Gangliocytic Paraganglioma: Report of A Case

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Abstract

Paragangliomas, known as extra-adrenal pheochromocytomas, are rare neuroendocrine tumors. The symptoms and signs are nonspecific and related to excess secretion of catecholamine. Paragangliomas occur as single tumors. However, when they occur in multiple sites they are usually found as a part of a heritable syndrome such as multiple endocrine neoplasia types II-A and II-B and succinate dehydrogenase (SDH) related mutations. Recognition and diagnosis depends on careful examination for the three cell types (epithelioid/ neuroendocrine cells, spindled cells, and ganglion cells) that characterize the tumor. Its behavior is usually benign, although some have lymph node metastasis and are diagnosed as malignant (15-35% of the cases). Surgery remains the mainstay of treatment for all paragangliomas. Herein, we report a case of gangliocytic paraganglioma located in the duodenum that was completely excised. (J Intern Med Taiwan 2014; 25: 122-126)

Key Words: Paraganglioma , Gangliocytic paraganglioma

Introduction

Paragangliomas, also called extra-adrenal pheochromocytomas, are rare neuroendocrine tumors. They are found predominantly in the abdomen (85%), thorax (12%), and only 3% are found in the head and neck region. The symptoms and signs are nonspecific and related to excess secretion of catecholamine. Computed tomography (CT), magnetic resonance imaging[5], and radionuclide imaging are helpful in the detection of small tumors and localization. Because of the similarity of each of the three cellular components (epithelioid cells, spindle cells and ganglionic cells) of gangliocytic paraganglioma to the cell of other tumors, there is a wide range of differential diagnosis including gastrointestinal stromal tumor, ganglioneuroma, carcinoid tumor and pancreatic cancer.

Case presentation

A 70-year-old woman presented with a medical history of hypertension for decades, and her blood pressure was under control. She was found to have an intraabdominal tumor at medical checkup on June 30th, 2012. No headache, cold sweats, paroxysmal palpitation, abdominal pain or family history of malignancy were noted. She was referred to our gastrointestinal medical outpatient department where abdomen ultrasound revealed a 6.5 x 6.1 cm hyperechoic tumor in right upper quadrant adjacent to the head of the pancreas. (Figure 1)

Physical examination showed no palpable abdominal mass. Laboratory data including tumor markers, hormones and catecholamine levels were within normal limits. She was referred to gastrointestinal surgical outpatient department for the

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intraabdominal tumor under the tentative diagnosis of colon cancer, pancreatic cancer, or other GI tumors, and she was admitted for surgical intervention. A CT scan of the abdomen with contrast on July 6th revealed a well-defined lobulated tumor 5.5 x 5.7 cm in size, located in the right upper quadrant and abutting the pancreatic head and second portion of the duodenum, strongly suggesting gastrointestinal stromal tumor (GIST). (Figure 2)

The patient underwent local excision of the tumor on July 31st and the tumor arose from the submucosal layer of the second portion of the duodenum. The gross specimen was 7 x 5.2 x 4.3 cm in size, well- defined, yellowish in color and elastic in consistency. The external surface was somewhat irregular, and marked hemorrhage was noted when the tumor was cut for examination. (Figure 3). There was no enlargement of the para-aortic or pelvic lymph nodes found during the operation. The histopathological specimen revealed neoplastic polygonal cells bearing amorphic to basophilic or granular cytoplasm. The tumor cells were arranged in a nest pattern and congested. (Figure 4A). The immunohistochemical studies were positive for chromogranin A and S100 which are the pathognomonic markers of ganglion cells. (Figure 4B, 4C). The final pathology report was paraganglioma. Since this tumor had extended to peritumoral adipose tissue, tumor nest expansion and tumor cells spindling, malignant potential of the tumor can't be excluded.

During the postoperative follow-up at our GI clinic, series CT scans (6 months and 1 year later) showed no residue nor further tumor recurrence.

