Case Report

Colonic Mucosal Schwann Cell Hamartoma: A Case Report and Literature Review

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Colonic mucosal Schwann cell hamartoma is an extremely rare entity, presenting as small colonic polyp, associating with no clinical symptoms and harboring no clinical significance. However, its mimics, such as GI neurofibroma/neurofibromatosis, ganglioneuroma, etc. are possible GI manifestations of hereditary syndromes and therefore are integral part of the patient workup and disease diagnosis. Here we report a case of mucosal Schwann cell hamartoma, with description of its morphology and immunophenotype. We also reviewed literature and differentially described some important mimics.
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INTRODUCTION

Benign nerve sheath tumors in gastrointestinal tract are very rare. They can present as tumor mass such as schwannoma or neurofibroma, or present as small polyp, such as ganglioneuroma, perineurioma, or granular cell tumor.[1] The latter have been detected with increasing frequency, largely due to widely application of colonoscopic sreening for colorectal cancer.[1-4] Although most of the polypoid lesions are benign in nature and harbor no clinical significance, some of these lesions, such as neurofibroma and mucosal ganglioneuroma, however, are of GI manifestation of hereditary syndromes, specifically, neurofibromatosis type 1 (NF1), or multiple endocrine neoplasia, type 2B (MEN 2B).[5-9] Therefore, differentiation of these lesions to reach a definite diagnosis is no nonsense for some patients. Here we report an even rarer entity, mucosal Schwann cell hamartoma, as a pathology curiosity and expanding the differential list.

CASE REPORT

A 57-year-old male patient without prominent previous medical history underwent a screening colonoscopy. Two small polyps were identified and biopsied from descending and sigmoid colon respectively. The specimens were processed and the descending colonic polyp turned out to be a small tubular adenoma. In contrast, the sigmoid colonic polyp contained proliferation of bland appearing spindle/ovoid cells in the mucosa with no atypia or mitotic figures. There were no ganglion cells identified (**Figure 1. A, B**). Immunohistochemistry was applied with array of antibodies. The spindle cells were strongly positive for S-100, CD56, and calretinin, but negative for SMA, CD117, Chromogranin, Synaptophysin, and CD45. Ki-67 proliferative index is very low (~1%) (**Figure 1. C-F**). Calretinin failed to reveal ganglion cells. Based on the location and immunophenotype of the lesion, a mucosal schwann cell hamartoma was established. Patient had no complications and returned to his normal life.

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DISCUSSION

Here we report a case of mucosal Schwann cell hamartoma, composed of pure Schwann cell proliferation in the lamina propria. There is no mixture of fibroblastic proliferation, or neuron/ nerve elements. This entity is benign in nature and does not associate with NF1 or other inherited syndromes.[1] The significance of recognition of this entity lies not in itself, it lies in differentiating it from other similar entities that are associated with inherited syndromes, such as GI neurofibroma, ganglioneuroma, or other innocent findings like mucosal perineurioma.

GI Neurofibroma

About 25% of NF1 patients have GI manifestations, including neurofibroma, leiomyoma, and gastrointestinal stromal tumor (GIST).[5,6,12] While most of these entities happen in the stomach or small intestine, colon can be involved in a lesser extent. Visceral neurofibroma is widely accepted to be highly associated with NF1, therefore, a colorectal diagnosis of neurofibroma should trigger a clinical suspicion for NF1 automatically. Histologically, neurofibroma has a heterogenous cellular composition, with a mixture of Schwann cells, fibroblasts, perineurial-like cells, and axons. Immunohistochemically, S-100 highlights sporadic staining of Schwann cells, CD34 is positive for fibroblasts, and antibody for neurofilament protein reveals scattered axons.[1] In contrast, Schwann cell hamartoma is composed of a pure population of cytologically uniform Schwann cells with strong diffuse S-100 staining.

