SHORT REPORT

Xanthogranulomatous inflammation of ascending colon with mucosal involvement: Report of a first case

Shashi Dhawan a, Deepali Jain a,*, Sudhir Kumar Kalhan b

a Department of Pathology, Sir Ganga Ram Hospital, New Delhi, India
b Department of Minimal Access and Bariatric Surgery, Sir Ganga Ram Hospital, New Delhi, India

Received 13 November 2010; received in revised form 22 December 2010; accepted 22 December 2010

KEYWORDS
Xanthogranulomatous inflammation; Colon; Mucosa; Pathology

Abstract

Xanthogranulomatous inflammation (XGI) is a rare phenomenon and can involve any organ system. The involvement of colon is rarely described in the literature. We herein report a case of XGI in a 60 year-old male who presented with friable ulceroinfiltrative mass in colon. Right hemicolectomy was performed with clinical and radiological suspicion of malignancy. This is the first reported case of XGI in ascending colon with mucosal involvement.

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1. Introduction

Xanthogranulomatous inflammation (XGI) is a rare but well-described disease process first reported in the genitourinary tract.1 It can involve any organ, but the most common sites are kidney and gallbladder. Other possible locations include endometrium, ovary, fallopian tubes, vagina, testis, epididymis, gall bladder, stomach, bone, skin, appendix, urinary bladder, thyroid and adrenal glands. Involvement of the colon is very rare. There are so far only three reported cases, two involving sigmoid colon and one involving cecum.2-4 It presents as a mass-like lesion, with predominant submucosal involvement. Infiltration into the surrounding tissues often mimics advanced cancer clinically, radiologically as well as on macroscopic examination of the specimens. Mucosa was also affected in our case while it was normal in all the previously reported cases. We herein report a case of XGI that presented as a friable ulceroinfiltrative mass in the ascending colon. With the best of our knowledge this is the first reported case of XGI in ascending colon with mucosal involvement.

2. Case report

A 60 year-old male presented to the emergency department with pain in the abdomen. He had history of recurrent episodes of vomiting with fullness in the abdomen and constipation for the last one month. There was no history of hematemesis, melena or weight loss. He had no past history of diabetes, hypertension or tuberculosis. He was a chronic smoker and alcoholic. His past history was significant for hernia repair surgery two years back. General physical
and systemic examination including respiratory, cardiovascular and central nervous system showed no significant abnormality. Per abdomen examination revealed a lump palpable in the right hypochondrium measuring about 6×6 cm. The lump was firm, non-tender and moving with respiration. No free fluid was present in the abdomen. Per rectal examination was normal. X-ray chest and electrocardiography (ECG) were within normal limits.

Contrast enhanced computed tomography (CECT) of abdomen showed irregular, circumferential and contrast enhancing thickening involving approximately 6 cm of the ascending colon (Fig. 1A). Multiple small peri-cecal lymph nodes were also seen. Colonoscopy revealed large friable mass present within the ascending colon (Fig. 1B).

Diagnosis of neoplastic mass lesion, with surrounding haziness, stranding and nodularity, suggestive of pericolonic spread was entertained. Multiple biopsies were taken.

Histopathologic examination revealed multiple fragments of colonic mucosa, which showed mild focal distortion of crypt architecture with adequate goblet cell population. Lamina propria showed moderate lympho-plasmacytic infiltrate including many eosinophils. There were scattered large cells having hyperchromatic nuclei with irregular nuclear margin and moderate finely vacualted cytoplasm recognized. The large cells were negative for cytokeratin (CK) and leukocyte common antigen (LCA). CD68 immunostain was positive. No granulomatous or neoplastic pathology was seen. A diagnosis of XGI was suggested. However, in view of strong clinical and radiological suspicion of malignancy, right hemicolectomy was performed by laparoscopic minimal access surgery.

The specimen on gross examination showed an ulceroproliferative growth situated 4 cm from the distal resected end (Fig. 1C). The growth involved the entire circumference. On opening it was greyish yellow, firm and infiltrating the full thickness of the wall. Ileum, rest of the colon and appendix were within normal limits. Serial sections of mesocolon revealed six lymph nodes varying in size from 0.2 to 0.5 cm.