Discussion

Paragangliomas (extra-adrenal pheochromocytomas) are rare neuroendocrine tumors and less often associated with symptoms of excess catecholamine when compared with pheochromocytomas. The distinction between pheochromocytoma and paraganglioma is an important one because of implications for associated neoplasms, risk for malignancy, and genetic testing. Approximately 10 percent of pheochromocytomas are malignant for which

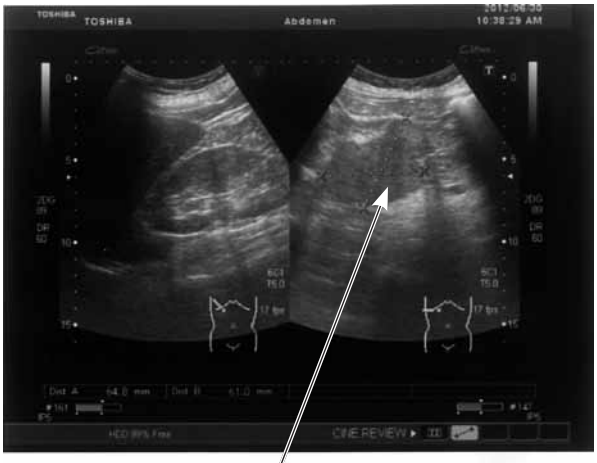

Figure 1. Abdomen sonography revealed a hyperechoic tumor approximately 6.5 x 6.1 cm in size over right upperquadrant adjacent to the head of the pancreas.

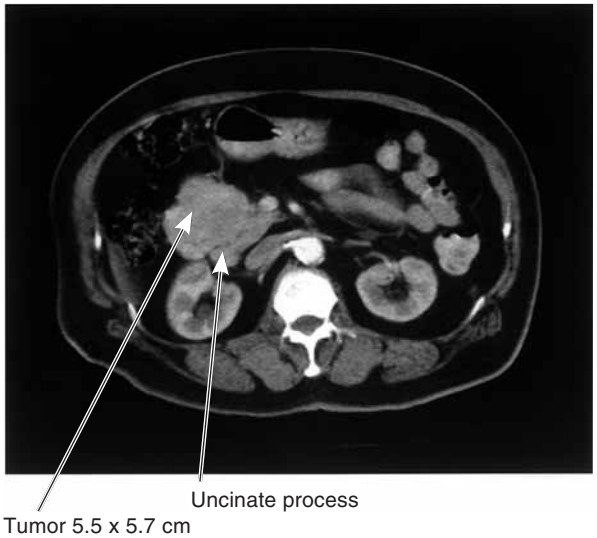

Figure 2. Abdomen CT confirmed the presence of a well-defined slightly hypervascular lobulated mass about 5.5 x 5.7 cm in size, located in the right upper quadrant and abutting the pancreatic head and second portion of the duodenum, strongly suggesting GIST.

diagnosis is based exclusively on the presence of metastasis[8], while a larger proportion of paragangliomas (up to 25 percent) are malignant. Malignancy rates are highest for paragangliomas that arise in the setting of an inherited mutation in the B subunit of the succinate dehydrogenase gene (*SDHB*)[8].

Gangliocytic paraganglioma is a very rare tumor which is usually benign. Mostly, the tumors occur in middle-aged patients (5th or 6th decades) and involve the submucosa of the descending duodenum, often near the papilla/ ampulla of Vater. The symptoms and signs are nonspecific and it varies from asymptomatic to gastric outlet obstruction or symptoms related to excess secretion of catecholamine, mainly based on the exact location of the tumor[4].

