Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/22801
DOI URL: http://dx.doi.org/10.21474/IJAR01/22801

RESEARCH ARTICLE

GASTROINTESTINAL MUCORMYCOSIS: A CASE REPORT

Dheer Jaiswal[1], Reeta Taksali[2] and C.P. Bhale[3]

1. Junior Resident, MGM Medical College, Chhatrapati Sambhaji Nagar.
2. Professor Department of Pathology, MGM Medical College, Chhatrapati Sambhaji Nagar.
3. Professor and HOD, Department of Pathology, MGM Medical College, Chhatrapati Sambhaji Nagar.

Manuscript Info

Manuscript History
Received: 12 December 2025
Final Accepted: 14 January 2026
Published: February 2026

Key words:-
Gastrointestinal Mucormycosis, ischemic necrosis, infarction, vascular thrombosis

Abstract

Introduction: Mucormycosis is a rare, aggressive, and often fatal infection causedby mucormycetemolds, primarily affecting immunoco m promised individuals or those with diabetes. It typically invades the sinuses, lungs, or skin via inhalation or wound contamination, often req uiring immediate antifungal medication (e.g., LiposomalAmphotericin B) and surgical debridement. Mortality rates are high, frequently exceeding 50%.

Case summary: A 17-year-old male with B-cell Acute Lymphoblastic Leukemia (B-ALL) presented with acute abdominal pain and distension Initially suspected to have small bowel obstruction, ultrasound revealed mild hepatomegaly, moderate ascites, and gallbladder wall thickening. Despite being immunocompromised, a fungal infection was not clinical ly suspected; PCR and fungal culture were not performed however, this possibility should not be overlooked. Histopathology confirmed mucor mycosis with broad, aseptate hyphae, angioinvasion, and ischemic necrosis.

Histopathology and Cytology: Microscopy showed broad, aseptate hyphae with right-angle branching. Angioinvasion leads to vascular thrombosis, necrosis, and infarction, with inflammatory infiltrates, necrotic debris, ribbon-like hyphae, angioinvasion, hemorrhage, and infarction, with minimal or absent septation. PAS and H&E stains aid diagnosis.

Discussion: The pathologic hallmark of mucormycosis is angioinvasion leading to ischemic necrosis and infarction. Diagnosis is often challenging due to overlapping clinical presentations. Infection is acquired through ingestion of contaminated food/drinks, with fungal spores colonizing gastrointestinal mucosa. Early identification using histopathology and fungal culture are crucial.

Conclusion: Early clinical suspicion, combined with histopathology and fungal culture, is crucial for diagnosing gastrointestinal mucormycosis. Antifungal therapy and surgical interventionremain key to improving patient outcomes.

Corresponding Author:- Dheer Jaiswal
Address:-Junior Resident, MGM Medical College, Chhatrapati Sambhaji Nagar.

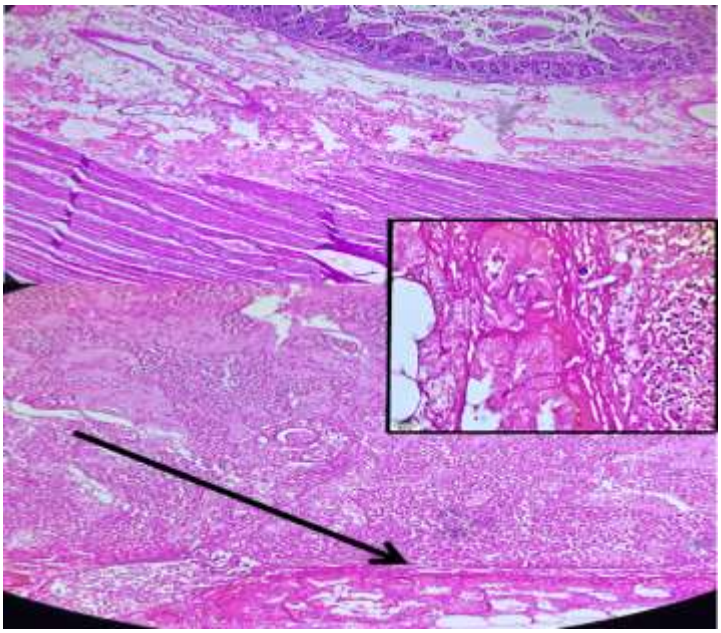
Introduction:-

Mucormycosis is an opportunistic fungal infection caused by organisms of the order Mucorales. While the rhino-orbital-cerebral form is the most frequently encountered, gastrointestinal (GI) involvement is rare, accounting for less than 7% of reported cases [1]. GI mucormycosis is associated with a high mortality rate, often exceeding 50%, largely due to delayed diagnosis and late initiation of appropriate treatment [2]. The disease primarily affects immunocompromised individuals, such as those with hematological malignancies, uncontrolled diabetes mellitus, or prolonged neutropenia.

