A Colonic Perineurioma

Tomoyuki Otani[1,2], Kinta Hatakeyama[1,2], Emi Ohtani[3], Susumu Nakayama[4], Takashi Fujimoto[5] and Chiho Ohbayashi[1]

[1]Department of Diagnostic Pathology, Nara Medical University, Kashihara, Japan. [2]Department of Diagnostic Pathology, Minami-Nara General Medical Center, Yoshino, Japan. [3]Departments of Diagnostic Pathology, Gastroenterology, Minami-Nara General Medical Center, Yoshino, Japan. [4]Department of General Internal Medicine, Minami-Nara General Medical Center, Yoshino, Japan. [5]Department of Orthopedics, Minami-Nara General Medical Center, Yoshino, Japan.

Clinical Medicine Insights: Pathology
Volume 11: 1–2

DOI: 10.1177/1179555718815918

ABSTRACT: Perineurioma is a mesenchymal neoplasm best known in soft-tissue pathology. A colonic perineurioma is a relatively recently described entity and sometimes encountered in specimens from the large intestine, especially distal colon. Without its recognition, a perineurioma can be misdiagnosed as other more common gastrointestinal spindle cell neoplasms. Here, we describe a case of colonic perineurioma with polypoid growth extruding into the intestinal lumen. *Case.* A woman in her seventh decade of life underwent a follow-up colonoscopy after an uneventful resection of a benign colonic polyp. A previously undetected 6-mm polyp was found in the sigmoid colon and was resected endoscopically. Microscopic examination of the lesion revealed a proliferation of bland spindle cells in the lamina propria mucosae, which were immunohistochemically positive for epithelial membrane antigen, claudin 1, and glucose transporter-1. A colonic perineurioma was diagnosed.

KEYWORDS: Perineurioma, benign fibroblastic polyp, colon, polypoid, mesenchymal tumor

RECEIVED: October 17, 2018. **ACCEPTED:** October 29, 2018.

TYPE: Short Report

FUNDING: The author(s) received no financial support for the research, authorship, and/or publication of this article.

DECLARATION OF CONFLICTING INTERESTS: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Chiho Ohbayashi, Department of Diagnostic Pathology, Nara Medical University, Kashihara, Nara 634-8521, Japan.
Email: ohbayashi@naramed-u.ac.jp

Perineurioma is occasionally encountered in the large intestine, especially distal colon. Many are small intramucosal lesions barely detectable with endoscopy, but some are more conspicuous. Here, we report an example with polypoid growth protruding into the intestinal lumen.

A woman in her 60s underwent follow-up colonoscopy after a prior endoscopic resection of a benign polypoid lesion. A 6-mm sessile polypoid lesion was seen in the sigmoid colon, which was not detected previously (Figure 1A). The lesion was endoscopically resected.

Histological examination revealed a proliferation of short spindle cells with pale cytoplasm and indistinct cell borders, whose nuclei were bland and not wavy. Between spindle cells were intervening delicate collagen fibers, which were positive for Type 4 collagen on immunohistochemistry. The lesion was well-circumscribed and situated in the lamina propria mucosae (Figure 1B and C). Necrosis was absent and mitotic figures not identified. Some intestinal crypts were entrapped in the lesion and had microvesicular cytoplasm and architectural serration and dilation, which were reminiscent of colonic serrated lesions. On immunohistochemistry, spindle cells were negative for smooth muscle actin (SMA), S100, c-kit, or CD34; focally positive for epithelial membrane antigen (EMA); and diffusely strongly positive for claudin 1 and glucose transporter-1 (GLUT1) (Figure 1D). A perineurioma was diagnosed.

Perineuriomas are better known in soft tissue and peripheral nerves, but some examples arise in the large intestine. Their perineural nature can be difficult to appreciate histologically, and Eslami-Varzaneh et al[1] first reported them as "benign fibroblastic polyps" of the colon. Groisman et al[2] revealed their perineural differentiation and now the 2 terms are used interchangeably by many gastrointestinal pathologists.