Most paragangliomas occur as single tumor. When they occur in multiple sites they are usually found as a part of a heritable syndrome such as multiple endocrine neoplasia types II-A and II-B and SDH-related mutations[3]. The most crucial element in the diagnosis is the recognition of the "triphasic" nature of the tumor, with the intimate admixture of all three cell types: epithelioid/ neuroendocrine cells, spindled cells, and ganglion cells that characterize the tumor[6]. It is usually benign, and most are localized and indolent. There have been a few reports of metastasis to regional lymph nodes in about15-35%

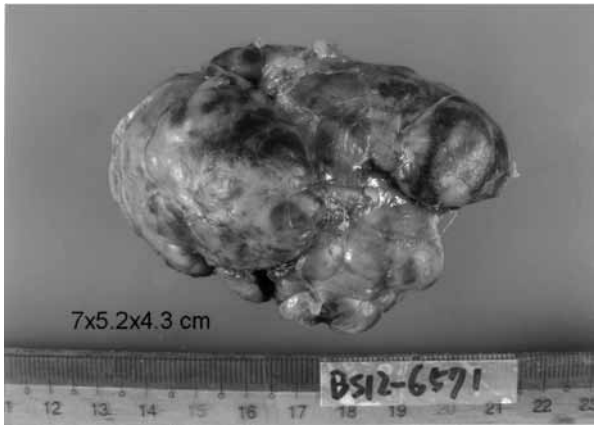

Figure 3. Gross specimen was 7 x 5.2 x 4.3 cm in size, well- defined, yellowish in color and elastic in consistency. The external surface was somewhat irregular, and marked hemorrhage on the cut surface.

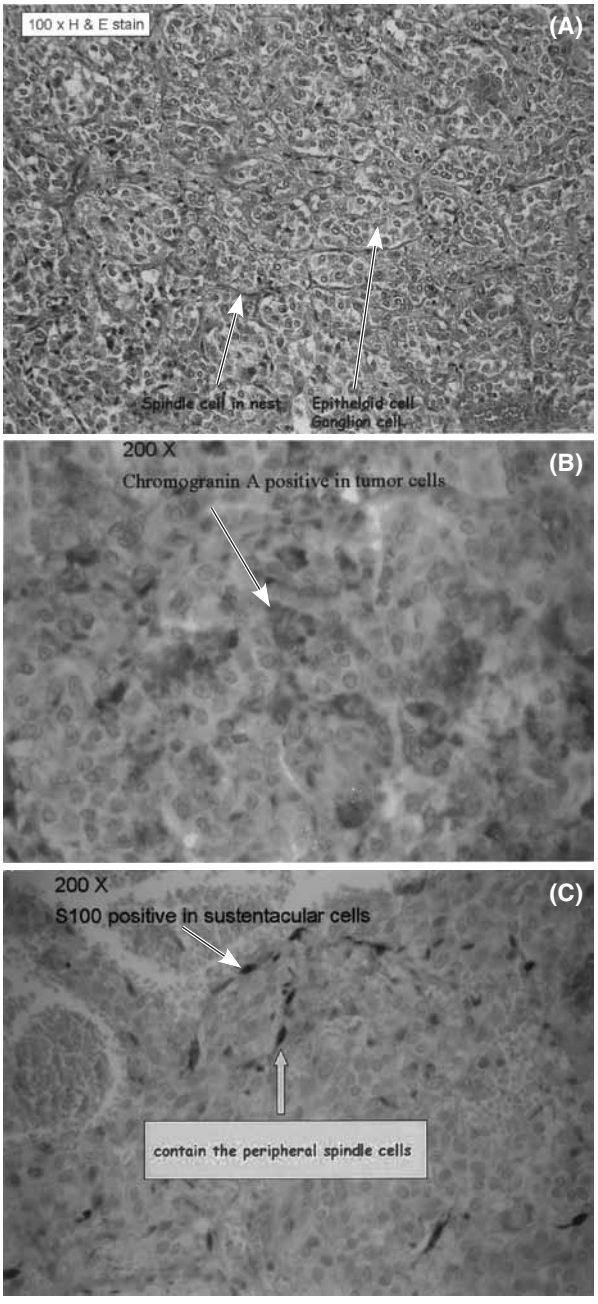

Figure 4. Histopathlology of the excised mass revealed three cell types (epithelioid,spindle cells, and ganglion cells). (100x, H&E stain, 4A) and these cells are positive for chromogranin A and S100. (200x immunohistochemical stain, 4B & 4C).

