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Case report

Granular cell tumor of the cecum: Case report of mini invasive surgical resection and review of the literature

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ABSTRACT

Introduction and importance: Granular Cell Tumor (GCT) is a rare lesion with unclear histogenesis, predominantly described as a skin lesion. Visceral localization of GCT is even more rare with few cases reported in the literature. Nowadays GCT guidelines are not available.

Case presentation: A 45-year-old Caucasian woman was visited in our surgical department for significant weight loss (about 30 kg) during the previous 6 months. Colonoscopy showed a caecal polypoid lesion that was resected with a diatermic loop and classified as GCT. Microscopically, the neoplasm partially involved the mucosa and diffusely the submucosa, extending to the endoscopic resection margins. Because of the high risk of perforation during endoscopic radicalisation attempt, the patient underwent ileocecal resection. The postoperative course was uneventful.

Clinical discussion: GCT is a rare soft tissue neoplasm probably deriving from Schwann cells. The main treatment for GCT is an endoscopic mucosal/submucosal resection. Nevertheless, a radicalization of the lesion through a surgical attempt should be preferred when the endoscopic procedure is linked to a high risk of perforation.
It is important to distinguish GCT from other polypoid lesions of the colon, due to its malignant potential (about 2%) and its relapsing capacity when margins are involved.

Conclusion: GTC is a rare neoplasm and as its diagnosis is made only histologically, it should be included in differential diagnosis of colonic polypoid lesions. Surgery can be considered the best choice when an endoscopic attempt of GCT lesions is linked to a high risk of colon perforation.

1. Introduction

Granular Cell Tumor (GCT) is a rare lesion with controversial origin [1].

Weber identified GCT in 1854 but it was firstly described in 1926 by Abrikossof. Due to its supposed skeletal muscle origin, GCT was initially named granular cell myoblastoma and only after the advent of immunohistochemistry and electron microscopy was redesignated as granular neuroma or granular cell schwannoma [1].

The diagnosis is almost based entirely on histological exam. The main microscopic architecture of the lesion include: poorly defined mass composed of sheets of cells or nests separated by thin collagenous bands with overlying squamous epithelium [2].

Granular cell tumors can occur near peripheral nerve branches (often within the perineurium) with poorly defined or infiltrative margins, widely surrounded by collagen.

GCT cells stains are positive for protein S-100 and neuron-specific enolase, and negative for epithelial, muscle, endothelial and glial cells markers [2].

Fanburg-Smith outlined six criteria to summarize GCT histological features: necrosis, spindling of tumor cells, vesicular nuclei with large nucleoli, increased rate of mitosis (greater than two mitoses per 10 high-power field), a high nuclear/cytoplasmic ratio and pleomorphism. The absence of these criteria leads to define the lesion benign, tumors with one or two criteria are considered atypical, and neoplasms with three or more criteria are classified as malignant [3].

At this time universally accepted staging schemes are not available for GCTs, so it is usually classified in ICD-10 as soft tissue cancer [2].

Malignant GCTs are usually detected in lower limbs, while benign GCTs are usually located in head and neck. Metastasis has been reported in regional lymph nodes, lungs, and bones. Advanced age, tumor size (>5 cm), rapid growth of the lesion are clinical features that are usually

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associated with malignant GCTs [4].

Prognostic indices include age at diagnosis, sex, stage and surgical resection. It is difficult to outline prognostic indices because literature reports only few data analysis regarding just cutaneous malignant GCTs [4]. Moreover, some studies highlighted an increased risk for pancreas and kidney tumors in GCT patients [5].

There is no evidence to support the use of radiotherapy and chemotherapy, however some studies report Pazopanib as successful pharmacological treatment for metastatic tumors [6].

This paper reports the case of a young Caucasian woman with an asymptomatic colocecal submucosal lesion found by chance during endoscopy. The histological typing of the biopsy identified a GCT, and our team performed a surgical radicalization of the lesion.

2. Case report

A 45-years-old Caucasian woman noticed a weight loss of 30 Kg during the previous 6 months. The patient belongs to a low socio-economic class, she is a smoker and she sometimes drinks. Patient anamnesis reported: sinus tachycardia treated with beta-blockers, major depression disorder with anxiety and agoraphobia in treatment with SSri, SNri, Trazodone and Benzodiazepines. She has performed appendectomy, laparoscopic cholecystectomy, two caesarean sections and total thyroidectomy in treatment with levothyroxine. Moreover, medical history reports that her father died due to a Pulmonary Neoplasia.

