

Multiple Granular Cell Tumors of the Ascending Colon

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Granular cell tumor (GCT), also known as a granular cell schwannoma or Abrikossoff tumor, is rare in the colon.¹ GCT is commonly seen in the subcutaneous tissue and other soft tissue in the body,² most frequently in the oral cavity and esophagus, followed by the duodenum, anus, and stomach.³⁻⁵ GCT is usually a benign tumor, though a malignant counterpart has been reported.^{6,7} This tumor often presents as a single submucosal nodule or polypoid flat mass-like sessile polyp. An aggregate of multiple GCTs in the ascending colon has rarely been reported in the literature.⁸ Most of the reported tumors measure less than 1.5 cm in diameter and are found incidentally during colorectal examinations for other reasons (eg, screening colonoscopy).^{2,7} We present a patient with an aggregate of multiple GCTs (the largest of which measured more than 1.5 cm) found in the ascending colon during screening colonoscopy.

Case Report

A 39-year-old man was referred to a gastroenterologist for a colonoscopy for colorectal cancer screening and intermittent rectal bleeding. The patient had multiple medical disorders, including hypertension, obesity, type II diabetes, hyperlipidemia, asthma, attention-deficit hyperactivity disorder, depression, and erectile dysfunction. He had recently begun to notice a small amount of painless bright red blood on the surface of the stool and on the toilet paper several times per month. He reported having regular bowel movements with soft stool and denied having any other gastrointestinal symptoms. The patient did not drink alcohol or use nonsteroidal anti-

inflammatory drugs. He had lost 9 pounds in the last 3 months with an intensive diet and exercise program. A colon polyp had been recently found in his sister, and his father had been diagnosed with colorectal cancer in his early fifties. Concerned about his risk of colorectal cancer, the patient was referred for a screening colonoscopy. Physical examination revealed an obese man weighing 187 pounds with essential normal vital signs and no anemia or jaundice. A grade 2 internal hemorrhoid was detected in the patient, but no subcutaneous nodules or submucosal masses were detected in the oral cavity. Other physical examinations were unremarkable. Laboratory tests showed an alanine aminotransferase level of 45 U/L, fasting glucose level of 146 mg/dL, low-density lipoprotein level of 129 mg/dL, triglyceride level of 284 mg/dL, and hemoglobin A1C level of 7.8%.

At the time of the colonoscopy, a 6-mm polyp was noted in the cecum and removed via electrocautery snare. A polypoid flat mass was also found along one of the folds, just above the ileocecal valve, measuring approximately 1.5 cm × 2 cm. The overlying mucosa appeared normal, and biopsies were obtained. As the colonoscope was withdrawn further up the colon, several other similar polypoid flat lesions, of smaller sizes, were noted along the folds. As the lesions had normal-appearing overlying mucosa, the endoscopist elected to obtain biopsies and send them to a pathologist before making a definitive decision as to appropriate treatment. Another 5–6-mm polyp was noted in the sigmoid colon and removed by snare polypectomy. The colonic mucosa was otherwise unremarkable, with no evidence of inflammation, ulceration, or other mass lesions (Figure 1). The patient was observed for 30 minutes and then discharged. There were no immediate or delayed complications.

Histologic examination of the biopsy tissue revealed a nest of plump histiocyte-like tumor cells with abundant

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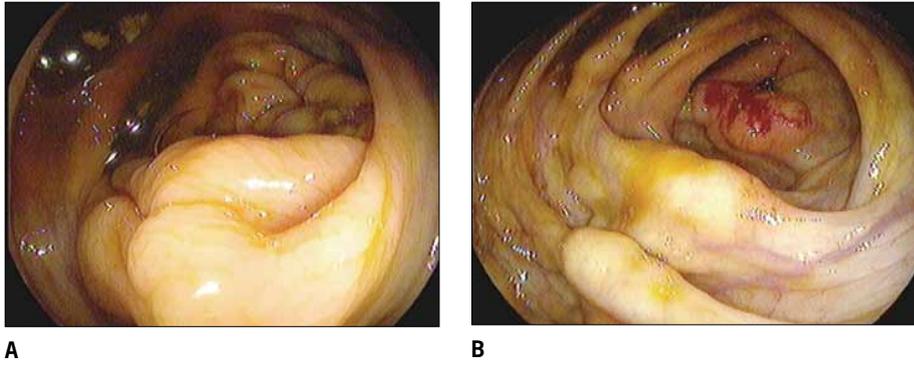


Figure 1. Endoscopy revealed a large flat polypoid mass with normal-looking mucosa approximately 1.5 cm × 2.0 cm in diameter (A) and two other sessile polyps along other folds in the ascending colon (B). Two additional sessile polyps in more distal parts of the ascending colon are not shown.

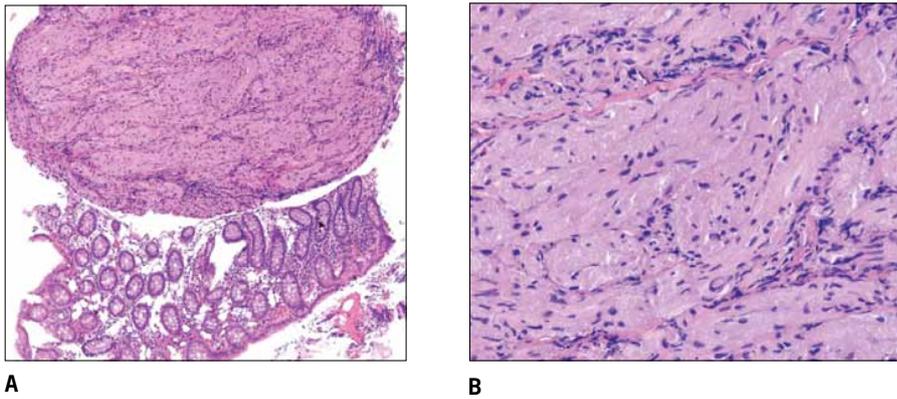


Figure 2. Biopsy revealed a submucosal tumor consisting of nests of granular cells with eosinophilic granular cytoplasm (hematoxylin and eosin stain). Microscopic low-power view (A) and high-power view (B).

