Case Report
Pancreas as Delayed Site of Metastasis from Papillary Thyroid Carcinoma

Mutahir A. Tunio,1 Mushabbab AlAsiri,1 Khalid Riaz,1 and Wafa AlShakweer2

1 Radiation Oncology, Comprehensive Cancer Center, King Fahad Medical City, Riyadh 59046, Saudi Arabia
2 Histopathology, Comprehensive Cancer Center, King Fahad Medical City, Riyadh 59046, Saudi Arabia

Correspondence should be addressed to Mutahir A. Tunio; mkhairuddin@kfmc.med.sa

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1. Introduction

Thyroid cancer is the commonest endocrine malignancy, presenting with 23,500 new cases per year in the United States and European Union, respectively [1, 2]. Differentiated thyroid carcinoma (DTC) is the most frequently diagnosed cancer among women in the Middle East, behind only breast cancer, and accounting for more than 10% of all cancers among women in Saudi Arabia [3].

Papillary thyroid carcinoma (PTC) is the most frequent form of DTC and the follicular variant of PTC (FV-PTC) is more aggressive than the classic variant of PTC. It differs from classical PTC in being follicular growth pattern, higher prevalence of tumor encapsulation, angiovascular invasion, and poorly differentiated areas and a lower rate of lymph node metastases [4].

Pancreas is an extremely rare site of metastasis of PTC. To date, only 9 cases of pancreatic metastasis secondary to PTC have been reported in the literature.

Herein we present a 67-year-old Saudi woman, who developed pancreatic metastases seven years after total thyroidectomy and neck dissection followed by sorafenib for FV-PTC.

2. Case Presentation

In November 2009, a 67-year-old Saudi woman presented in our clinic for her routine visit with the complaints of abdominal pain and indigestion. She had noticed these complaints for 2 months and had been occurring frequently over 2 weeks, for which she was taking antispasmodics and nonsteroidal anti-inflammatory drugs (NSAIDs), but with minimal improvement. Her previous medical history revealed hypertension and diabetes since last 20 years which were controlled on medications. She had no history of smoking and her weight was stable. Her past surgical history showed that she underwent total thyroidectomy and lymph node dissection for follicular variant papillary thyroid carcinoma.
Multiple pulmonary metastases. Whole body iodine scintigraphy was noniodine avid. Magnetic Resonance Cholangiopancreatography (MRCP) revealed a small hypovascular lesion in the pancreatic neck measuring $1.8 \times 1.5$ cm. It showed low signal intensity in both T1 and T2 with no enhancement in the arterial phase and faint enhancement in delayed sequences. Mass was abutting the superior mesenteric vein (SMV) and caused narrowing to its caliber below the confluence with splenic vein; however, superior mesenteric artery (SMA) was found normal in caliber with no sign of invasion (Figure 2). CT guided fine needle aspiration cytology of the mass was performed and it showed papillary nests of cosinophilic tumor cells with intranuclear inclusions. The patient underwent pancreaticoduodenectomy. Histopathology showed $1.6 \times 1.4$ cm metastatic deposit in the neck of the pancreas and immunohistochemistry examination showed the positivity for TG and thyroid transcription factor-1 (TTF-1) and made confirmed diagnosis of pancreatic metastasis consistent with FV-PTC (Figure 3). Genetic testing revealed a BRFV600E mutation. After surgical resection, she was started on sorafenib 400 mg twice daily, which she tolerated well. At time of submission of case report the patient was alive at 36 months postoperatively and was doing fine with partial response in lungs, without recurrence in neck and serum TG levels 39.8 ng/mL.

### 3. Discussion

Pancreas is rare site metastasis. Common malignancies which metastasize to pancreas are renal cell carcinoma, lung, medullary carcinoma of the thyroid, lymphomas, alveolar rhabdomyosarcoma, and esophagus [11]. Metastases to the pancreas from papillary thyroid carcinoma are extremely rare. To date, only 9 cases have been reported in the literature with initial diagnosis of PTC [5–10, 12] in Table 1. Exact pathogenesis is not well known; however, hematogenous route is well supported.

Pancreatic metastases remain asymptomatic for long period before diagnosis or manifest as symptoms like chronic pancreatitis as seen in our patient. At time of presentation,
pancreatic metastases are usually sign of extensive disease seen in our patient. Conventional diagnostic tools (CT, WBS) may remain fail to reach the diagnosis. However, positron emission tomography-computed tomography (PET-CT) and endoscopic ultrasound (EUS) have shown the sensitivity or detecting pancreatic lesions up to 94–100%, though not performed in our case due to unavailability in institute [13].

Surgical treatment in the form of pylorus sparing pancreaticoduodenectomy relieves the symptoms and may increase the disease free survival (DFS) for isolated pancreatic metastasis. However, adjunct and multikinase inhibitors (sorafenib or sunitinib) may slow the disease progression especially in patients with BRAF V600E mutation in tumor cell lines [14].

In conclusion, pancreatic metastases are rare in FV-PTC and they remain asymptomatic or are associated with non-specific complaints. Improved diagnostic tools (MRCP, PET-CT, and EUS) and immunohistochemistry can be helpful for prompt diagnosis and treatment by means of pancreaticoduodenectomy followed by sorafenib which is associated with increased DFS.

Conflict of Interests
The authors declare that they have no potential conflict of interests.

References