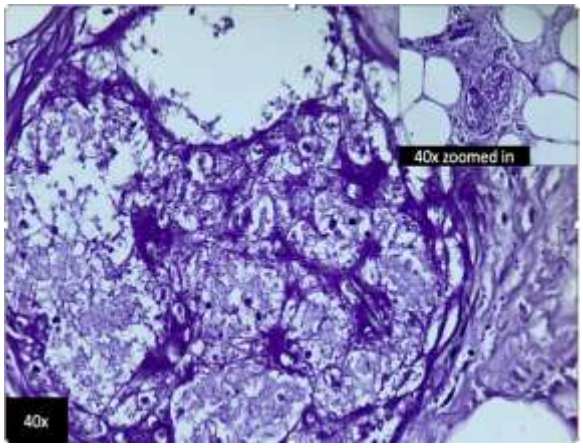
The pathogenesis involves ingestion of fungal spores through contaminated food or water, followed by colonization of the GI mucosa. Once established, the fungus demonstrates a strong propensity for angioinvasion, leading to thrombosis, ischemia, and tissue necrosis [3]. Clinical manifestations are nonspecific—ranging from abdominal pain and distension to gastrointestinal bleeding—often mimicking more common surgical emergencies.Given the nonspecific presentation, diagnosis requires a high index of suspicion, particularly in immunosuppressed patients. Histopathology remains the gold standard, revealing broad, aseptate hyphae with right-angle branching. Early diagnosis is crucial because delay in treatment significantly worsens the prognosis. The mainstay of management includes a combination of aggressive surgical debridement and systemic antifungal therapy with agents such as amphotericin B [4,5]. This report describes a case of gastrointestinal mucormycosis in a leukemic patient, emphasizing the challenges in diagnosis and the importance of early recognition in improving clinical outcomes.

Case Presentation:

A 17-year-old male with a known diagnosis of B-cell acute lymphoblastic leukemia (B-ALL) presented with acute onset abdominal pain and distension. He was undergoing chemotherapy and had severe neutropenia at presentation. The initial clinical impression was small bowel obstruction. Ultrasound of the abdomen revealed mild hepatomegaly, moderate ascites, and gallbladder wall thickening. No specific evidence of fungal infection was suspected at this stage, and PCR or fungal cultures were not performed.



The patient's condition deteriorated, and exploratory laparotomy was performed. Intraoperative findings included necrotic bowel segments, which were resected. Histopathological examination showed broad, ribbon-like, aseptate fungal hyphae with right-angle branching, extensive angioinvasion, vascular thrombosis, ischemic necrosis, and associated inflammatory infiltrates. These features were consistent with mucormycosis.PAS and H&E stains aided in visualization.



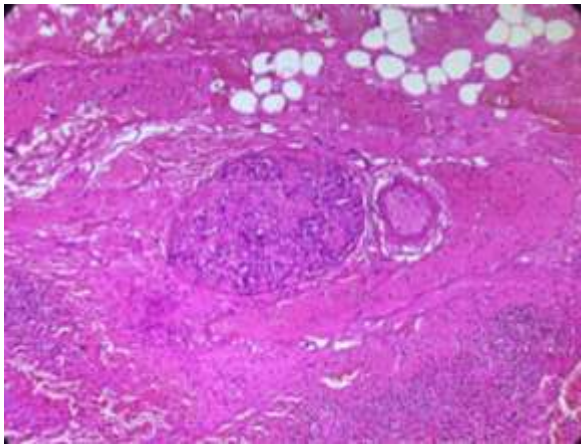


Table 1: Clinical and Histopathological Findings

Parameter	Findings
Age/Sex	17-year-old male
Underlying condition	B-cell acute lymphoblastic leukemia
Risk factor	Chemotherapy-induced neutropenia
Presenting symptoms	Abdominal pain, abdominal distension
Ultrasound findings	Hepatomegaly, ascites, gallbladder wall thickening
Intraoperative findings	Necrotic bowel segments
Histopathology	Broad aseptate hyphae, right-angle branching
Angioinvasion	Present
Necrosis	Present
Special stains	PAS positive
Final diagnosis	Gastrointestinal mucormycosis

