Leiomyomatous Lesions of the Colon: Two Case Reports with Radiological Features, Pathological Correlations and Literature Review

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Received: 14 October 2022
Accepted: 17 October 2022
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DOI 10.5001/omj.2024.04

Abstract

Colonic leiomyomatous lesions are smooth muscle tumors including both benign leiomyoma and malignant leiomyosarcoma. They usually occur in elderly and middle-age groups. They are rare representing 3% of all gastrointestinal leiomyomas. Descending and sigmoid colon are the most common affected segments of colon. Patients are usually asymptomatic but occasionally they may present with abdominal pain, hemorrhage, and intestinal obstruction. Radiological findings for these lesions are variable and overlapping with other diagnosis but usually manifest as large lesions with lobulated margins, extra-colic growth and heterogeneous enhancement. Final diagnosis is achieved by tissue diagnosis in which immunohistochemistry is used to differentiate them from other types of mesenchymal tumors like Gastrointestinal Stromal Tumor (GIST). A complete surgical/endoscopic resection is usually curative with excellent prognosis in cases of benign leiomyoma. In cases of leiomyosarcoma, post-surgical chemotherapy and radiotherapy is usually needed with five-year survival of about 50%. We report the radiological findings of two cases of colonic leiomyomatous lesions that presented with nonspecific abdominal pain. The lesions were resected surgically and confirmed histopathologically as leiomyoma and leiomyosarcoma of the colon, respectively. We report the radiological findings with pathological correlation and literature review. To the best of our knowledge, these are the first cases of colonic leiomyomatous lesions to be reported in our country.

Keywords: Leiomyoma, leiomyosarcoma, extra-colic growth, surgical resection.

Introduction

Gastrointestinal (GI) tract smooth muscle tumors commonly occur in the esophagus. They are uncommon in the colorectal region.¹ They usually occur in elderly with no sex or racial predilection.²,³ The exact cause and predisposing factors are still unknown, however, diet and behaviors like smoking or lack of exercise may play a role. Some literature shows that colonic injury or inflammatory bowel disease may increase the risk as well.¹,¹³ In most cases, patients are asymptomatic and these lesions are found incidentally during colonoscopy or radiological imaging.¹,¹⁰ Compared to polyps, they are subepithelial lesions arising from the muscularis propria and appear mainly as sessile lesions. Occasionally, they may appear as pedunculated lesions resulting in preoperative misdiagnosis as epithelial polyps.²,¹⁰,¹¹ Radiologically, colonic smooth muscle tumors are usually large with lobulated margins, extra-colic growth and heterogeneous enhancement.¹,¹⁴,¹⁵ The tissue biopsy is considered to be the gold-standard for confirmation
of the diagnosis.\textsuperscript{1} In some instances, it is difficult to differentiate between benign and malignant lesions and therefore, a complete surgical resection of the leiomyomatous lesion is required.\textsuperscript{4,6} This is usually curative with a good prognosis in cases of benign leiomyoma with no malignant potential or recurrence.\textsuperscript{10,11} However, in cases of leiomyosarcoma, the prognosis depends on the tumour grade and presence of metastasis at the time of diagnosis.\textsuperscript{1,5} Although a metastatic lymphadenopathy is uncommon, a distant metastasis to the liver and abdominal cavity is well known in cases of leiomyosarcoma.\textsuperscript{8,9} Post-surgical chemotherapy and radiotherapy is needed in such cases with 50% five-years survival.\textsuperscript{5,8,9} Here, we report two pathology proven colonic leiomyomatous tumors.

Case Report

Case one

Forty-one years old woman, not known to have any medical issues presented to the emergency department, Royal Hospital, Muscat, Oman, in September 2019 with a history of intermittent lower abdominal pain and pelvic fullness for the past two weeks. She was vitally stable and abdominal examination revealed large pelvic non-tender hard mass. She was referred to gynecology where ultrasound of pelvis was done and revealed a large complex right pelvic mass inseparable from the right ovary. Lab investigations were within normal limits and tumor markers including cancer antigen 125 (CA 125), carcinoembryonic antigen (CEA), Alpha-fetoprotein (AFP), Beta-human chorionic gonadotropin (B-HCG) were negative. Magnetic resonance imaging (MRI) was done and revealed normal uterus and ovaries with a separate large mixed solid and cystic multilobulated midline abdominopelvic mass in close proximity to the transverse colon which looked tethered without causing bowel obstruction. The solid component of the mass demonstrated enhancement (Fig. 1C,D,E,F). Computed tomography (CT) staging was done and showed that the corresponding mass infiltrates the transverse colon (Fig. 1A,B) with no evidence of lymphadenopathy or distant metastasis to lung or liver.