Microscopic examination from the mass showed diffuse infiltration of colonic wall by large cells (Fig. 2A–C). These cells possessed irregular nuclei with occasional prominent nucleoli and abundant foamy cytoplasm; morphologically resembled macrophages or histiocytes. Many multinucleated foreign body type of giant cells and admixed inflammatory cells rich in lymphocytes and eosinophils were also seen. Many cells also had signet ring like appearance. The cells were seen throughout the wall from mucosa to subserosa, though the infiltrates were more in submucosal region than in the mucosa. The colonic glands were focally displaced while muscularis propria showed marked destruction by these cells. At places collagenised stroma was also noted. No increase in mitosis was seen. The resection margins (proximal, distal and radial) and all the six lymph nodes isolated from pericolic fat showed no such cells. Random sections from the ileal and colonic tissue as well as from the appendix showed no significant abnormality. There were no features to suggest inflammatory bowel disease, diverticulosis or tuberculosis. The cells were negative for mucin stains (mucicarmine and alcian blue-PAS). The large cells including ones with signet ring configuration were positive for CD68 immunostain, proving that they were of histiocytic in origin. Cytokeratin was negative while LCA stain was positive only in background lymphoid cells (Fig. 2D–F). The morphology was that of xanthogranulomatous colitis.

The patient was discharged on the 4th day of surgery and is doing well in 5 months follow up period.

3. Discussion

XGI is a rare chronic inflammatory condition that is characterized by aggregation of lipid-laden foamy macrophages or xanthoma cells. This disease entity is well recognized in the kidney and gallbladder, yet involvement of the gastrointestinal tract is extremely rare. To the best of our knowledge, there are only three cases so far reported in the colon. (Table 1) Clinically, it can be difficult to differentiate from infiltrative cancer because XGI usually presents as an irregular mass-like lesion with an extension of fibrosis and inflammation into the surrounding tissues, which often mimics infiltrative cancer.

There are many case reports of secondary involvement of colon in cases of xanthogranulomatous cholecystitis, masquerading as stage IV cancer of gallbladder, including two cases of our own experience. Secondary anorectal involvement by primary mullerian duct remnant xanthogranulomatous abscess was first described by Devis et al. XGI involving the large bowel as primary site is extremely rare. All three
previous cases were diagnosed after surgery. In two cases no preoperative biopsy was performed while in one case, biopsy showed normal colonic mucosa. Lipid stains such as oil red O or sudan black can be performed on fresh frozen tissue if clinical suspicion of carcinoma exists and microscopically foam cells mimic mucin containing epithelial cells. In that scenario lipid stains would differentiate clearly between lipid containing foamy histiocytes of xanthogranulomatous inflammation and mucinous carcinoma. In our case, benign histiocytic lesion, compatible with xanthogranulomatous inflammation was suggested in the biopsy material. However it was not possible to rule out associated carcinoma in the small biopsy as coexistence of cancer and xanthogranulomatous inflammation is described in the literature.

Laparoscopic hemicolectomy was performed because the patient had obstructive features and there was a strong clinical suspicion of malignancy and possibility of cancer in the vicinity could not be entirely ruled out.

In all the three previous cases, there was a mass like lesion on radiological as well as gross examination. On microscopy; the involvement was submucosal sparing the mucosa. This is the first case of ulceroinfiltrative growth with extensive mucosal involvement.

Pathologically, other lesions containing foam cells should be distinguished from XGI. Differentials may include malakoplakia or pseudoxanthomatous inflammation. Malakoplakia is an unusual inflammatory condition characterized by inflammatory and destructive xanthomatous proliferation with the presence of Michaelis–Gutmann bodies, which was not seen in our case. Michaelis–Gutmann bodies are intracytoplasmic and extracellular laminated concretions which stain positive with Von Kossa calcium and Prussian blue stains.

