

Duodenal gangliocytic paraganglioma: A case report

Duodenal gangliyositik paragangliyom: Olgu sunumu

Gülşah KAYGUSUZ¹, Hatice GERMEN¹, Onur BİRSEN², Kürşat KARADAYI², Hilmi KOCAOĞLU², Esra ERDEN¹

Ankara University, School of Medicine, Departments of Pathology¹ and Surgery, Section of Surgical Oncology², ANKARA

ABSTRACT

Duodenal gangliocytic paraganglioma is a rare tumor that characteristically occurs in the second portion of the duodenum and typically presents with gastrointestinal bleeding. Duodenal gangliocytic paraganglioma have a good prognosis after surgical resection but metastatic spread to regional lymph nodes and recurrence may rarely occur. A 41-year-old man underwent pancreaticoduodenectomy for the proposed diagnosis of carcinoma of the ampulla vateri. Macroscopically, the tumor measuring 2,7 cm in its greatest diameter, located in the ampulla without infiltration of the pancreas was detected. Histologically, the tumor composed of epithelioid cells, ganglion cells with abundant cytoplasm and vesicular nuclei, and spindle cells arranged in broad fascicles. Immunohistochemically, tumor cells were strongly positive for S-100 protein, cytokeratin AE1/AE3 cocktail, chromogranin A, and synaptophysin. There was no metastasis in the regional lymph nodes. We present here a rare case of duodenal gangliocytic paraganglioma and review the differential diagnosis of this infrequent tumor.

Key words: Paraganglioma, gangliocytic, gastrointestinal tract

ÖZET

Duodenal gangliyositik paragangliyom, karakteristik olarak duodenumun ikinci kısmında görülen ve tipik olarak gastrointestinal kanama ile ortaya çıkan nadir bir tümördür. Cerrahi rezeksiyon sonrası prognoz iyidir, ancak bölgesel lenf nodu metastazı ve rekürrens nadiren görülebilir. Ampulla vateri karsinomu ön tanısı ile 41 yaşındaki erkek hastaya pankreatikoduodenektomi yapıldı. Makroskopik olarak pankreası infiltre etmeyen 2,7 cm uzun çaplı kitle saptandı. Histolojik olarak tümör, epitelioid hücreler, veziküler nükleuslu ve eozinofilik sitoplazmalı gangliyon hücreleri ve fasiküller oluşturan iğsi hücrelerden meydana gelmekteydi. İmmünohistokimyasal olarak tümör hücrelerinde S-100 protein, sitokeratin AE1/AE3 kokteyli, kromogranin A ve sinaptofizin ile boyanma gözlemlendi. Bölgesel lenf nodu metastazı görülmedi. Bu çalışmada nadir görülen bir tümör olan duodenal gangliyositik paragangliyom olgusu, ayırıcı tanı özellikleri ile tartışıldı.

Anahtar sözcükler: Paragangliyom, gangliyositik, gastrointestinal sistem

INTRODUCTION

Gangliocytic paraganglioma (GP) is a rare tumor occurring exclusively in the second portion of the duodenum (1,2). Although these tumors generally have a benign clinical course, limited number of cases metastasized to lymph nodes or recurred locally have been reported (3,4). Dahl et al (5) first described this tumor in

1957, and since more than 130 cases have been reported (6). We report herein a case of duodenal GP and discuss differential diagnosis of this rare tumor from histopathological perspective.

CASE REPORT

A 41-year-old man was admitted to an external hospital with complaints of dyspepsia and weakness. Laboratory findings showed iron deficiency anemia. Endoscopic examination and computed tomography (CT) revealed an ulcera-

Corresponding Author: Gulsah Kaygusuz, M.D., Ankara University, School of Medicine Department of Pathology Morfoloji Binası, Sıhhiye, 06100, Ankara, Turkey

ted polypoid mass in the ampullary region (Fig. 1). After endoscopic biopsy specimen diagnosed as adenocarcinoma, the patient transferred to our hospital. The patient underwent pancreaticoduodenectomy, regional lymphadenectomy, omentectomy, and cholecystectomy. Mac-

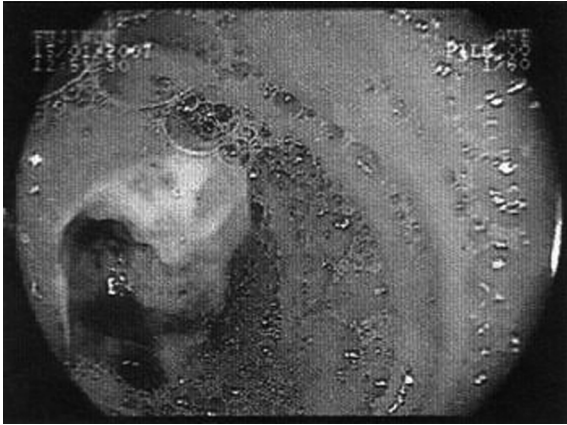


Figure 1. Endoscopically, an ulcerated polypoid tumor in the periampullary region.

roscopically, a polypoid tumor, 2,7 cm in greatest diameter located in ampulla vateri without infiltration of the pancreas was detected. Surgical specimen was fixed in neutral buffered formalin and embedded in paraffin.