Results:-

Histopathological examination of the resected bowel specimen revealed broad, ribbon-like, aseptate fungal hyphae with right-angle branching characteristic of mucormycosis. Extensive angioinvasion was noted, leading to vascular thrombosis, ischemic necrosis, and tissue infarction. PAS and H&E staining confirmed the presence of fungal elements within necrotic tissue. These findings established the definitive diagnosis of gastrointestinal mucormycosis.

Discussion:-

Gastrointestinal mucormycosis, though rare, is a rapidly progressive and frequently fatal infection, especially in immunocompromised individuals [1,2]. The disease often remains undiagnosed until advanced stages due to its nonspecific presentation, leading to delays in treatment initiation. The pathologic hallmark is angioinvasion, where fungal hyphae penetrate blood vessels, causing thrombosis, ischemic necrosis, and subsequent tissue infarction [3].

In the present case, the patient's immunosuppressed state due to leukemia and chemotherapy was a significant predisposing factor. While the clinical and radiological features suggested small bowel obstruction, the absence of early microbiological testing delayed targeted antifungal therapy. This underscores the need for heightened clinical suspicion of invasive fungal infections in high-risk patients presenting with unexplained abdominal symptoms.

The mainstay of diagnosis is histopathological identification of characteristic hyphae in tissue samples, with fungal culture providing species-level confirmation [4]. However, cultures are often negative due to the fragile nature of the hyphae and prior antifungal exposure. Early initiation of treatment is critical, with surgical resection of necrotic tissue combined with high-dose intravenous amphotericin B as the recommended approach [5]. Delayed or inadequate therapy is associated with poor survival rates.This case emphasizes that in immunocompromised patients, even common gastrointestinal complaints should prompt consideration of invasive fungal infections, particularly when initial workup is inconclusive. Adoption of rapid diagnostic techniques, such as PCR-based assays, could further aid early detection and improve prognosis.

Summary:-

Gastrointestinal mucormycosis is a rare but highly fatal opportunistic fungal infection.Immunocompromised patients, especially those with hematological malignancies, are at highest risk.Angioinvasion causing vascular thrombosis and ischemic necrosis is the pathological hallmark.Clinical presentation is nonspecific and may mimic surgical emergencies.Histopathology remains the gold standard for diagnosis.Early surgical intervention and antifungal therapy improve survival.

Conclusion:-

Gastrointestinal mucormycosis is a rare but deadly infection, particularly in immunocompromised hosts. Its nonspecific clinical presentation often leads to delayed diagnosis and poor outcomes. A high index of suspicion, early histopathological confirmation, and prompt initiation of combined surgical and antifungal therapy are crucial for improving survival. This case highlights the importance of considering mucormycosis in differential diagnoses of acute abdomen in immunocompromised patients.

Acknowledgement:-

The authors express their sincere gratitude to the Management and Administration of MGM Medical College, Chhatrapati Sambhaji Nagar, for providing the necessary facilities and support to carry out this work. We are also thankful to the Departments of Anatomy and Pharmacology for their cooperation and assistance throughout the preparation of this manuscript. The authors further acknowledge with appreciation the contributions of all researchers whose work has been cited in this article.

References:-

1. Cornely OA, Alastruey-Izquierdo A, Arenz D, et al. Global guideline for the diagnosis and management of mucormycosis. Lancet Infect Dis. 2019;19:e405-e421.
2. Petrikkos G, Tsioutis C. Recent advances in the pathogenesis of mucormycoses. Clin Ther. 2018;40:894-902.
3. Prabhu RM, Patel R. Mucormycosis and entomophthoramycosis. Clin Microbiol Infect. 2004;10:31-47.
4. Ribes JA, Vanover-Sams CL, Baker DJ. Zygomycetes in human disease. Clin Microbiol Rev. 2000;13:236-301.
5. Spellberg B, Edwards J Jr, Ibrahim A. Novel perspectives on mucormycosis. Clin Microbiol Rev. 2005;18:556-569.