

Primary gastric hemangioblastoma: report of a case

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Abstract

Capillary hemangioblastoma (CHB) is a benign, highly vascularized tumor that generally occurs in central nervous system either in the setting of von Hippel-Lindau (VHL) disease or, more often, as a solitary sporadic lesion that is increasingly recognized in extraneural sites. We present the case of a 18 year-old man with abdominal pain, nausea and hematemesis, the endoscopy showed polypoid tumor bleeding of 5 cm in gastric antrum. The patients had not signs of VHL disease and was subjected to subtotal gastrectomy and referred to our institution. To our knowledge this is the first reported case of CHB occurring in stomach.

Introduction

Capillary hemangioblastoma (CHB) is a benign, highly vascularized tumor that generally occurs in central nervous system either in the setting of von Hippel-Lindau (VHL) disease or, more often, as a solitary sporadic lesion that is increasingly recognized in extraneural site.¹

Different presentations of hemangioblastoma in peripheral nerves and extraneural tissues have been reported. The histogenesis of this tumor remains uncertain. Of the hemangioblastoma cases reported arising in extraneural tissues, two were located in the presacral region, one in the maxilla, kidney, and adrenal glands, the existence of these cases suggests that the stromal cells of hemangioblastoma can demonstrate a variety of mature specific lineages, such as smooth muscle/myofibroblastic, or neuroendocrine, depending on the location.² To the best of our knowledge this is the first case of hemangioblastoma reported in the literature to the date.

Case Report

An 18-year-old male, without any medical or family history was referred with the background of 8 months of evolution characterized by abdominal symptoms like severe abdominal pain, nausea and hematemesis. An endoscopic procedure was performed and it showed a bleeding polypoid tumor of 5 cm in the gastric antrum. The computer tomography scan showed a gastric cystic lesion and the initial biopsy was diagnosed as chronic unspecific pangastritis.

He underwent subtotal gastrectomy and referred to our institution, were reviewed the paraffin blocks and slides with the following results.

Pathology report was: vascular tumor with histological features of hemangioblastoma. The pathological analysis showed a cellular proliferation in the gastric wall (Figure 1A) composed of polygonal cells with clear cytoplasm due to the presence of intracytoplasmic vacuoles and round or oval nucleus without cytologic atypia (Figure 1B). These cells were sited in a rich vascular network of capillary type with extravasation of erythrocytes (Figure 1C).

Immunohistochemistry reactions were conducted with the following results in the neoplastic cells: vimentin and CD-34 were strong and diffusely positive and CD-68 was focally positive. The reactions against actin, desmin, inhibin, acid glial fibrillary protein, epithelial membrane antigen, sinaptophysin, S-100 protein, HMB-45, CD-117 (c-kit) and renal cell carcinoma antigen (RCC) were negative. The aforementioned results let us rule out carcinoma, peripheral nerve tumors, perivascular epithelioid cell tumors (PEComa), smooth muscle tumors, gastrointestinal stromal tumors, clear cell renal carcinoma and neuroendocrine neoplasms. Finally, the patient was diagnosed as gastric hemangioblastoma (Figure 1).

The evolution after surgery was favorable. In the subsequent tests clinical examination and endoscopic, signs were discarded of local recurrence. No lesions were found in other organs suggestive of VHL syndrome and studies were made in the family members also excluded syndrome. He remained in surveillance without evidence of recurrence at 4 years of follow-up.

Discussion

The vascular hemangioblastoma is a benign neoplasm of unknown origin more prevalent in men and usually occurs in the fourth or fifth decade of life, but it can occur at any age and have even been reports of congenital lesions.³ These lesions can be found in several loca-

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tions, in the central nervous system, constituting between 1.5-2% of all malignancies of the central nervous system. The location in the stomach no has been reported. The 30% of cases are associated with VHL syndrome and of these, 80% correspond to isolated lesions. The remaining 70% occurs spontaneously and only 5% of these neoplasm are multiple.⁴ Sporadic CHB is a tumor of adulthood generally occurring between 30 and 65 years age, while VHL-associated tumors affect significantly younger patients with a mean age of 29 years.⁵ Patients usually present with symptoms of increased intracranial pressure or spinal cord compression, because the hemangioblastoma is a morphologically distinctive tumor that can occur sporadically or in association with Von Hippel-Lindau disease, and which involves the central nervous system in the majority of the cases. Rare occurrences of hemangioblastoma in peripheral nerves and extraneural tissues have been reported. The histogenesis of this tumor remains uncertain. Various cell lineages such vascular, glial, neural, fibrohistiocytic, and smooth muscle/myofibroblastic have been proposed for the so-called stromal cells, which are thought to represent the neoplastic component of these lesions. There has been claimed that hypoxia induced factor expression is a pro-angiogenic event that causes extensive pathological neovascularization in hemangioblastomas. A number of studies have shown coexistence of pro-angiogenic and stem cell markers in *tumorlet-like stromal cells* in the retinal and optic nerve hemangioblastomas, leading to suggestions

