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Case Study

Caecal Gangrene-Storm's Ahead

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Abstract

Objective: Cecal gangrene is rare cause of acute abdomen in surgical practice associated with unusual clinical presentation and high risk of complications. Early diagnosis and aggressive management are key to manage it.

Methods: We are presenting 3 cases diagnosed with cecal gangrene who did not have any abdominal complaints on admission and rapidly deteriorated with consequent development of peritonitis. All patients were operated and managed post operatively. All patients regardless of adequate surgical excision developed post operative complications impacting the outcome of patients.

Results: One out of 3 patients succumbed to illness due to respiratory complications 5 months after index surgery. Rest 2 patients also are doing well in spite of developing post operative sepsis and complications.

Conclusion: Cecal gangrene is surgical emergency associated with high morbidity and mortality. High index of suspicion, early investigation and surgical management is paramount. Post operative complications are to be expected and should be aggressively managed.

Keywords: Cecal gangrene, Ischemic colitis

Introduction

Colonic gangrene is a sequelae of Ischemic Colitis. In majority of cases, ischemic colitis is limited to watershed areas in descending and rectosigmoid colon. Uncommonly it can progress to necrosis and gangrene of colon which is life threatening condition. Rarely Caecum and right colon can be involved in this gangrenous process. Various case reports have been published in literature regarding Isolated caecal necrosis. Mostly patients presented with pain right lower abdomen mimicking acute appendicitis [1, 2], in some cases perforated peptic ulcer [3]. With prompt diagnosis and early surgical management, most of the patients can be managed successfully without post operative complications as evident from published cases. Here in this article we are presenting three cases of caecal necrosis who didn't have typical abdominal complaints, were managed promptly and had stormy post operative course.

Case 1

A 52yr male presented with complaints of High grade fever and generalized weakness for 10 days, admitted in emergency under Medicine department. Initially he was managed as case of Acute febrile illness, relevant investigations were done for work up of fever. His Total leukocyte counts were 24000/mm, rest blood investigations were normal. Serum Procalcitonin levels were 0.35 ng/ml. comorbidities – Diabetes mellitus (DM), Hypertension (HTN). Next day of admission patient developed severe pain abdomen in right lumbar and iliac fossa region, surgical reference was done. Blood pressure – 112/74 mm hg, pulse – 108/min. Per abdominal examination revealed generalized Abdominal distension and tenderness in right upper and lower quadrant. Contrast Enhanced Computed Tomography (CECT) Abdomen was done

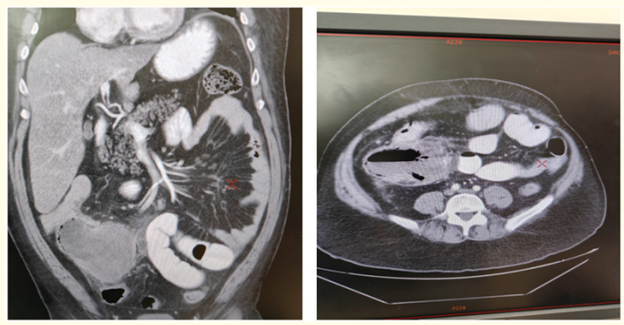

Figure 1: CT Images showing dilated Caecum with air fluid level and gangrenous changes in wall of caecu.

Patient underwent urgent exploratory laparotomy. Findings -Caecal wall gangrene was present on posterior caecal wall. Rest of colon was normal. Limited right Hemicolectomy with End ileostomy was done.

Post-operative course – Patient developed ileus on Post operative day (POD) 3 which was managed conservatively and patient responded. Throughout his post operative course, he had persistently high TLC counts. Intraoperative pus culture showed Carbapenem resistant Escherichia Coli only sensitive to Amikacin and Intermediate sensitivity to colistin, resistant to all other antibiotics. Patient was discharged on POD 8 on oral antibiotics with TLC counts 14000/mm. After 1 month of index surgery, Patient again admitted with Pain abdomen and high grade Fever. CECT Abdomen showed Intra abdominal collection.