Tissue sections were stained with routine hematoxylin and eosin (HE). Histological examination revealed a tumor extending into the submucosa and muscularis propria with focal mucosal ulceration. The tumor was composed of epithelioid cells, arranged in trabecular or pseudoglandular pattern, spindle cells, and ganglion cells with abundant cytoplasm and vesicular nuclei (Fig. 2a-e). There was no significant mitotic activity, necrosis or infiltration of the pancreas. No metastasis was found in the regional lymph nodes and omentum .

Immunohistochemical analyses were performed on tissue sections using Ventana Automated Immunostainer. The antibodies used included: cytokeratin AE1/ AE3 cocktail (1:100 di-

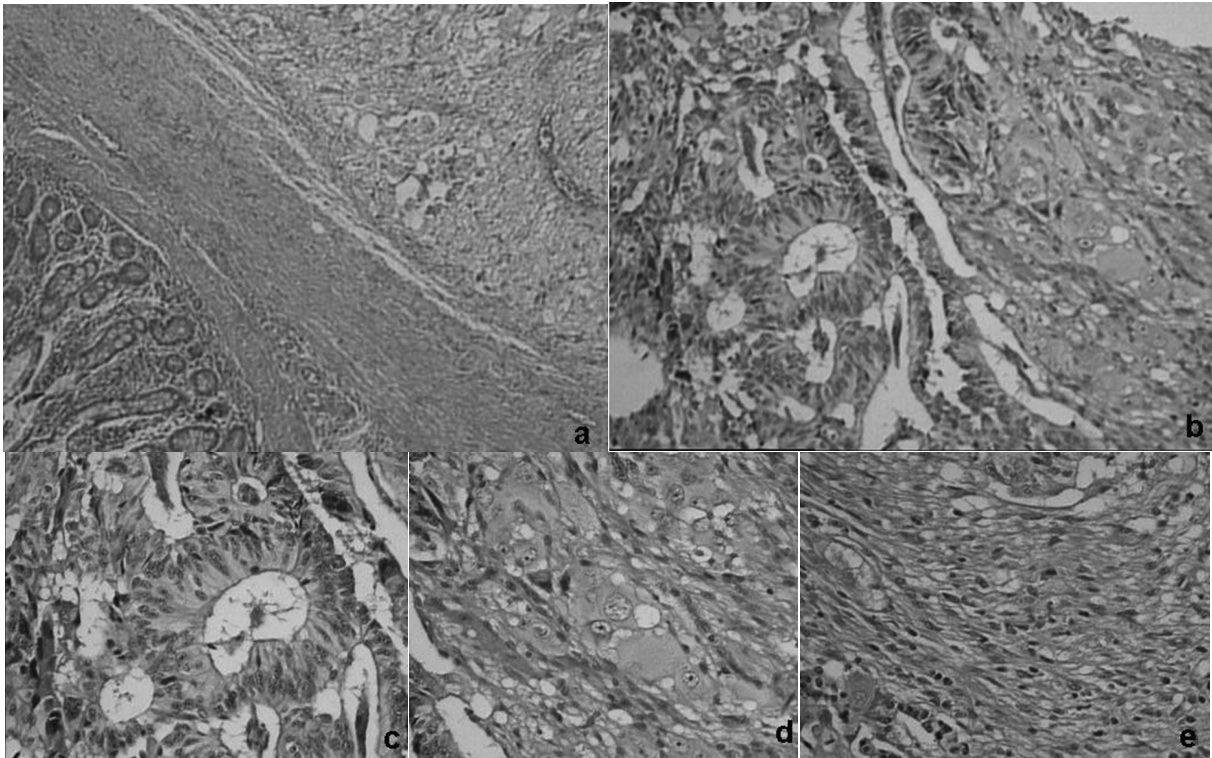


Figure 2. a. Duodenal submucosal location of the tumor. (HE x100). b. Tumor has a triphasic morphology. (HE x 200). c. Epithelioid tumor cells arranged in pseudoglandular pattern (HE x400). d. Ganglionic tumor cells with abundant cytoplasm and vesicular nuclei (HE x400). e. Spindle tumor cells (HE x400).