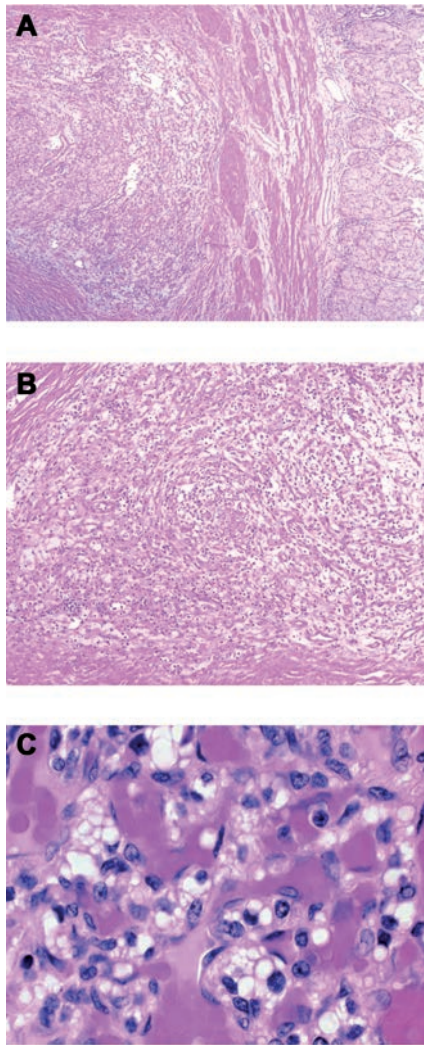


Figure 1. A) Microphotography of gastric wall infiltrated by the neoplasm. In the right side, gastric mucosa is showed and the tumor is infiltrating the muscular wall in the left side of the photograph (Hematoxylin and Eosin, 20 \times). B) Medium power detail of the tumor conformed by cells of clear cytoplasm around of blood vessels (Hematoxylin and Eosin, 100 \times). C) High power detail showing clear cells with cytoplasmic vasculature embedded in a sclerotic stroma (Hematoxylin and Eosin, 400 \times).

that hemangioblastomas originate from developmentally arrested stem cells or embryonic progenitors activated by hypoxic events.⁶ However, these findings are better demonstrated only in CHB associated with VHL disease. They have described in peripheral nerves,⁷ kidney, liver, lung,⁸ retroperitoneum,⁹

soft tissues and skin,^{10,11} all being unassociated with VHL disease. Here in we presented a case primary CHB arising in the stomach of a 18 year-old male patient with no family history of VHL disease. The histopathological diagnosis of the lesion is difficult because the appearance of the cells. The cell conforming the CHB are polygonal cells with abundant and clear cytoplasm, this phenotype is shared in all lesions described in VHL disease. The tumors in this syndrome are characterized by clear cells, specially renal clear cell carcinoma and the PEComa. Even more, all these clear cells are immunoreactive with CD10 and vimentin, for this reason, these antibodies are not useful in the differential diagnosis. Some authors have found that peripheral hemangioblastomas are less cystic, have more cytologically atypical, and have a more hyalinized stroma than central ones. Our case shows a characteristic sclerous stroma, consistent with this finding. The main differential diagnosis in our case is a metastasis of a renal clear cell carcinoma, however, the RCC antibody was negative, and the follow-up of the patient has not evidenced any other lesion in the patient. The morphology of this tumor is quite characteristic, and the described immunophenotype is heterogeneous and unspecific. If well the CHB is constantly positive for inhibin, S-100 protein and neuronal specific enolase these markers are very unspecific and there are reported cases negative for these reactions.¹²

Conclusions

The CHB is a very rare and poor understood tumor commonly arising in the setting of VHL disease. However, there are sporadic cases. The preoperative diagnosis of this neoplasm is difficult because the clinical suspicion is low in the stomach location. The definitive diagnosis is made through pathologic examination. The immunohistochemical techniques are helpful for differential diagnosis with lesions that are more common in the stomach. The importance of correct diagnosis of these benign tumors, is in the possible association with VHL syndrome.

The gastric hemangioblastoma is a tumor not previously reported in gastric location, it is not associated with VHL disease and the biologic behavior is uncertain, but a complete surgical resection seems to be the treatment of choice.

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