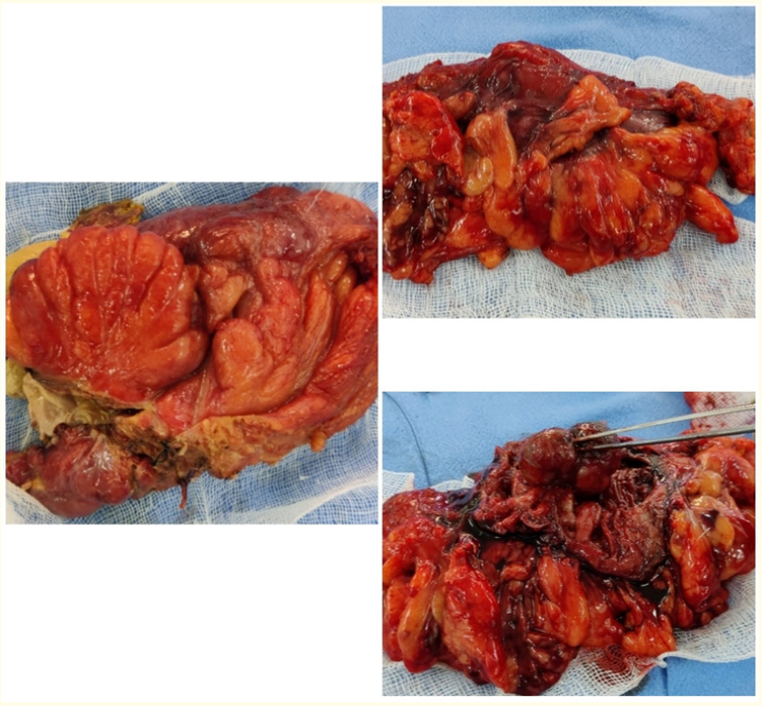

Figure 2: Showing Intraoperative pictures of patient 1. Gangrenous posterior layer of caecum with thickened wall intraluminal appearance.

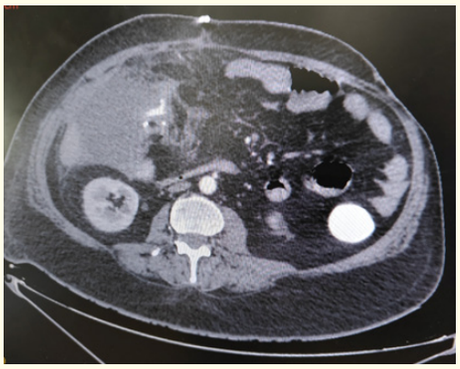

Figure 3: Showing CECT abdomen showing intraabdominal collection.

USG guided PCD insertion was done, 100 ml pus drained. Pus Culture showed carbapenem resistant Klebsiella only intermediately sensitive to Amika, colistin. Also Candida special was isolated which was sensitive to Amphotericin B, Caspofungin, micafungin, voriconazole. Patient was discharged after 3 days.

Patient had poor nutritional status in post operative period with persistently low albumin levels. Restoration of bowel continuity was done after 3 months of index surgery, Patient discharged after 6 days with no postoperative complication.

Case 2

A 81yr old Male presented with complaints of Generalized weakness, Anorexia and Cough for 5 days, two episodes of melena 3 days back and Shortness of breath for 4 hours. Comorbidity – Chronic obstructive pulmonary disease (COPD) for past 12 years. Patient was admitted under Medicine department was managed conservatively. His investigations showed TLC counts 14000/mm, Serum Procalcitonin levels 0.56 ng/ml. Gastro-enterology opinion

was taken due to history of melena. Stool for occult blood was positive, Upper GI endoscopy showed Esophageal, Gastric and duodenal ulcers.

After 7 days of admission patient developed abdominal tenderness and went into shock, Surgical reference was done. BP – 92/48 mm hg, pulse – 118/min. Per abdominal examination revealed abdominal distention and tender lump was present in Right Hypochondrium and right lumbar region. On Digital rectal examination, Melenic stools were present.

Urgent CECT Abdomen done

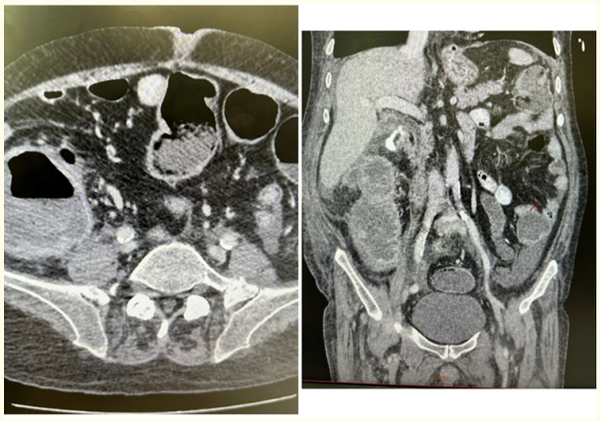

Figure 4: CECT Abdomen showing dilated and caecum and ascending colon and ischemic changes in wall of Right colon.

