committee and the reference number：Fuzhou General Hospital ethics committee of Nanjing Military Area Command, 2017-019), and the participant has gave informed consent.

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