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Case Report

A rare case of invasive intestinal mucormycosis: a case report

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ABSTRACT

Mucormycosis is an uncommon, life threatening infection, also known as zygomycosis. Most infections are fatal. We reported a case of a 38 year old male patient who presented with generalised abdominal pain, fever and vomiting for 15 days. Patient was a known case of chronic kidney disease. On per abdominal examination, guarding and rigidity were present. Patient was taken for an emergency exploratory laparotomy. Approximately 1500 ml toxic fluid with faeces was drained on entering the abdominal cavity. Sloughed out caecum with multiple perforations and gangrenous terminal ileum with ascending colon was seen. Non-viable segments were resected and stoma was given. Resected segment was sent for histopathological examination. On histopathological examination, invasive small intestinal mucormycosis with acute on chronic inflammation with ulceration, perforations and serositis with hemorrhagic necrosis and infarction was found. Patient vitally deteriorated in the post-operative period and succumbed to death due to cardiac failure with septicemia.

Keywords: Invasive intestinal mucormycosis, Resection and anastomosis, Emergency, Chronic inflammation, Life threatening

INTRODUCTION

Mucormycosis is an uncommon, life threatening infection, also known as zygomycosis. Most common genera causing the infection is *Rhizopus*, other generas include *Mucor*, *Cunninghamella*, *Apophysomyces*, *Lichtheimia*. Mucormycosis requires an aggressive approach which includes a triad of correction of the risk factors, antifungal agents and aggressive surgery. Invasive intestinal mucormycosis is a rare entity. In gastrointestinal tract, most commonly involved site is stomach followed by colon then ileum.

A most common symptom is nonspecific abdominal pain. Neonates and premature infants are more affected. Predisposing factors include Crohn's disease, tuberculosis, and the immunocompromised state as follows: uncontrolled diabetes especially with ketosis, cancer and chemotherapy, immunosuppressive disorders, patients on broad-spectrum antibiotics, intravenous steroids, tumor necrotizing factor alpha-blockers, extreme malnutrition, organ transplant and burns patients.[1] Most common route of infection is by inhalation which inoculates in sinuses and lungs followed by ingestion especially in malnourished patients and patients with a history of pica followed by trauma or by surgery through skin. The main pathological features found to be angioinvasion, thrombosis, and tissue necrosis.

CASE REPORT

This was a case of a 38-year-old male patient with chronic kidney disease. The patient presented with fever, generalised abdominal pain, and vomiting in the hospital of his native city for 15 days. Diagnosis of enteric fever was made and during conservative management, the patient developed sepsis followed by acute kidney injury. Patient had undergone one cycle of hemodialysis.

Table 1: Laboratory findings.

Findings	Values
Haemoglobin (g/dl)	7.2 (12-18)
WBC (Ku/l)	30.05 (5.2-12.4)
Platelet count (Ku/l)	120 (130-400)
Neutrophil (%)	95 (49-74)
Lymphocyte (%)	02 (26-46)
Monocyte (%)	02 (2-12)
Eosinophil (%)	01 (0-5)
Basophil (%)	00 (0-2)
Blood urea (mg/dl)	231.2 (15-45)
Creatinine (mg/dl)	6.88 (0.7-1.3)
Sodium (Mmol/l)	137 (132-146)
Potassium (Mmol/l)	5.0 (3.5-5.5)
Chloride (Mmol/l)	101 (99-109)
SGPT(ALT) (U/l)	41 (10-49)
SGOT(AST) (U/l)	69 (0-34)
ALP 97 (U/l)	(45-129)
T. bilirubin (mg/dl)	0.98 (0.3-1.2)
D. bilirubin (mg/dl)	0.51 (0-0.3)
Indirect bilirubin (mg/dl)	0.47
Protein serum (g/dl)	4.5 (5.7-8.2)
Albumin serum (g/dl)	2.7 (3.2-4.8)
PT (secs)	25.2 (12-16)
APTT (secs)	36.2 (20-35)