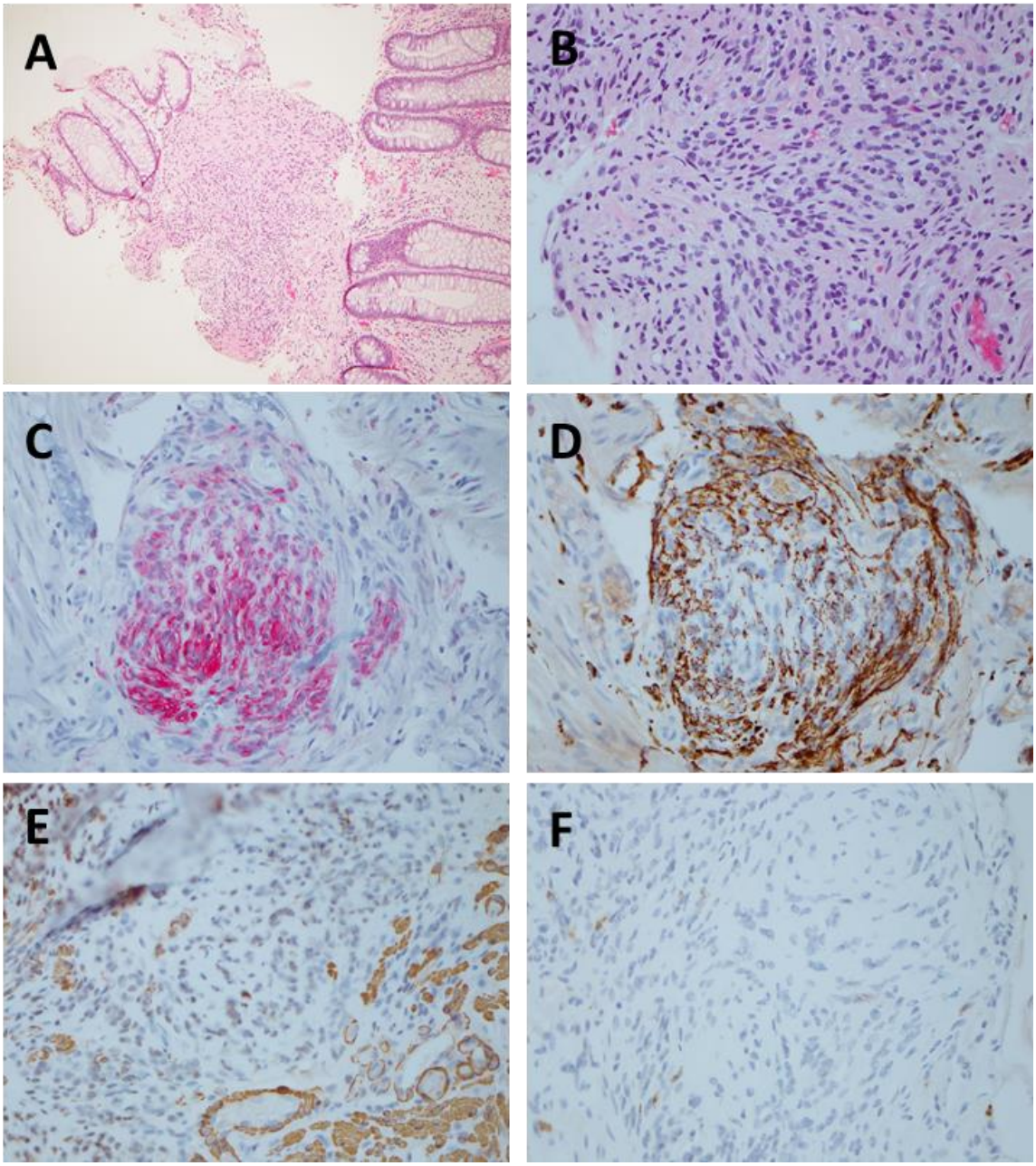

Figure 1. The morphology and immunohistochemistry of colonic mucosal Schwann cell hamartoma. **A** and **B**: H&E sections, 100x and 400x each, showing proliferation of bland Schwann cells in the colonic mucosa. **C**. Immunostaining for S-100. The Schwann cells are positive (color red). **D**. Immunostaining for calretinin. The Schwann cells are positive (color brown). **E**. Immunostaining for SMA. The Schwann cells are negative. Nearby small muscle fibers and vessel walls are positive (color brown). **F**. Immunostaining for CD117. The Schwann cells are negative. Rare scattered mast cells are positive (color brown).

Ganglioneuroma

Ganglioneuroma is a benign tumor composed of ganglion cells, nerve fibers, and Schwann cells.[12] Colorectal ganglioneuroma is classified into 3 groups: solitary polypoid ganglioneuroma, ganglioneuromatous polyposis, and diffuse ganglioneuromatosis. The latter 2 have significant associations with Cowden syndrome, MEN2B, or NF1.[6,7,12,13,15] The first one, solitary polypoid ganglioneuroma, is the most common form of colorectal ganglioneuroma. However, it's sporadic, and is not associated with inherited syndromes.[14] One of the diagnostic features is the presence of prominent ganglion cells, or not so prominent but can be highlighted by calretinin staining.