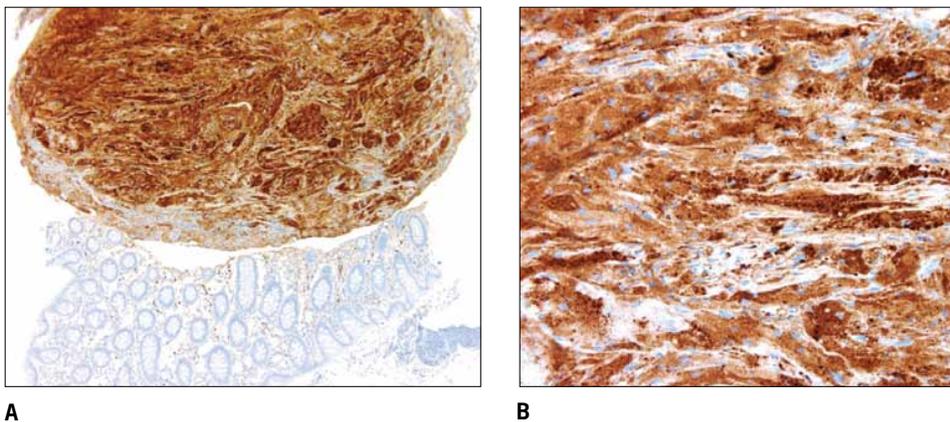


Figure 3. Diffuse and strong expression of S-100 protein in tumor (shown by immunohistochemical examination). Microscopic low-power view (A) and high-power view (B).

granular eosinophilic cytoplasm containing acidophilic periodic acid Schiff–positive, diastase-resistant granules (Figure 2). Immunohistochemical analysis showed that the tumor cells expressed S-100 protein (Figure 3). The flat lesions were diagnosed as GCTs occurring in the ascending colon, and 2 polyps that were removed showed hyperplastic architecture.

Discussion

Since the first description by Abrikossoff in 1926,⁹ fewer than 100 cases of GCTs have been reported in the litera-

ture.^{8,10} An aggregate of multiple GCTs has been reported in only 15 patients in the literature.⁸ Most GCTs are of small to average size (5–6 mm), with the largest reported GCT in the colon being 1.5 cm.^{10,11} It is to our best knowledge that this is the first case report of an aggregate of multiple GCTs with the largest tumor measuring more than 1.5 cm in the ascending colon. The tumors in our patient appeared to be submucosal with intact overlying mucosa and were asymptomatic in their clinical presentation and found incidentally during colonoscopy for colonic cancer screening. There is no consensus for the optimal management of this tumor. A conservative

approach with endoscopic removal under endoscopic ultrasound is appropriate, as most GCTs are benign. Malignant GCTs are extremely rare; only 30 cases have been reported in the literature.^{8,12} In a study of 622 patients under the age of 50 who had hematochezia and were undergoing screening colonoscopy for colonic polyps, only 1 case of GCT was found.⁶ Malignant behavior correlates with tumor size; it has been found that more than 60% of metastatic GCTs are larger than 4 cm in diameter.^{5,7,12}

GCT is assumed to derive from Schwann cells. There is a strong correlation between GCT and peripheral nerves.⁸ The immunohistochemistry study with S-100 protein and myelin proteins or myelin-associated glycoproteins also supports the neural origin of GCTs. These tumors can be found anywhere in the body with a nerve supply, though predominantly in subcutaneous tissue.¹ Most colonic GCTs are found in the ascending colon or anorectal area, with flat polypoid submucosal nodules covered by normal mucosa resembling sessile polyps.⁸ GCTs have also been reported in the muscle layer of the gastrointestinal tract as well as subserosal areas.^{3,5}

It is almost impossible to diagnose GCTs based upon macroscopic and endoscopic examination, due to unremarkable appearance. In our case, GCT seemed unlikely, as the endoscopic features of the tumor resembled those of sessile polyps. Endoscopic ultrasound has been extensively used for determining the depth of tumor invasion in the gastrointestinal wall. The endoscopic ultrasound evaluation of GCTs will be helpful in the selection of tumor resection strategies, as endoscopic removal of large submucosal tumors carries a high risk of perforation and bleeding in the ascending colon.^{10,13,14} An endoscopic ultrasound-guided endoscopic mucosal resection in an experienced center, or a partial colectomy with a thorough pathologic examination, can be a good option in our case with proper endoscopic follow-up. Esophagogastroduodenoscopy should be pursued to exclude GCTs in the upper gastrointestinal tract, as GCTs are more prevalent in the esophagus and stomach.^{3,15}

In summary, we report the first case of an aggregate of multiple GCTs with the largest tumor measuring more

than 1.5 cm in the ascending colon. GCTs of the colon are often found incidentally during colonoscopy, and the possibility of GCT should be included in the differential diagnosis of sessile polyps of the colon. An endoscopic ultrasound-guided endoscopic mucosal resection in an experienced center, or surgical removal with a thorough pathologic examination, is recommended in our case with proper endoscopic follow-up.

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