

CASE REPORT

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Coincidence of Gastrointestinal Stromal Tumor and Sessile Serrated Lesion in the Appendix

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ABSTRACT Although gastrointestinal stromal tumor (GIST) is one of the most commonly seen mesenchymal tumor of gastrointestinal system, it's rare in appendix. Incidental sessile serrated lesions (SSLs) which are seen during colonoscopy are also rare in the appendix. In our patient who was operated with a diagnosis of acute appendicitis, we detected an incidental GIST and accompanying SSL. Up to date, coincidence of these 2 entities in the same case hasn't been reported in the literature. Despite its small size and absence of mitotic activity of the GIST in our case, GISTs are a special tumor group. It is also reported that SSLs located in the appendix are more aggressive than located in colorectal region. Due to the rarity and clinical courses of these entities in the appendix, we wanted to present our case with the literature.

Keywords: Appendix; gastrointestinal stromal tumor; sessile serrated lesion

Gastrointestinal stromal tumors (GISTs) are the most common mesenchymal tumors of gastrointestinal tractus. While these tumors are commonly seen in stomach and small intestine, less commonly seen in colon and esophagus.^{1,2} Appendiceal GIST is even rare with less than 50 reported cases in the literature.³⁻⁸ As these tumors are rarely seen, their risk profiles, appropriate treatment and follow up are not well defined. Sessile serrated lesions (SSLs) which are usually asymptomatic are incidentally seen during colonoscopic examination. They are generally located in the right colon, but rare in the appendix.^{9,10} Due to the rarity and clinical courses of these entities in the appendix, we wanted to present our case with the view of literature.

CASE REPORT

Seventy seven years old male patient applied to emergency department with nausea and abdominal pain. There was no significant pathology in his computer-

ized tomography. He underwent surgery with a diagnosis of acute appendicitis. Appendix was edematous and hyperemic during per-op examination and there was a widespread purulent material in the abdominal cavity. In macroscopic examination, appendix was 7 cm in length with a diameter of 0.5 cm. There was no significant gross pathology in serial sections of the appendix. Histopathological examination revealed infiltration of polymorphonuclear leukocytes in whole layers which was more severe in the mucosa. In sections from proximal appendix, horizontally oriented crypt dilatation, serrated changes in the epithelium extending through the crypt base and papillary projections of crypts were seen (Figure 1). Apart from this lesion, a nodular lesion with a diameter of 0.3 cm localized in the subserosal region of the tip of the appendix which also related to muscularis layer, was noted (Figure 2a). The lesion was composed of spindle cells showing a storiform pattern (Figure 2b). There was no cytological atypia and mitotic activity in the cells. Leiomyoma, peripheral nerve sheath

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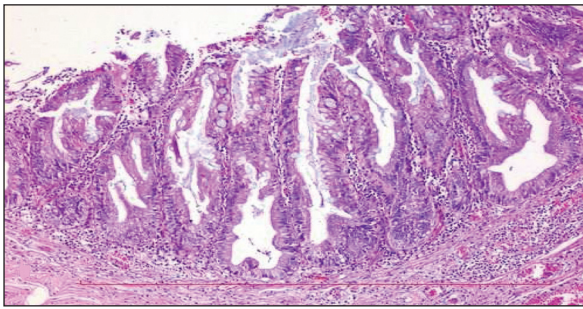


FIGURE 1: Horizontally oriented crypt dilatation and serrated changes in the epithelium (H&E, x100).

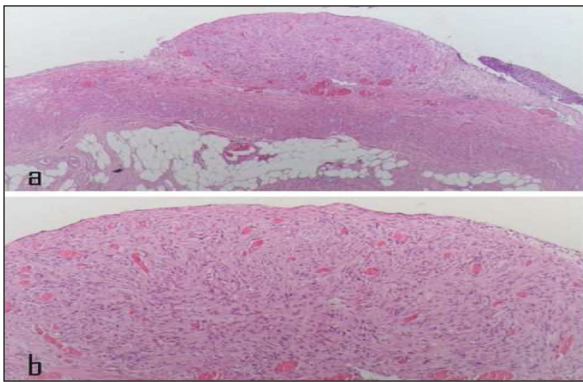


FIGURE 2: a) A nodular lesion localized in the subserosal region (H&E, x40), b) The lesion composed of spindle cells (H&E, x100).

tumor and GIST was taken in the differential diagnosis with these morphological findings. In immunohistochemical (IHC) studies, tumor cells were positively stained for CD117, DOG1, CD34, and were focally positive for S-100 (Figure 3). Actin and desmin were negative. There is no proliferative activity in tumor cells with Ki-67. Based on the histopathological and the immunohistochemical findings, the patient was diagnosed with “GIST and sessile serrated lesion (SSL)”. Surgical margin was negative for both of the lesions. Due to the clinical course of these 2 entities, although the surgical margins were negative, clinical follow-up was recommended.

The patient has given written consent for this case report.