The patient underwent laparotomy and excision of the mass with segmental resection of the infiltrated part of the transverse colon and primary anastomosis was done. No immediate complications were documented. Post-operatively, the patient was doing well and was discharged on post-operative day 3 on analgesia. Final histopathology report was a benign leiomyoma of the mesentery of transverse colon (Fig. 2A,B). Patient was kept on a follow-up by a colorectal surgical team.
Figure 1: (A) and (B) contrast enhanced CT axial and coronal images showing a large mixed solid and cystic multilobulated midline abdominopelvic mass in close proximity to the transverse colon which is tethered without causing obstruction. The solid component of the mass demonstrate enhancement. (C), (D), (E) MRI axial & sagittal T2WI, axial T1WI post gadolinium enhancement demonstrating a heterogenous predominantly hypointense mass with cystic component and shows heterogenous enhancement in post contrast images. It is separated from uterus and both ovaries.
Figure 2: (A) Low power view showing a well-circumscribed spindle cell neoplasm. (B) High power view showing interlacing fascicles of smooth muscle fibres lacking cytological atypia, increase mitosis and necrosis.
Case two

Thirty-one years old man, not known to have any medical background, was presented to the surgical outpatient clinic, Royal Hospital, Muscat, Oman, in November 2015 with a history of abdominal pain on and off for one year. He was managed conservatively with analgesia, but multiple visits were documented with the same complaints. He was vitally stable and abdominal examination revealed a large left iliac non-tender mass. Lab investigation were within normal limits. US abdomen was performed and confirmed the presence of a left iliac fossa mass. CT and MRI were done and showed aggressive looking left iliac fossa solid enhancing mass invading the left psoas muscle and peritoneum (Fig. 3). There were some tiny cystic changes within the mass. There was no evidence of distant metastasis to lung or liver. The differential diagnosis at that time included sarcoma and lymphoma. Subsequently, US guided biopsy was performed, and results came as smooth muscle neoplasm with atypia in which leiomyosarcoma could not be entirely excluded.

Figure 3: (A) and (B) contrast enhanced CT axial and coronal images showing a left iliac fossa solid heterogenous enhancing mass invading the left psoas muscle and peritoneum and is in close proximity to the sigmoid colon.
mesentry. (C), (D), (E) MRI axial T2WI, axial T1WI, axial T1WI post gadolinium enhancement demonstrating a lesion of low to intermediate signal intensity with few cystic changes and shows heterogeneous enhancement in post contrast images.
Figure 4: A, Intermediate power view showing area of coagulative-type necrosis (arrow). B, High power view exhibiting smooth muscle neoplasm with marked cytological atypia and scattered atypical mitosis (Arrow). C, Immunohistochemistry with the smooth muscle markers (Smooth muscle actin, Desmin and H-Caldesmon) are positive.

The patient underwent laparotomy resection of the left iliac fossa mass and segmental resection of the sigmoid colon and part of the spermatic cord. Intraoperative findings revealed large highly vascular intraabdominal mass measured about 10 x 8 cm with an intact capsule which firmly attached to sigmoid colon. No immediate postoperative complications and patient was discharged a few days later in a stable condition. Final histopathology report was leiomyosarcoma of sigmoid colon (Fig. 4A,B,C). Patient was referred to a multidisciplinary team including colorectal surgery, oncology and radiation oncology and multiple sessions of chemotherapy and radiotherapy were done. After two years of follow-up, he developed liver and lung metastasis as well as a metastatic mass in the right iliac fossa invading the iliacus muscle and right iliac wing. Then, he was started on palliative chemotherapy.

Discussion

Smooth muscle tumors were first described by Virchow in 1854. They are often seen in young women arising from the uterus. However, they can also be seen less frequently in other parts of the body including the GI tract. Esophagus and stomach are the most common locations in GI tract smooth muscle tumors and the colon is the rarest one. Sigmoid colon, descending colon and the transverse colon are the most affected parts of the colon. Baker and Good conducted a study on GI smooth muscle tumors which showed that 65% of leiomyomas were found in the esophagus or stomach, 23% in the small intestine and only 3% in the colon.

Mesenchymal tumors of the colon are usually asymptomatic. However, patients may present with nonspecific abdominal symptoms like pain, mass, intestinal obstruction or hemorrhage. In most cases, these tumors are found incidentally during imaging or colonoscopy examination. The clinical presentation of the patient depends on the origin, size and mass effect. Both of our patients presented with lower abdominal pain and a palpable mass. There are a few hypotheses which may explain this pain; 1) Pressure effect on the adjacent nerves, 2) The contraction of smooth muscle cells. However, the exact explanation of the pain is still not clearly understood.