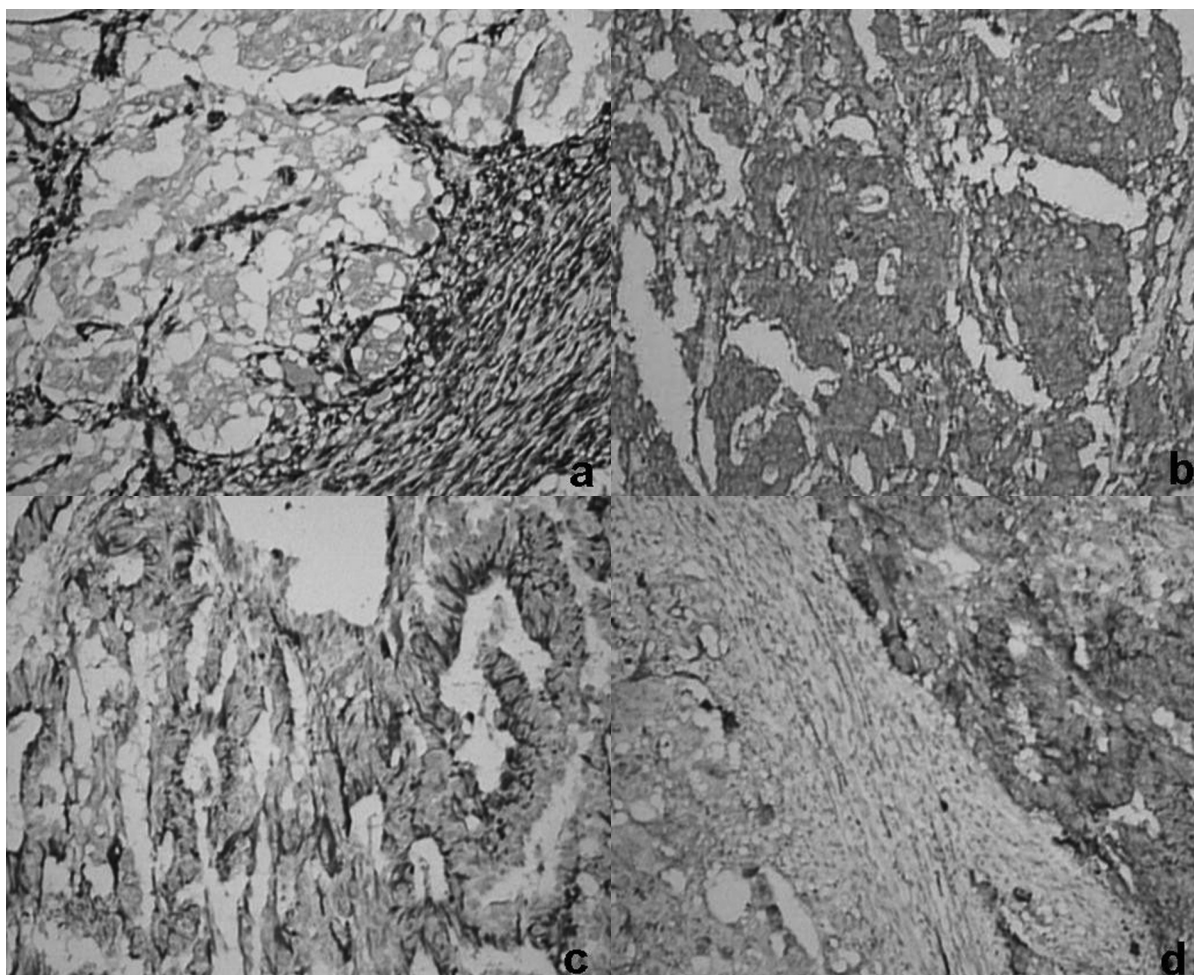


Figure 3. a. Immunohistochemical S-100 protein expression of the sustentacular and spindle cells (x 200). b. Synaptophysin labelled epithelioid cells and ganglion cells (x 200). c. Cytokeratin AE1/ AE3 staining of the tumor cells (x 200). d. Chromogranin A expression of the epithelioid tumor cells (x 200).

lution, Neomarkers), chromogranin A (monoclonal, 1:1000 dilution, Neomarkers), synaptophysin (27G12, 1:200 dilution, Novocastra), S-100 (4C4.9, 1:200 dilution, Neomarkers), cytokeratin 7 (OV-TL12/30, 1:150 dilution, Neomarkers), cytokeratin 20 (Ks20.8, 1:100 dilution, Neomarkers), and CEA (monoclonal, 1:1000 dilution, Neomarkers). Immunohistochemically, the epithelioid cells were positive for cytokeratin AE1/ AE3 cocktail, chromogranin A, and synaptophysin (Fig. 3b-d). S-100 protein labeled the sustentacular cells and the spindle cell component (Fig. 3a). Ganglion cells were positive for synaptophysin (Fig. 3b). The tumor cells

were negative for cytokeratin 7, cytokeratin 20, and CEA.