of cases. Malignancy can be confirmed by the presence of distant metastasis or local recurrence, and mainly involves the surrounding lymph nodes and rarely distant metastasis[3,10]. There are no reliable markers nor specific histopathological distinction between benign and malignant tumors. Surgery remains the mainstay of treatment for all paragangliomas[6,9]. In gangliocytic paragangliomas, the treatment of choice is local excision. Smaller tumors or those that presented as a pedunculated polyp in the gastrointestinal lumen can be removed endoscopically. However, for larger tumors or tumors with prior evidence of regional lymph node metastasis, the transduodenal approach and pancreaticoduodenectomy (Whipple resection) are recommended. In a series of 22 cases of extra-adrenal retroperitoneal paragangliomas from the Memorial Sloan-Kettering Cancer Center, the 5-year survival for unresected tumors was 19%, compared with 75% after complete resection[7]. When incompletely excised, the tumors may recur. Once metastasis occurs, the prognosis is poor with a 5-year survival of 20-45%[1-2]. Adjuvant therapies include chemotherapy and external radiotherapy, however there is no consensus concerning the optimal management of patients with malignant paragangliomas.

References

1. John H, Ziegler WH, Hauri D, et al. Pheochromocytoma: can malignant potential be predicted? Urology 1993; 53: 679-83.
2. Edstrom Elder E, Hjelm Skog AL, Hoog A, et al. The management of benign and malignant pheochromocytoma and abdominal paraganglioma. Eur J Surg Oncol 2003; 29: 278.
3. Sakhuja P, Malhotra V, Gondal R, et al. Periampullary gangliocytic paraganglioma. J Clin Gastroenterol 2001; 33: 154.
4. Sundararajan V, Robinson-Smith TM, Lowy AM. Duodenal gangliocytic paraganglioma with lymph node metastasis: a case report and review of the literature. Arch Pathol Lab Med 2003; 127: e139.
5. Velchik MS, Alavi A, Kressel HY, et al. Localization of pheochromocytoma: MIBG [correction of MIGB], CT, and MRI correlation. J Nucl Med 1989; 30: 328-36.
6. Perrone T, Sibley RK, Rosai J. Duodenal gangliocytic paraganglioma: clinicopathologic and ultrastructural study and a hypothesis concerning its origin. Am J Surg Pathol 1985; 9: 31-41.
7. Sclafani LM, Woodruff JM, Brennan MF. Extraadrenal retroperitoneal paragangliomas: Nature history and response to treatment. Surgery 1990; 108: 1124.
8. Kumar: Robbins and Cotran Pathologic Basis of Disease, Professional Edition, 8th Edition. W.B. Saunders Co. 2010; 1161.
9. Guo N, Liu H, Peng Z. A mesenteric paraganglioma. J Clin Neurosci 2009; 16: 1650-1.
10. Chetrit, Dube, Royal, et al. World J Surg Oncol 2012, 10: 46.

神經節細胞的副神經節細胞瘤—病例報告

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摘　要

副神經節細胞瘤，被稱為腎上腺外的嗜鉻細胞瘤，是罕見的神經內分泌腫瘤。它的症狀和表現不具特異性，有些腫瘤會分泌過多的兒茶酚胺而引發症狀。它大部分只發生在單獨一處；然而當它發生在很多地方時，通常被認為是一個遺傳疾病的綜合症狀的一部分，例如多發性內分泌腫瘤。它最重要的診斷要素取決於仔細的檢查出此腫瘤混合的三個細胞類型。此腫瘤大多都是良性的表現，雖然少部分(15-35%的病例)會有淋巴結轉移，就會被診斷為惡性。手術依然是所有副神經節瘤的主要治療方式。在此我們報告一個長在十二指腸的副神經節細胞瘤病例。