The pseudoxanthoma cells have brown cytoplasmic lipofuscin pigment whereas the histiocytes in xanthogranulomatous inflammation have a foamy vacuolated cytoplasm, a difference highlighted by Fontana–Masson staining. Numerous and multiple types of inflammatory cells in addition to foamy histiocytes are present in xanthogranulomatous inflammation whereas inflammatory cells are sparse in pseudoxanthomatous conditions.

Poorly differentiated carcinomas or diffusely infiltrating histiocytic lymphomas can be differentiated with the help of immunohistochemistry.

Although the precise pathogenesis of XGI is not well understood; a variety of mechanisms have been proposed for various sites, including chronic recurrent infection, obstruction, immunologic disorders and defective lipid transport. The obstructive hypothesis is known to be responsible for xanthogranulomatous pyelonephritis, cholecystitis, and appendicitis. Although the cause of the inflammatory process was unknown in our case, XGI represents a chronic suppurative process in which host and microorganism interact that leads to tissue destruction and localized proliferation of lipid laden macrophages.

In conclusion, we like to emphasize that XGI should be considered as one of the differential diagnoses of colonic mass lesions, though it is a rare disease. It may be wise to make an intraoperative pathological diagnosis with a frozen section for planning of the extent of surgery, considering that XGI could be clinically and radiologically misinterpreted as an infiltrative cancer and preoperative biopsy may not be helpful since most of the lesions are submucosal in location. Possibility of malignancy still remains uncertain even if XGI is diagnosed in biopsy as associated malignancy is known with XGI.

Figure 2  Lipid laden foamy macrophages admixed with mixed inflammatory cells in the lamina propria (A) H&E ×100 (B) H&E ×200 and deep bowel wall; please note splaying of muscle fibers of muscularis propria by xanthomatous infiltrate (C) H&E ×100. The foam cells are positive for CD68 (D); lymphoid cells stain for LCA (E), whereas CK stains epithelial cells (F).
Table 1  Clinicopathologic review of reported cases of XGI of colon.

<table>
<thead>
<tr>
<th>Author and year</th>
<th>Age (year)/sex</th>
<th>Clinical presentation</th>
<th>Site</th>
<th>Barium enema</th>
<th>Colonoscopy</th>
<th>CT findings</th>
<th>Pre-op biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lo et al. (1996)²</td>
<td>72/M</td>
<td>Constipation and abdominal distension due to intestinal obstruction</td>
<td>Sigmoid colon</td>
<td>Stricture</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Oh et al. 2005³</td>
<td>38/F</td>
<td>Abdominal pain and diarrhea</td>
<td>Sigmoid colon</td>
<td>Luminal irregularity with poor expansion</td>
<td>Submucosal mass, 20 cm above the anal verge. Mucosa irregularly elevated and edematous with focal linear erosion.</td>
<td>Slightly enhanced colonic loop around the rectosigmoid junction with mesenteric fat infiltration and an enhanced soft-tissue mass-like lesion between the right iliac vessel and the rectosigmoid</td>
<td>NA intra op. frozen section-XGI</td>
</tr>
<tr>
<td>Anadol et al. 2009⁴</td>
<td>57/F</td>
<td>Abdominal pain and bloody stool</td>
<td>Cecum</td>
<td>NA</td>
<td>Submucosal mass with erosion of mucosa</td>
<td>Solid mass in the right lower quadrant with poorly defined margins and fat infiltration</td>
<td>Normal colonic mucosa with minimal inflammation</td>
</tr>
<tr>
<td>Present case 2010</td>
<td>60/M</td>
<td>Abdominal pain and fullness, vomiting</td>
<td>Ascending colon</td>
<td>NA</td>
<td>Large friable mass with ulceration of mucosa</td>
<td>Irregular circumferential enhancing thickening, involving an approximately 6 cm of the ascending colon. Multiple small pericolic lymph nodes</td>
<td>Benign histiocytic lesion, compatible with xanthogranulomatous inflammation</td>
</tr>
</tbody>
</table>

Abbreviations: M: male, F: Female, NA: not available.

References