The Colonoscopy examination performed in December 2020 detected a protuberance of 8 mm in diameter located in front of the caecal valve. The medical report described the lesion as a submucosal swelling covered with normal, semi-pedicled and hard mucosa (Fig. 1). The colonoscopy procedure consisted of injecting the lesion with adrenaline, then cutting off its pedicle with a diathermic loop and, finally, putting four haemostatic clips (Fig. 2).

The removed specimen consisted of a polypoid lesion with a major axis measuring 10 mm. Histopathologically, the lesion partially involved the mucosa, diffusely the submucosa reaching resection margins. Degenerative focal nuclear atypia and a low mitosis index were found, but there was no sign of necrosis (Fig. 3a).

Immunohistochemically, tumor cells were positive for S100 (Fig. 3b), calretinin, CD68, and negative for HMB 45, dog1, desmin, actin, CD34, gfap.

The radicalization of the lesion is mandatory when margins are involved. In our case, due to the depth of the previous resection, a new endoscopic approach was linked to a high risk of colon perforation; so, a mini-invasive surgical procedure was suggested.

It was performed Computer Tomography that reported the absence of visible abnormalities.

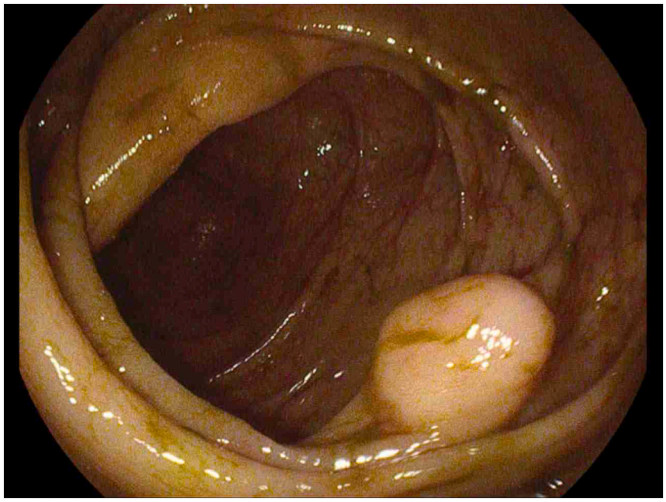

Fig. 1. Lesion identified during endoscopic exam.

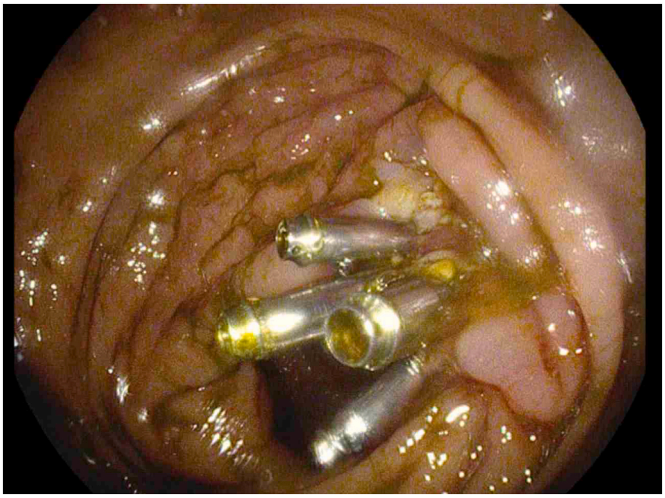

Fig. 2. Clips apposition after diathermic loop during endoscopic procedure.

In January 2021, videolaparoscopic ileocecal resection with ileocolic anastomosis was performed (Fig. 4). The resection involved: 5 cm of terminal ileus, the ileocecal valve, 4 cm of cecum and 3 cm of proximal colon. All specimens were submitted for a new histopathological evaluation.

The pathological report confirmed the presence of a lesion at 3.2 cm from the distal resection margin. The lesion appeared as a scar-like mucosal area with residual microfocus of granular cell tumor approximately 3 mm in diameter. Margins were free of disease. Immunohistochemical examination confirmed the profile showed by the previous specimen.

Post-operative course was uneventful, with resumption of feeding nutrition and discharge respectively in the second and the fifth post-operative day.

3. Discussion

Granular Cell Tumor (GCT) is a rare lesion with a controversial origin; the most accepted histogenesis is a schwannian origin [1].