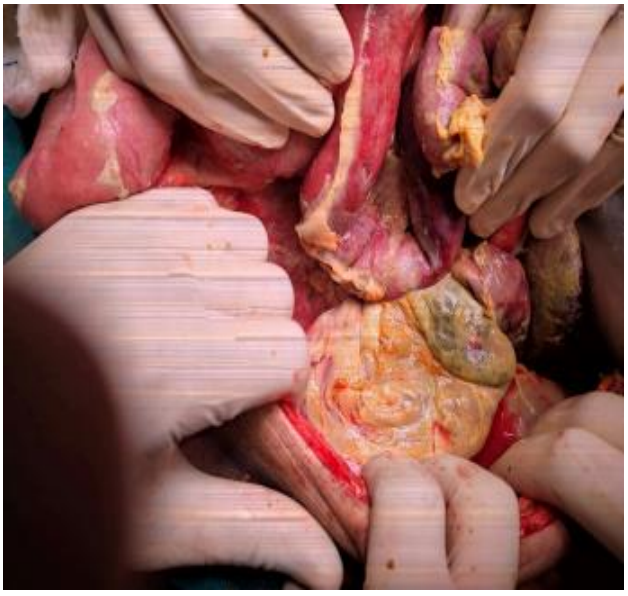

Figure 1: Sloughed off caecum.

As the severity of abdominal pain increased with multiple episodes of vomiting. Subsequent investigations revealed air foci in the peritoneal cavity with possibility of gastrointestinal perforation and peritonitis. Associated with right small kidney, left ureteric calculus and left sided mild hydronephrosis and hydroureter with gas filled and dilated bowel loops, altered liver echotexture with cirrhosis of liver and portal hypertension with nodular lesion in anterior segment of upper lobe of both lungs.

On physical examination the patient was conscious and oriented with pulse rate of 114 /min, blood pressure of 100/68 mm/Hg maintaining 90% SpO_2 on room air.

No significant findings were present on general examination.

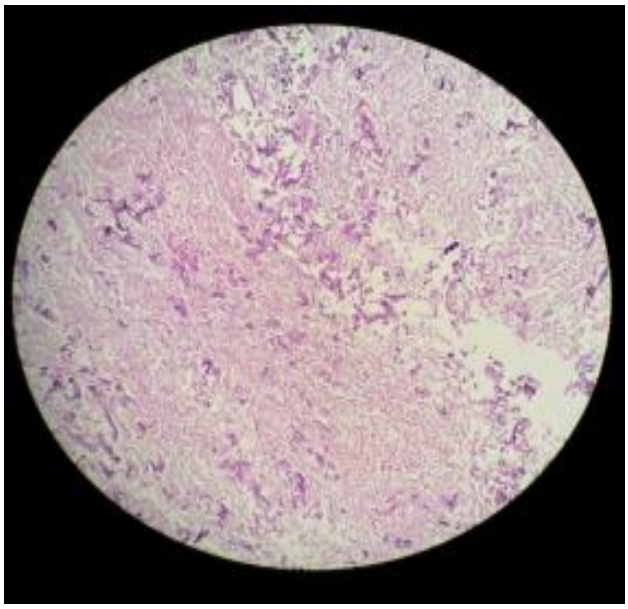

Figure 2: HPE slide.

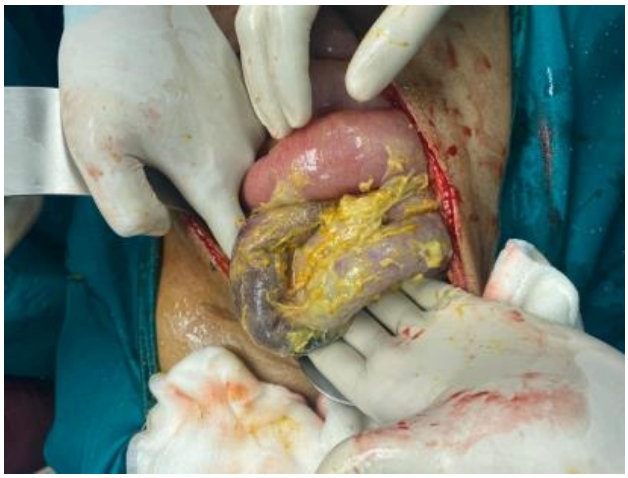

Figure 3: Ileum showing pregangrenous changes.