In gastrointestinal tract, other spindle cell tumors such as gastrointestinal stromal tumor (GIST), Schwannoma, and leiomyoma are more widely known. But, when considering a colonic intramucosal spindle cell lesion, GISTs and Schwannomas are rare diagnoses. Much more realistic are possibilities of ganglioneuroma, perineurioma, and leiomyoma.[3] These entities have more or less characteristic histology and immunohistochemical profile. In short, perineurioma entraps intestinal crypts and immunohistochemically positive for EMA, claudin 1, and GLUT1; ganglioneuroma can entrap crypts but contain S100-positive ganglion cells; leiomyoma does not entrap intestinal crypts and SMA- and desmin-positive. Antibodies against claudin 1 and GLUT1 might not be available in some institutions. While EMA staining could be a key study in this situation, EMA positivity of perineurioma can be weak or absent, thus rendering the diagnosis of perineurioma somewhat moot. It is reported that, with modifications in the antigen-retrieval protocol and use of a kit for signal amplification, most examples of perineurioma would prove EMA-positive.[2]

Colonic perineuriomas are known to be associated with serrated crypts,[1,4] though its interpretation has been controversial. It has been suggested[3,4] that the perineurioma might induce epithelial changes or that serrated polyps promote perineural proliferation in the stroma. Two components could be merely coincidental. More recently, it is proposed that they are true