DISCUSSION

GISTs in the appendix is very rare forming 0.1% of all GISTs.³ GISTs are thought to derive from or dif-

ferentiate towards the interstitial cells of Cajal (ICC) as most demonstrate a similar immunoprofile: CD117+, CD34+ and DOG1+.^{5,6} Several approaches have been employed to describe small GISTs in the stomach such as: minute GISTs, GIST tumourlets, ICC hyperplasia, microscopic GISTs, minimal GISTs, and sclerosing stromal tumourlets. There has been no uniformity in terms of the size of these small or microscopic lesions which can be as small as 0.2 mm and others up to 10 mm, all falling within the category of microscopic or minute GISTs. But this terminology is applied to GISTs originating from stomach. These lesions have a predilection for the gastro-oesophageal junction and occur slightly more frequently in the proximal stomach.⁶ As appendiceal lesions are very rare, there is no known consensus on the literature if these terminology can be applied to GISTs arising from appendix.

Multifocal hyperplasia of ICC (hyperplasia) is a precursor of hereditary GISTs in patients with germline mutations of c-KIT or platelet-derived growth factor receptor A (PDGFRA), but precursor lesions of sporadic GISTs have not been defined yet.⁷ These lesions are well defined in the stomach of patients with mutations of c-KIT or PDGFRA; but Cajal cell hyperplasia is not defined in the appendix up to date. As our patient does not have a syndromic background, using the terminology of Cajal cell hyperplasia would be controversial.

Studies show that even the smallest lesion has been shown to harbour mutations of the c-kit gene.⁶⁻⁸ Using terminology of GIST in the appendix may be

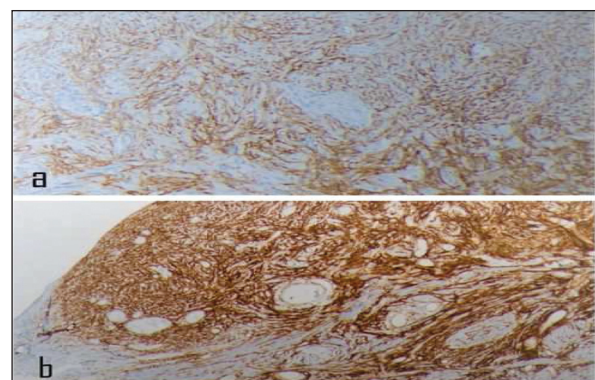


FIGURE 3: a) CD117 positivity in tumor cells (IHC, original magnification x100), b) DOG1 positivity in tumor cells (IHC, original magnification x40).

in favor of the patient. There is little knowledge in the literature regarding the prognosis of these lesions. As seen in our case, its incidence is higher in men. These lesions are generally smaller than 3 cm.^{4,9} According to Miettinen & Lasota-Armed Forces Institute of Pathology data, the risk of progressive disease in GISTs depends on the the location, diameter and mitotic index of the tumor.¹ All reported GISTs in the appendix are included in the prognostic Group 1 according to these data. These lesions show spindle morphology and are mitotically inactive.^{1,2} The lesion which was incidentally identified in our case was accepted as prognostic Group 1, as it was composed of spindle cells, diameter of the lesion was 0.3 cm and there was no mitotic activity.

Although progressive disease was not observed in the cases which were followed up, it is emphasized that GISTs are a special tumor group in the literature. While the standard treatment for most cases is simple appendectomy, there are studies reporting that adjacent tissue or organ resection may be necessary to minimize the risk of local recurrence.¹⁰

Serrated polyps of the colon and the rectum are classified as hyperplastic polyp, SSL and the traditional serrated lesion.¹¹ SSL are most commonly seen in right colon, but they can be detected also in the appendix incidentally. However, the actual incidence is not known except for case reports or small case series.^{11,12} There is an increase in the number of cases diagnosed with SSL in recent years due to the increased awareness of this entity and change in epigenetic factors.¹⁰

SSLs that circumferentially involve the appendix are most commonly located in the tip.¹¹ In our case, SSL was localized in the proximal appendix. Because these lesions are usually quite small, they are recognized during microscopic examination. Therefore, it is emphasized that macroscopic sampling is also important besides careful microscopic examination.^{11,13}

As we have described in our case, the serrated appearance, crypt dilatation and L-shaped or in-

verted T-shaped horizontal orientation at the base of the crypts are main diagnostic features for SSL.^{11,13}

Although appendiceal SSLs are similar in many respects to colorectal SSLs, it is reported that they may exhibit more aggressive behavior due to histo-functional and anatomical differences of the appendix.^{9,10}

In the literature, tumors associated with SSLs and non-appendiceal malignities accompanying GIST have been reported, but the association of GIST and SSL in the same case as seen in our case has not been described.^{13,14}

In conclusion, despite its small size and the absence of mitotic activity of the GIST in our case, GISTs are a special tumor group. It is also reported that SSLs located in the appendix are more aggressive than those located in the colorectal region. Clinical follow-up should be recommended for patients treated with simple appendectomy because of the clinical course of the two entities.

Source of Finance

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Selma Şengiz Erhan; **Design:** Selma Şengiz Erhan, Pınar Engin Zerk; **Control/Supervision:** Selma Şengiz Erhan, Pınar Engin Zerk, Elis Kangal, Ali Alemdar; **Data Collection and/or Processing:** Selma Şengiz Erhan, Elis Kangal; **Analysis and/or Interpretation:** Selma Şengiz Erhan, Pınar Engin Zerk, Ali Alemdar; **Literature Review:** Selma Şengiz Erhan, Elis Kangal; **Writing the Article:** Selma Şengiz Erhan, Pınar Engin Zerk; **Critical Review:** Selma Şengiz Erhan, Pınar Engin Zerk, Ali Alemdar.

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