Even if GCT aetiology is not clear, several studies reported that this tumor often shows recurrent genetic mutations in the setting of specific syndromes such us LEOPARD and Noonan syndromes [7,8]. Anyway, many of syndrome-associated gene mutations have not yet been tested in large studies and are mostly derived from case studies or small case series.

Granular cell tumor epidemiology is limited because studies have been hampered by its unknown origin and rare occurrence. What is known about GCT derives almost from case reports, so epidemiological and survival data are still inconsistent or incomplete.

Even if GCT can affect all age groups, it commonly arises during the fourth and sixth decade predominantly in women [9,10]. The commonest sites affected are skin, oral cavity, digestive tract and subcutaneous tissue [4–9]. GCT lesions are usually solitary and smaller than 3 cm, typically localised in the dermis or subcutis and less frequently in submucosa, smooth muscle or striated muscle. GCT is typically a benign lesion and only 2.0% of cases are malign with poor diagnosis and few therapeutic options [4].

Some studies reports that 32% of Granular Cell Tumors presents local recurrence. Local recurrence can regard benign lesion as well as malignant ones. Benign lesions with negative margins have a recurrence of 2–8%, while it reaches the 20% when margins are involved. GCT malign lesions are aggressive and surgical treatment has low efficacy. Moreover, 50% of patients with malign lesions presents metastasis within two years. Overall survival is 39% at 3 years [3,10].

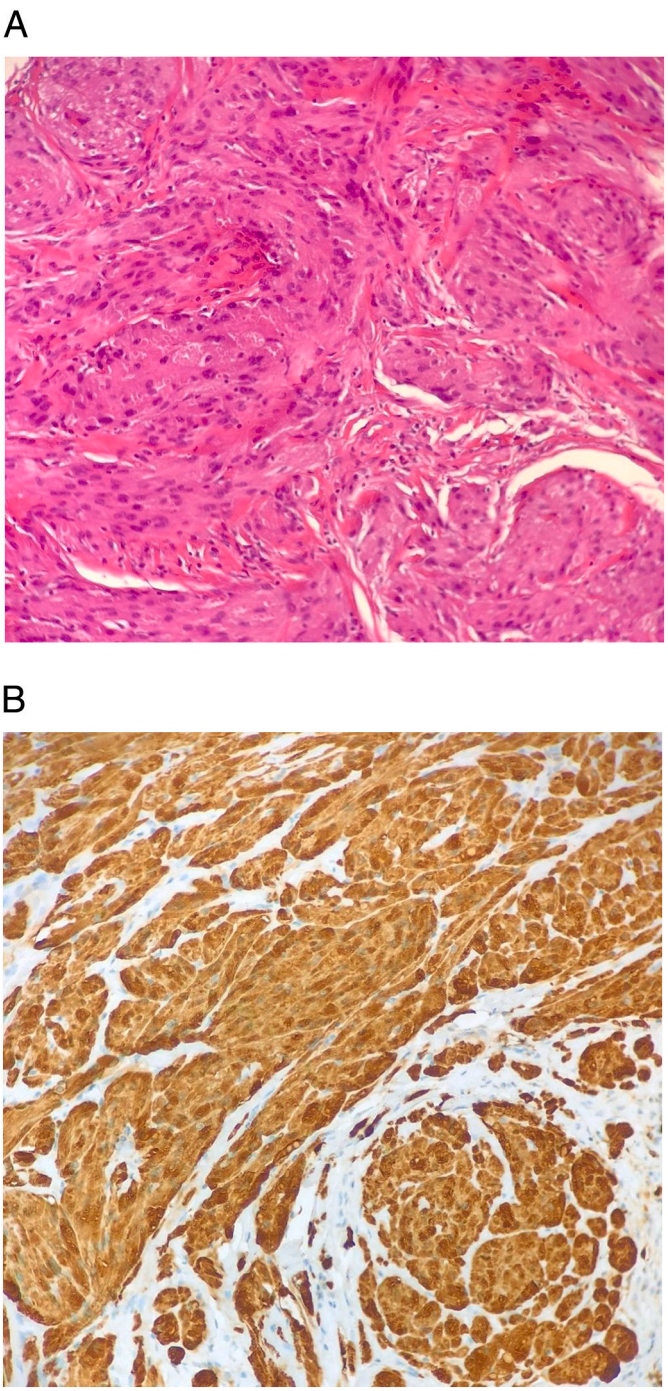

Fig. 3. a Photomicrograph section of colonic granular cell tumor (hematoxylin and eosin, original magnification ×40).
b Immunohistochemical analysis revealed positive staining of S 100 in the nucleus and cytoplasm (original magnification ×40).