Patient underwent urgent exploratory laparotomy. Findings- Caecum and ascending colon till hepatic flexure was gangrenous. Right Hemicolectomy with End Ileostomy was done.

Post operative course - POD 1 patient was extubated, second day patient remained stable, ileostomy was functional and patient was orally allowed. POD 4, patient developed shock and fall in oxygen saturation, was re- intubated. Intra operative pus culture growed carbapenem resistant klebsiella pneumoniae sensitive to Amikacin and colistin only. Patient was extubated on POD 6 and was managed with non invasive ventilation. POD 12 developed desaturation with encephalopathy (Septic, Metabolic), had to be Re-intubated and extubated after 5 days. POD 22 developed respiratory acidosis, drowsiness and hypotension, again intubated and Tracheostomized on POD 26. POD 29 developed severe Mitral Regurgitation/Tricuspid Regurgitation with pancytopenia, managed with intensive care. Patient was accepting feeds and stoma was functional throughout his stay . Patient was discharged from hospital after 3 months of hospital stay on home care advise. Patient came to emergency with breathlessness after 5 months of surgery and succumbed to his illness.

CASE 3

PA 56yr old male presented with complaints of Decreased appetite, Intermittent fever, Breathlessness for 15 days.

Bleeding per rectum 1 episode 12 days back. Comorbidities - DM, HTN, CAD (post PTCA), Hypothyroidism. Patient was admitted in secondary care centre. Colonoscopy showed ?Rectal sessile polyp ? Stricturing growth in descending colon biopsy was done. Patient was shifted to our hospital for further management. On admission, TLC counts were 13400/mm, Procalcitonin levels were 3.74 ng/ml. Next day patient developed severe pain abdomen with Abdominal distention, signs of peritonitis were not present. X ray abdomen was done.

Figure 5: X ray abdomen showing free air under Diaphragm.

Patient was taken for emergency exploratory laparotomy, Findings – Pneumoperitoneum was present, Left colonic gangrene from Rectosigmoid junction to Mid Descending colon. Also Necrotic patch (3 x 3 cm) over caecum with cecal perforation.

Figure 6: Gangrene and sloughing off of left colon from Rectosigmoid junction to Mid Descending colon.

Left Hemicolectomy with excision of necrotic patch over caecum with primary repair of cecum with end ileostomy and transverse colon mucus fistula was done

Post operative course – Post operative day 4, patient developed tachycardia, Hypotension and sepsis , shifted to ICU. Intra-operative Pus Culture grew Klebsiella pneumoniae intermediately sensitive to amikacin and colistin. Patient was managed conservatively and shifted back to ward after 3 days. He developed Surgical site infection which was managed wth regular dressings. Patient was discharged after 12 days of surgery

Patient readmitted with complaints of rectal bleed after 5 days of discharge. Blood transfusion done in view of low Haemoglobin levels. Sigmoidoscopy was done which showed clots adherent to rectal wall. Due to excessive slough and necrotic tissue, endoscopic management of bleed was not feasible. Patient continued to bleed, taken up for surgery- Necrotic rectal wall removed and Hemostasis achieved

Patient was discharged after 7 days. After 12 days, patient again complained of rectal bleeding. Colonoscopy showed large ulcers in rectum with evidence of active bleed. Angiographic embolization of Superior rectal artery was done and bleed decreased. Patient was discharged after 3 days and managing well currently. Three months after index surgery, patient again had Fever, poor appetite and derangement in blood glucose levels inspite of adequate dosage of insulin. Pulse -126/min and Total leukocyte counts 18000/mm. CECT whole abdomen was done which showed thick organized collection in left lumbar region with air inside collection. Patient underwent laparotomy and drainage of collection. Currently managing well on ileostomy without any complaints. Restoration of bowel continuity will be done after he is nutritionally rehabilitated.