On per abdominal examination, guarding and rigidity were present on palpation.

X-ray abdomen showed free air was noted under both domes of diaphragms, suggestive of pneumoperitoneum with few significant air fluid levels and few gas filled small and large bowel loops noted.

Patient was taken for exploratory laparotomy. On entering the peritoneal cavity about 1500 cc toxic fluid with faeces was drained and the sample was sent for histopathological examination. Multiple pus flakes were

found over bowel loops. Ceacum was sloughed out with multiple perforations and terminal ileum was found gangrenous and parts of terminal ileum and ascending colon showed thrombotic and pregangrenous changes. Resection of nonviable bowel segment including from 80 cm proximal to ileocecal junction to hepatic flexure was done and resected bowel sent for histopathological examination and stoma was given.

On HPE, it revealed invasive small intestinal mucormycosis with acute on chronic inflammation with ulceration and perforations and serositis with hemorrhagic necrosis and infarction.

Patient was vitally compromised postoperatively pulse rate 130/min, blood pressure of 100/72 mmHg with injection noradrenaline at 10 ml/hr and SpO_2 70% on VCV mode.

Patient succumbed to death due to cardiac failure with septicemia the same day postoperatively.

DISCUSSION

Mucormycosis is a life-threatening fungal infection caused by *Mucorales*, primarily affecting the immunocompromised hosts. Almost all patients with invasive mucormycosis have some underlying disease that both predisposes to the infection and influences the clinical 8 presentation. However, it's uncommon for immunocompetent patients to develop invasive mucormycosis. Our case had no traditional risk factors often predisposing the patient to invasive mucormycosis.

Involvement of gastrointestinal system by mucormycosis is dominated by involvement of the stomach in 67%, whereas the intestine is involved in 25% of the case. Intestinal mucormycosis has wide range of clinical manifestation, ranging from presenting with peptic ulcer disease to an aggressive and life threatening intestinal invasion by fungal filaments causing systemic fungemia.[2-4] The pathologic hallmark of mucormycosis is infarction of host tissue resulting from angioinvasion by fungal hyphae. This gives rise to necrotic ulcers with resultant acute abdominal pain, hematemesis, perforation and peritonitis. The patient is often thought to have an intraabdominal abscess. Ante-mortem diagnosis of mucormycosis is made in only 25 to 50% of cases, as its extremely rare disease with significant fatal outcome even with treatment. Cultures are usually negative and no reliable serologic tests are currently available. The diagnosis is nearly always made by biopsy of the suspected area during or after surgery or endoscopy, or at autopsy.[5-8] Treatment of mucormycosis involves a combination of antifungal therapy with surgical debridement of infected and necrotic tissues.[2-4,6,7,9] Additionally, early identification and treatment of an underlying predisposing factors, such as diabetes mellitus, immunosuppressive drugs, and neutropenia, chronic alcoholism, and HIV infection is vital to successfully treat invasive mucormycosis.[2,8,10] Gastro-intestinal mucormycosis has mortality rate of approximately 50%.[2,5,10,11] Our patient has no identifiable traditional risk factors, but due to extensive intestinal involvement the patient succumbed to cardiac failure postoperatively.

CONCLUSION

Invasive intestinal mucormycosis is one of the rarest life-threatening fungal infection, because of this its vita to identify the illness early and initiate antifungal medication. Despite its high mortality patient can be salvaged if there is high suspicion and early diagnosis made with radiological and histopathological studies.

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