

# Granular Cell Tumor of the Colon: An Exceptionally Rare Finding

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**G**ranular cell tumors (GCTs) are rare and were first described by Abrikosof in 1926 [1]. These tumors are generally benign and only 1–2% of cases were reported as malignant. GCTs are soft tissue neoplasms arising from Schwann cells [2]. They can be found anywhere in the body, but are most commonly seen in skin and subcutaneous tissue, the oral cavity, and the gastrointestinal tract. However, gastrointestinal involvement, particularly the colon, is extremely rare. GCTs are relatively uncommon in the gastrointestinal track, accounting for 5–11% of all GCTs [3].

Colonic GCTs are often asymptomatic and may be detected incidentally during colonoscopy screening or through examinations performed for non-specific gastrointestinal symptoms. To date, most of what is known regarding GCTs is limited to case reports.

We report a rare case of a descent colon GCT in a 52-year-old male patient.

## PATIENT DESCRIPTION

A 52-year-old man with no medical comorbidities presented to the gastroenterology clinic for surveillance colonoscopy after polypectomy. The patient denied any gastrointestinal-related complaints. Surveillance colonoscopy revealed good bowel preparation. A 1.5 cm sessile polyp in the left colon was noted. A white-light colonoscopy showed a well-circumscribed lesion covered with rough irregular mucosa

on the top of the lesion, which was removed with endoscopic hot submucosal snare. The pathology of the polyp revealed a granular cell tumor. Immunohistochemical staining for S100 protein was positive [Figure 1]. Neuron-specific enolase (neuron-specific enolase) was negative for desmin.

## COMMENT

GCT is a rare tumor that usually appears as a solitary neoplasm of mesenchyme origin. Most GCTs of the gastrointestinal tract are submucosal and thus are covered by normal mucosa. These tumors follow a benign course. They are thought to originate from the Schwann cells due to its positive staining for S100 protein, myelin, and myelin associated glycoprotein [4]. These tumors are generally found incidentally.

GCTs are commonly misdiagnosed as carcinoid tumors because both tumors are mucosal or submucosal in location and have similar endoscopic findings. The carcinoid tumor arises from the enterochromaffin cells of the gastrointestinal tract

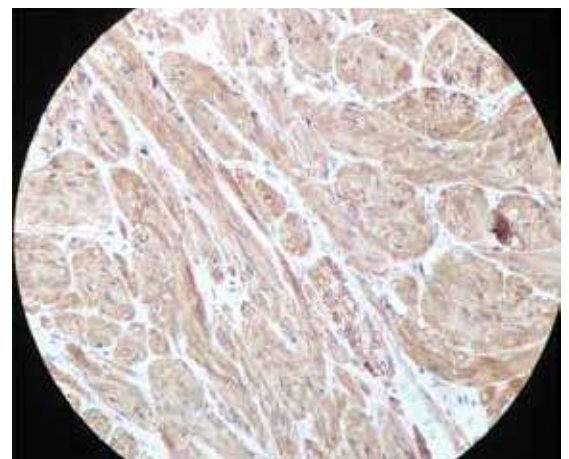
and can be differentiated histologically and chemically from GCT [5]. The final diagnosis of GCT depends on pathological findings. Neoplastic cells are plump, histiocyte-like, and bland looking with abundant granular eosinophilic cytoplasm containing acidophilic, PAS-positive, diastase-resistant granules. A small, uniform nuclei in which mitotic figures are absent is noted and neural markers, including S100 protein or NSE, are expressed uniformly.

The main treatment for a benign GCT is endoscopic resection. Different methods of endoscopic resections (mucosal and submucosal resections) are widely used and are curative in most cases. Evaluation of lateral and deep margins are needed to prevent recurrence.

## CONCLUSION

GCTs in the gastrointestinal tract are rare. They are mostly benign tumors starting from Schwann cells in the submucosa. GCTs are commonly misdiagnosed as carcinoid tumors. Submucosal tumors of the colon must be included in the differential

**Figure 1.** Immunohistochemical analysis revealed positive staining of S100 in the nucleus and cytoplasm



diagnosis. Most gastrointestinal GCTs are treatable with endoscopic resection, which is often curative.

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### Capsule

#### Signals from lipid hydrolysis

An exploration of how lipolysis is coupled to mitochondrial changes that increase oxidative capacity may reveal how a Mediterranean diet is beneficial. **Najt** et al. found that monounsaturated fatty acids (MUFAs) released by lipolysis bound to the protein perilipin 5, which carried them to the nucleus. MUFAs also bound to the deacetylase sirtuin 1 (SIRT1), which is implicated in the health span improved

effects of caloric restriction. MUFA binding increased SIRT1 activity toward certain substrates. Foods like nuts, avocados, and olive oil all provide MUFAs in the diet, and these effects could in part underlie their beneficial properties.

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### Capsule

#### Correcting airways in cystic fibrosis

Cystic fibrosis is caused by inactivating mutations in the cystic fibrosis transmembrane conductance regulator (*CFTR*) gene. Deletion of phenylalanine-508 is the most common mutation. **Vaidyanathan** et al. used CRISPR-associated protein 9 (Cas9)-mediated *CFTR* editing and adeno-associated virus delivery to correct the phenylalanine-508 deletion in upper-airway basal stem cells from 10 patients with cystic fibrosis. They achieved 30 to 50% gene correction and improved CFTR protein

function. The corrected cells successfully engrafted within a clinically approved scaffold. This finding offers possibilities for clinical development of upper airway implants to treat respiratory failure, which is the biggest cause of mortality in cystic fibrosis patients.

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### Capsule

#### Somatic inflammatory gene mutations in human ulcerative colitis epithelium

With aging, normal human tissues experience an expansion of somatic clones that carry cancer mutations. However, whether such clonal expansion exists in the non-neoplastic intestine remains unknown. **Nanki** et al., using whole-exome sequencing data from 76 clonal human colon organoids, identified a unique pattern of somatic mutagenesis in the inflamed epithelium of patients with ulcerative colitis. The affected epithelium accumulates somatic mutations in multiple genes that are related to IL-17 signaling, including *NFKB1Z*, *ZC3H12A*, and *PIGR*, which are genes that are rarely affected in colon cancer. Targeted sequencing validates the pervasive spread of mutations that are related to IL-17

signaling. Unbiased CRISPR-based knockout screening in colon organoids revealed that the mutations confer resistance to the pro-apoptotic response that is induced by IL-17A. Some of these genetic mutations are known to exacerbate experimental colitis in mice, and somatic mutagenesis in human colon epithelium may be causally linked to the inflammatory process. These findings highlight a genetic landscape that adapts to a hostile microenvironment, and demonstrate its potential contribution to the pathogenesis of ulcerative colitis.

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