DISCUSSION

Gangliocytic paraganglioma is an extremely rare benign neuroendocrine tumor of the gastrointestinal tract. Most GPs are characteristically located in the second portion of the duodenum with a predilection for the ampulla Vateri, as in this case. Duodenal GP has been reported in patients 15 to 84 years of age with a male predominance. The patients with GP clinically present with abdominal pain, gastrointesti-

nal bleeding, or they can be asymptomatic. CT finding of duodenal GP is that of a polypoid or sessile solid mass (7), as in our case.

Histologically, GP is an uncapsulated benign triphasic tumor, composed of epitheloid cells, ganglion cells and spindle cells in variable proportions. The general pattern is characterized by the features of carcinoid, paraganglioma, and ganglioneuroma. The tumors show no necrosis or conspicuous mitotic activity. Immunohistochemically, the epitheloid cells are positive for NSE, synaptophysin, chromogranin A and sometimes positive for cytokeratins, similar to our case. The ganglion cells express NSE and synaptophysin whereas spindle cells positively stain for S-100 protein. Although there are many hypothesis about the histogenesis of GPs, there is no clear explanation yet.

It may be difficult to make a differential diagnosis, if endoscopic biopsy specimens do not contain all three histologic components. The spindle cell tumors, epithelial tumors or ganglioneuroma may be recognized according to the presence of three related different elements, as in the current case. The histological differential diagnosis of duodenal GP includes well-differentiated neuroendocrine carcinoma, ganglioneuroma, paraganglioma, and spindle cell malignancies (nerve sheath, smooth muscle, and gastrointestinal stromal tumors) (8). The lack of immunohistochemical S-100 protein positive spindle cells and ganglion cells favor the diagnosis of well-differentiated neuroendocrine carcinoma. Beside immunohistochemical profile of the tumor, CD117 and CD34 negativity, and the presence of ganglion cells exclude the diagnosis

of gastrointestinal stromal tumor. Immunohistochemical expression of smooth muscle markers is not a diagnostic feature of duodenal GP. Typical duodenal submucosal location without infiltration of the pancreas, without any lymph node metastasis of the tumor, triphasic morphology, immunohistochemical positivity for synaptophysin, chromogranin A, S-100 protein and cytokeratins of the tumor cells are the most important diagnostic features of GP.

Although GPs are accepted as a benign tumors, careful assessment is necessary for recurrences or metastases.

REFERENCES

1. Dante S, Viale G, Dalla Palma P. Gangliocytic paraganglioma of the duodenum: case report. *Tumori* 1987; 73:425-429.
2. Scheithauer BW, Nora FE, Lechago J, Wick MP, Crawford BG, Weiland LH et al. Duodenal gangliocytic paraganglioma. Clinicopathologic and immunohistological study of 11 cases. *Am J Clin Pathol* 1986; 86:559-565.
3. Dookan DB, Miettinen M, Finkel G, Gibas Z. Recurrent duodenal gangliocytic paraganglioma with lymph node metastasis. *Histopathology* 1993;22:399-401.
4. Inai K, Kobuke T, Yonehara S, Tokuoka S. Duodenal gangliocytic paraganglioma with lymph node metastasis in a 17 year old boy. *Cancer* 1989;63:2540-2545.
5. Dahl EV, Waugh JM, Dajin DC. Gastrointestinal ganglioneuroma. Brief review with report of a duodenal ganglioneuroma. *Am J Pathol* 1957;33:953-965.
6. Nakamura T, Ozawa T, Takehira Y, Kitagawa M, Yamada M, Yasumi K et al. amakoshi K, Kobayashi Y, Nakamura H. Endoscopic resection of gangliocytic paraganglioma of the minor duodenal papilla: case report and review. *Gastrointest Endosc* 2002;55:270-273.
7. Buetow P, Levine M, Buck J. Duodenal gangliocytic paraganglioma: CT, MR imaging and US findings. *Radiology* 1997;204:745-747.
8. Furihata M, Sonobe H, Iwata J. Immunohistochemical characterization of a case of duodenal gangliocytic paraganglioma. *Pathol Int* 1996;46:610-613.