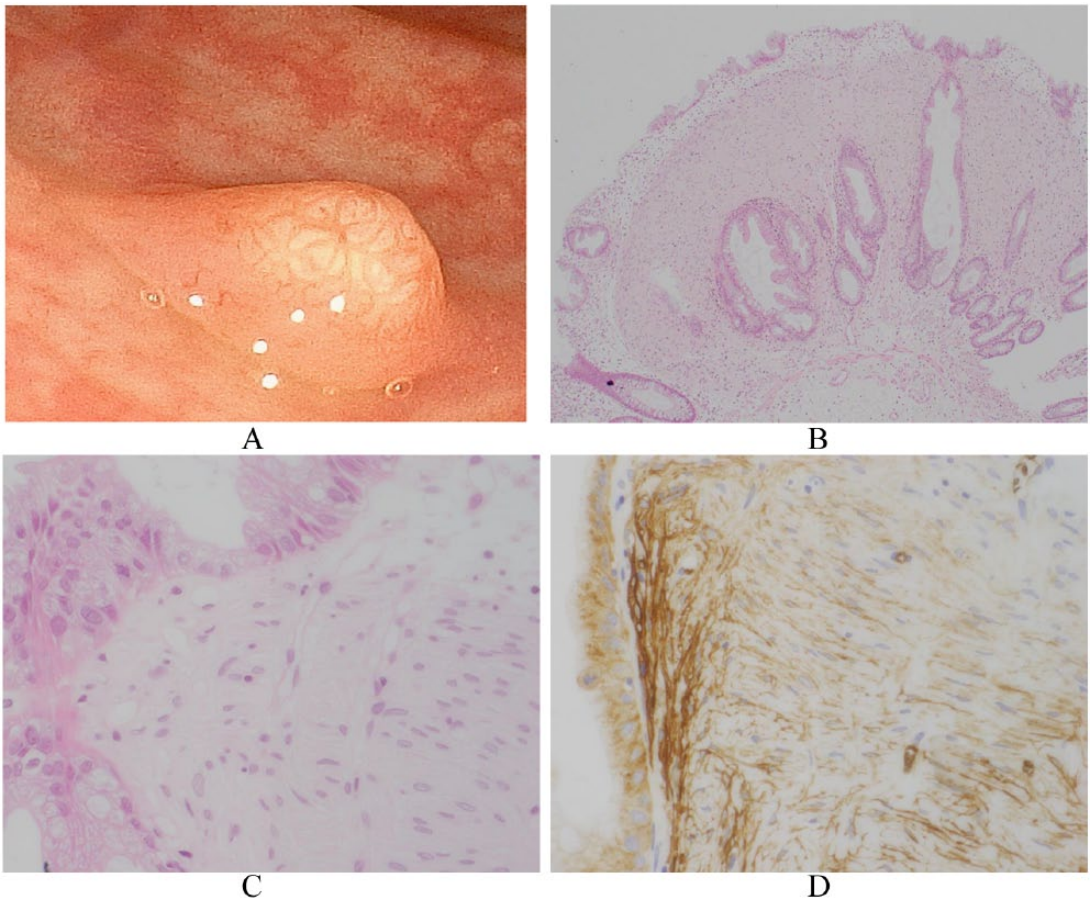

Figure 1. A colonic perineurioma. (A) Endoscopic image. A colonoscopic examination found a 6-mm sessile polypoid lesion with a smooth surface in the sigmoid colon, suggestive of a submucosal tumor. (B, C) Histological examination. Short spindle cells with bland nuclei are proliferating in the lamina propria mucosae, intimately associated with intestinal crypts with microvesicular cytoplasm and architectural serration and dilation (reminiscent of sessile serrated adenoma/polyp) (hematoxylin and eosin, original magnification ×10 [B], and ×400 [C]). (D) Immunohistochemistry for GLUT1. Spindle cells are positive for GLUT1 (original magnification ×400). GLUT1 indicates glucose transporter-1.

mixed epithelial–stromal polyps, involving epithelial–mesenchymal transition.[5] BRAF V600E mutation, which is well known in conventional hyperplastic polyps and sessile serrated adenoma/polyps (SSA/P), has been detected in these seemingly composite lesions, both cytogenetically and immunohistochemically,[5-7] supporting the notion that the epithelial components are true serrated lesions. But the exact nature, neoplastic or reactive, of mesenchymal component is still controversial. Also it is not understood whether serrated lesions associated with perineural proliferations have the same precancerous status as conventional serrated lesions. The perineurioma from our case had entrapped crypts with morphological resemblance to those of SSA/P, though falling short of being diagnostic of SSA/P. Our case failed to show immunoreactivity with BRAF V600E mutation–specific antibodies.

Perineurioma, although rare, is a well-established entity in gastrointestinal pathology and, along with its association with serrated lesions, should be widely recognized.

Author Contributions

All authors were involved in the diagnosis and clinical care of the patient. TO and HK drafted the manuscript. EO and SN provided the endoscopic photograph. All authors contributed to the manuscript revision.

ORCID iD

Tomoyuki Otani https://orcid.org/0000-0002-4351-324X

REFERENCES

1. Eslami-Varzaneh F, Washington K, Robert ME, Kashgarian M, Goldblum JR, Jain D. Benign fibroblastic polyps of the colon: a histologic, immunohistochemical, and ultrastructural study. *Am J Surg Pathol*. 2004;28:374–378.
2. 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.
3. 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.
4. Groisman GM, Polak-Charcon S, Appelman HD. Fibroblastic polyp of the colon: clinicopathological analysis of 10 cases with emphasis on its common association with serrated crypts. *Histopathology*. 2006;48:431–437.
5. Agaimy A, Stoehr R, Vieth M, Hartmann A. Benign serrated colorectal fibroblastic polyps/intramucosal perineuriomas are true mixed epithelial-stromal polyps (hybrid hyperplastic polyp/mucosal perineurioma) with frequent BRAF mutations. *Am J Surg Pathol*. 2010;34:1663–1671.
6. Pai RK, Mojtahed A, Rouse RV, et al. Histologic and molecular analyses of colonic perineurial-like proliferations in serrated polyps: perineurial-like stromal proliferations are seen in sessile serrated adenomas. *Am J Surg Pathol*. 2011;35:1373–1380.
7. van Wyk AC, van Zyl H, Rigby J. Colonic perineurioma (benign fibroblastic polyp): case report and review of the literature. *Diagn Pathol*. 2018;13:16.