Mesenchymal tumors of the digestive tract are classified by the WHO into gastrointestinal stromal tumors (GIST), lipomas, leiomyomas, leiomyosarcomas, angiosarcomas, and Kaposi sarcomas. The mesenchymal tumors are subepithelial tumors and represent only 1% of primary GI cancers. It is important to differentiate between the GIST and other mesenchymal tumors as they are sharing the same features under the light microscopy. This can be achieved by doing further tests using immunohistochemistry and electron microscopy. Colonic GISTs are rare and usually they are c-Kit (CD117), DOG-1 positive. Mesenchymal tumors arise from smooth muscle cells and usually stain positive for smooth muscle actin or desmin, but negative for C-kit. Leiomyomas are circumscribed lesions and composed of interlacing fascicles of smooth muscle fibers. The tumor cells are bland and lack cytological atypia, frequent mitosis, and coagulative necrosis. Compared to leiomyosarcomas which show significant cytological atypia, frequent mitosis including atypical mitosis and coagulative necrosis. The histology of first patient (Figure 2) showed well-circumscribed spindle cell neoplasm with interlacing fascicles of smooth muscle fibres lacking cytological atypia, increase mitosis and necrosis. The histology of second patients showed smooth muscle neoplasm with marked cytological atypia and scattered atypical mitosis and area of coagulative-type necrosis (Figure 4A,B). Immunohistochemistry with the smooth muscle markers (Smooth muscle actin, Desmin and H-Caldesmon) were positive (Figure 4C).

The radiological findings of leiomyomatous tumors frequently overlap with other aggressive GI tumors or lymphoma. Lee SH et.al performed a study in 12 pathologically proven leiomyomatous tumors of colorectal region (2 leiomyomas and 10 leiomyosarcomas) to assess their radiological features. The results revealed that most of these tumors are large in size (mean: 7.9 cm) with lobulated margins, exocolic growth and show variable degrees of internal necrosis and heterogeneous enhancement. Dystrophic calcification sometimes can be seen. Another study done by Chun HJ et.al to evaluate the CT efficacy in differentiating between GI leiomyoma and leiomyosarcoma showed that large size (> 5 cm), lobulated contour, heterogeneous enhancement, mesenteric fat infiltration, ulceration, regional lymphadenopathy, and exophytic growth pattern are the CT features favoring malignancy with significant p value (p
In our cases, both masses are large with lobulated margins and extracolic growth and showed heterogeneous enhancement with no evidence of lymphadenopathy or distant metastasis (Figure 1,3). Therefore, these features are not very helpful in excluding malignancy and surgical resection should be considered.

Surgical resection is the mainstay of treatment. Although sometimes in cases of small benign leiomyoma with no evidence of deep invasion, an endoscopic resection can be considered as an alternative to surgery given its lower costs and low rate of complications. The prognosis depends on the tumor grade and presence of metastasis at time of diagnosis. Although metastatic lymphadenopathy is uncommon, distant metastasis to the liver and abdominal cavity can be seen in cases of leiomyosarcoma.

Post-surgical chemotherapy and radiotherapy is needed in some cases. Five-year survival is about 50% in case of leiomyosarcoma. Leiomyoma has excellent prognosis with no malignant potential or recurrence. In our patients, they underwent surgical resection of the lesions with segmental resection of the involved part of the colon. The first patient with leiomyoma did well. The second patient received multiple sessions of radiotherapy but after 2 years of follow up, he developed metastasis to liver, lung and right iliac fossa which necessitated palliative chemotherapy.

Conclusion

Colonic leiomyomatous tumors are rare and usually discovered incidentally during radiological imaging or colonoscopy. Radiological findings can be non-specific but presence of certain features including the large size and extra-colic growth favors the diagnosis. CT can help to differentiate between benign leiomyoma and leiomyosarcoma, however, tissue diagnosis is the confirmatory method. Surgical resection is the mainstay of treatment with or without radiotherapy and chemotherapy in some cases of leiomyosarcoma.

Disclosure

The authors declared no conflicts of interest. Informed patients consent of publication were obtained.

References


13. Miettinen M, Sarlomo-Rikala M, Sobin LH. Mesenchymal tumors of muscularis mucosae of colon and rectum are benign leiomyomas that should be separated from gastrointestinal stromal tumors--a clinicopathologic and immunohistochemical study of eighty-eight cases. Mod Pathol. 2001;14(10):950-956. doi:10.1038/modpathol.3880417