	Patient 1	Patient 2	Patient 3
Age (Years)	52	81	56
Sex	M	M	M
Presenting complaints	High grade fever Weakness	Weakness, Anorexia, Cough, melena and Dyspnea	Decreased appetite, Intermittent fever, Breathlessness, Bleeding per rectum
Development of abdominal complaints	Next day of admission	After 7 days of admission	Next day of admission
Co-morbidities	DM, HTN	COPD	DM, HTN, CAD (post PTCA), Hypothyroidism
TLC counts	24000/mm	14000/mm	13400/mm
Surgical Findings	Caecal wall gangrene on posterior caecal wall	Gangrenous Caecum and ascending colon till hepatic flexure	Left colonic gangrene from Recto-sigmoid junction to Mid Descending colon, Necrotic patch (3 x 3 cm) over caecum
Surgical Procedure	Limited right Hemicolectomy with End ileostomy	Right Hemicolectomy with End Ileostomy	Left Hemicolectomy with excision of necrotic patch over caecum with primary repair of cecum with end ileostomy and transverse colon mucus fistula
Post operative complications	SSI, Sepsis, Intra-abdominal collection requiring catheter insertion, Uncontrolled DM	ARDS, Shock, Encephalopathy, Re-intubations, tracheostomy, Mitral regurgitation	SSI, sepsis, rectal bleed requiring endoscopic and surgical intervention, infective thick intra-abdominal collection requiring laparotomy
Outcome	Restoration of bowel continuity done 3 months after index surgery. Currently well	Died 5 months after surgery due to respiratory complications	Awaiting restoration of bowel continuity 6 months post surgery. Nutritional rehabilitation being done

Table 1: Characteristics of patients. SSI – Surgical site infections.

Discussion

Caecal gangrene used to be rare entity in surgical practice. Published literature constitutes of few case reports regarding this. Mesenteric hypoperfusion leads to ischemic colitis which eventually progress to gangrene. Cause of this mesenteric hypoperfusion is not firmly established. Caecal gangrene has been classified into two types. Type 1 or spontaneous type in which no cause is identified and type 2 in which identifiable cause of mesenteric hypoperfusion is present such as following a cardiopulmonary bypass or period of hypotension in patients undergoing haemodialysis [4]. One thing common in all published cases regarding caecal gangrene is that all patients had one or more comorbidities such as DM, HTN, coronary artery disease, chronic kidney disease (CKD), COPD and End Stage Renal Failure (ESRF)[5]. Various mechanisms of ischemia of caecum have been hypothesized such as blood supply of caecum is from anterior and posterior cecal arteries which protect cecum from vasculo-occlusive ischemia. However, cecum is more vulnerable to ischemia if these arteries form single blood supply originating from colic branch of the ileocolic artery [6]. Also, small and less developed vasa recti of right colon are more prone to vasospasm thereby making it prone to ischemia in low flow states compared to left colon [7].

Most cases of caecal necrosis published in literature presented as acute abdomen with pain in right lower quadrant [4,8,9,10], sometimes mimicking acute appendicitis and rarely perforated peptic ulcer [3]. In contrast to existing literature, all of our patients presented with general complaints of fever or breathlessness on admission with abdominal complaints developing over next few days such as severe pain abdomen and features of peritonitis. Threshold of investigation such as CECT abdomen should be lower if patients with multiple comorbidities develop abdominal symptoms and signs keeping this rare diagnosis in mind. As evident from literature and our experience also, there is no role of conservative management in this entity. All patients should undergo urgent laparotomy and diseased colon should be removed. Poor general condition, flagrant sepsis and multiple comorbidities generally precludes primary anastomosis, stoma creation is preferable. Most of case reports and series regarding cecal necrosis reported minimal or less post operative complications after colectomy has been performed [2,1,3,5]. In contrast to these findings, we report very high post operative complication rate in these patients. Rates of sepsis, infected collections, respiratory complications, bleeding and need for re-laparotomy were high in our patients. Pan resistant organisms were also common in our patients most likely due to usage of broad spectrum antibiotics pre-operatively, bacterial translocation and fecal contamination during surgery. This posed a significant challenge in managing sepsis in these patients. Prolonged follow up is must with early interventions in case of emerging complication as reserves are lower in these patients owing to poor general condition and multiple co-morbidities. In consistent with our observations, cakar et al [9] reported very high mortality in there series with 5 out of 6 patients died postoperatively with isolated cecal necrosis. Gundes et al [11] reported 38% mortality with 5 out 13 patients died due to this condition. High index of suspicion, prompt investigation, urgent surgery, intensive post operative care and active management of post operative complications are keys to success in this set of patients with this grave diagnosis.

Conclusion

Elderly patients with multiple comorbidities admitted with nonspecific general complaints developing severe abdominal pain and features of peritonitis should be considered for diagnosis of cecal gangrene. Clinicians should expect high post operative complications and mortality in these patients and prompt interventions should be done to increase success rate in managing cecal gangrene.

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