Some studies reported GCT lesions in internal organs, such as in respiratory system and digestive tract [4].

Gastrointestinal GCTs represent the 8% of all GCTs [11]. Mucosal or submucosal nodules can arise in GCT of the esophagus, stomach, small and large intestine, larynx, bronchi, lungs, gallbladder and biliary tract [10].

Some patients show aspecific symptoms such as belching, dysphagia, abdominal distension, or hematochezia [7]. Macroscopical examination of GCT tumors reveals hard lesions, isolated with a mucosal nodule or covered with normal mucosa, not distinguishable from other gastrointestinal polyps. Hence, microscopical evaluation is diriment to decide if surgical treatment is necessary [4,11–13].

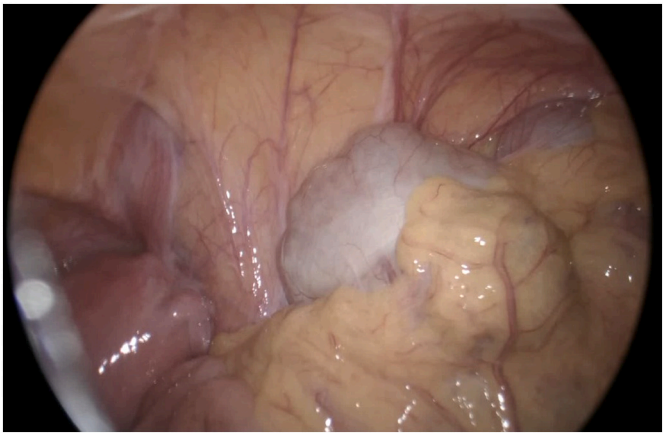

Fig. 4. Identification site of lesion in laparoscopy.

The most used approach to treat GCT of the colon is an endoscopic one. However, endoscopy is linked to some contraindications and limits that can lead specialists to prefer surgical resection [14]. Some specialists recommend a surgical resection for lesions >5 cm, while others for lesions >2 cm [4,7,13].

The Mohs surgical technique is usually applied for superficial lesion of the skin [15].

Lesions of gastrointestinal tract are usually evaluated with an accurate endoscopic examination assisted by ultrasound endoscopy. This exam is important to evaluate the macroscopic characteristics of the lesion such us size, position, vertical depth. Surgical or endoscopic resection is recommended for symptomatic tumors, rapidly growing lesions or lesions bigger than 1 cm. Anyway, for lesions bigger than 2 cm many specialists recommend colectomy [4–7]. Our patient was firstly treated with an endoscopic procedure, then, due to the risk of perforation, it was performed a surgical procedure. The minimal ileocecal resection involved 5 cm of terminal ileus, the ileocecal valve, 4 cm of cecum and 3 cm of ascending colon. The procedure achieved entirely with mini-invasive surgery.

4. Conclusion

GCT is an uncommon skin tumor with a rare localization in internal tissues, especially in the colon. However, the inclusion of granular cell tumor in differential diagnosis options of polypoid lesions could be diriment.

Considering the risk of perforation linked to endoscopy and the high risk of recurrence, when margins are involved a surgical treatment could be the best solution to remove the whole lesion. Anyway, the best treatment should be suitable case by case in a multidisciplinary contest.

Provenance and peer review

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Ethical approval

Ethical approval has been exempted by our institution because this is a case report and no new studies or new techniques were carried out.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for the Editor-in-Chief of this journal on request.

Referencing the checklist

This case report has been reported in line with the SCARE Criteria 2020 [16].

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Author contribution

Roberto Cantella: drafting the manuscript, literature research.

Giuseppe Evola: drafting the manuscript, literature research.

Carla Di Stefano: Operated on the patient, drafting the manuscript, literature research.

Ezio Trusso Zirna: drafting the manuscript, literature research.

Marianna Iudica: drafting the manuscript, literature research.

Luigi Piazza: Operated on the patient, drafting the manuscript, literature research, Director of the Department.

Registration of research studies

Not applicable.

Guarantor

The guarantor for this case report is Roberto Cantella.

Declaration of competing interest

All the authors certify that there is no conflict of interest regarding the material discussed in the manuscript.

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