Other entities mimicking mucosal Schwann cell hamartoma

Other rare entities in the differential list include intramucosal perineurioma, which is mostly seen in the distal colon and presented as sessile polyp.[3] Histologically Intramucosal perineurioma is composed of diffusely distributed whorled

ovoid or slender cells that are positive for EMA and negative for S-100. And finally we should keep in mind about the colonic schwannoma, which is also composed of majority of Schwann cells, might showing nuclear palisading, Atoni A and Atoni B patterns, and peripheral lymphoid cuff with germinal centers.[10] In contrast to diffusely distributed/non-marginated mucosa Schwann cell hamartoma, mucosal schwannoma is usually well circumscribed, although non-capsulated.

CONCLUSION

Here we described a rare entity of mucosa Schwann cell hamartoma and its close mimics, some of which are clinically significant due to their association with inherited syndromes. In summary, mucosal Schwann cell hamartoma is of pure Schwann cell proliferation in the lamina propria with poor margination. Unlike GI neurofibroma or ganglioneuroma, it is not associated with NF1 or other hereditary syndromes. Therefore, differentially distinguishing these entities based on histology, immunohistochemistry and systemic presentation is crucial for patient care.

CONFLICT OF INTEREST

The authors have no conflict of interest to disclose.

REFERENCES

1. Gibson J, Hornick L. Mucosal schwann cell "Hamartoma": clinicopathologic study of 26 neural colorectal polyps distinct from neurofibromas and mucosal neuromas. Am J Surg Pathol. 2009;33:781-787.
2. Attar B, Khurana D, Hlaing-Ray V, et al. Mucosal neuroma of the rectosigmoid colon. Gastrointest Endosc. 1986;32:219-220.
3. Groisman GM, Polak-Charcon S. Fibroblastic polyp of the colon and colonic perineurioma: 2 names for a single entity? Am J Surg Pathol. 2008;32:1088-1094.
4. Hornick JL, Fletcher CD. Intestinal perineuriomas: clinicopathologic definition of a new anatomic subset in a series of 10 cases. Am J Surg Pathol. 2005;29:859-865.
5. Davis GB, Berk RN. Intestinal neurofibromas in von R?recklinghausen's disease. Am J Gastroenterol. 1973;60:410-414.
6. Fuller CE, Williams GT. Gastrointestinal manifestations of type 1 neurofibromatosis (von Recklinghausen's disease). Histopathology. 1991;19:1-11.
7. Heuschkel R, Kim S, Korf B, et al. Abdominal migraine in children with neurofibromatosis type 1: a case series and review of gastrointestinal involvement in NF1. J Pediatr Gastroenterol Nutr. 2001;33:149-154.
8. Hizawa K, Iida M, Matsumoto T, et al. Gastrointestinal manifestations of cowden's disease. Report of four cases. J Clin Gastroenterol. 1994;18:13-18.
9. Lee NC, Norton JA. Multiple endocrine neoplasia type 2B-genetic basis and clinical expression. Surg Oncol. 2000;9:111-118.
10. Lewin MR, Dilworth HP, Abu Alfa AK, et al. Mucosal benign epithelioid nerve sheath tumors. Am J Surg Pathol. 2005;29:1310-1315.
11. Miettinen M, Shekitka KM, Sobin LH. Schwannomas in the colon and rectum: a clinicopathologic and immunohistochemical study of 20 cases. Am J Surg Pathol. 2001;25:846-855.
12. Scheithauer BW, Woodruff JM, Erlandson RA. Atlas of Pathology: Tumors of the peripheral nervous system, Third Series, Fascicle 24. Washington, DC: Armed Forces Institute of Pathology; 1997.
13. Pinsk I, Dukhno O, Ovnat A, et al. Gastrointestinal complications of von recklinghausen's disease: two case reports and a review of the literature. Scand J Gastroenterol. 2003;38:1275-1278.
14. Shekitka KM, Sobin LH. Ganglioneuromas of the gastrointestinal tract. Relation to von recklinghausen disease and other multiple tumor syndromes. Am J Surg Pathol. 1994;18:250-257.
15. Lashner BA, Riddell RH, Winans CS. Ganglioneuromatosis of the colon and extensive glycogenic acanthosis in Cowden's disease. Dig Dis Sci. 1986;31:213-216.