



Fungal Gastric Ulcer Perforation in an Immunocompetent Individual: A Rare Case Report and Review of Literature

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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Case Study

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ABSTRACT

Fungal infection of gastrointestinal tract is frequent in immunocompromised patients and rare in an otherwise healthy individual. Gastric perforation commonly occurs as a complication of peptic ulcer disease. Other causes include prolonged intake of Nonsteroidal Anti-inflammatory Drugs, steroid abuse, neoplastic diseases. Gastric perforation due to secondary *Candida albicans* infection is exceedingly rare. We present a hypertensive 70 year old lady presenting in emergency department with peritonitis. She was taken up for emergency laparotomy. Intra-operatively gastric ulcer perforation was found and repaired with Graham's omental patch repair. Edge biopsy findings was consistent with fungal etiology showing hyphae of *Candida albicans*. We concluded that fungal infection can cause gastric ulcer perforation beside a much-discussed *H. pylori* infection. So, a high index of suspicion is needed to rule out fungal infection as a possible etiology.

Keywords: Peptic ulcer perforation; Fungal gastric infection; Amphotericin B.

1. INTRODUCTION

Candida albicans is a commensal found in the oral cavity, vagina, and the gastro-intestinal tract. It is also an opportunistic pathogen, able to cause both superficial and systemic infections, the latter mainly occurring in immunocompromised patients [1]. *Gastric candidal* infections are rare as it cannot adapt in low pH of gastric juice and the commensal bacteria inhibit its proliferation [2]. It is commonly seen in immunocompromised and debilitated patients. Gastrointestinal fungal infection is most commonly seen at oesophagus and rarely occur in stomach and small bowel [1]. Transmural fungal infection due to candida can be detected in as many as 25% of normal oesophagus [3]. Its incidence can be attributed to growing number of invasive procedures, newer methods of aggressive immunosuppressive and immunomodulatory treatments and non-judicious widespread use of broad-spectrum antibiotics [4-5]. We report a case of perforated gastric ulcer with secondary *Candida albicans* infection in an immunocompetent individual.

2. CASE REPORT

A 70-year-old female Hindu from Thoubal district of Manipur presented with a 3-day history of severe generalized abdominal pain in emergency department, Jawaharlal Nehru Institute of Medical Sciences (JNIMS), a tertiary care centre in Imphal. The pain was associated with progressive distension of abdomen and constipation for two days. No history of fever or vomiting. She is a known hypertensive with a previous history of cerebrovascular accident with right hemiplegia currently on tablet Telmisartan. She is also a chronic smoker with a pack-years of 9. For 30 years she smoked local rolled tobacco and stopped 3 years back when she was diagnosed with Hypertension. There is no history of diabetes mellitus, tuberculosis, any major operative procedures or blood transfusion. She consumes mixed diet and preferably eats smoked fish and fermented fish. She has no history of abuse of NSAIDs, steroids or any other substances. Her vital signs at presentation were blood pressure of 100/60 mmHg, pulse rate of 118 beats per minute and, oxygen saturation of 85% in room air. She was pale and dehydrated. Abdomen was distended with diffused tenderness and guarding. Liver dullness was obliterated with tympanic notes. Abdominal X-ray shows pneumoperitoneum under right diaphragm and was taken in erect position as it has better

sensitivity to detect small amount of air. She has a differential Leukocyte count of 13,480 with a blood picture of Neutrophilia at 88%. Her haemoglobin is 7.6 gm%, Prothrombin time of 19.6 secs, INR of 1.52, Random blood sugar of 110 mg/dl and reduced serum albumin at 1.5gm/L. She has a mildly deranged Kidney function test shown by Urea of 110 mg/dl and serum creatinine of 1.2 mg/dl. Viral serology test consisting of HbsAg, HCV antibody and HIV (ELISA) were negative. Resuscitation started with crystalloids, Injection Ceftriaxone 500mg twice daily and Injection Metronidazole 500mg thrice daily, Injection Tramadol for pain, Ryle's tube insertion for aspiration and decompression of stomach, Foley's catheterization for urinary output monitoring and strict monitoring of vitals were done. She was planned and taken up for emergency exploratory Laparotomy. About 500 ml of bilious fluids with flakes were drained. A perforation of around 0.5x0.5 cm identified at anterior wall of Pylorus and checked for other synchronous perforations. Considering the magnitude of the perforation, Graham's omental patch repair was done. Two abdominal drains were placed at Morrison's pouch and pelvic cavity. Perforated ulcer margin was excised and sent for histopathological examination and peritoneal fluid for culture and sensitivity sent. Post operatively patient was managed in Intensive care unit for proper monitoring. 3 units of packed cell RBCs were given. Ulcer margin biopsy showed Candidal hyphae, one of the three biological phases of Candida. Culture was done on Sabouraud Dextrose agar which shows a characteristic cream coloured, smooth, glabrous and yeast like in appearance [6]. Sensitivity was done by Disc diffusion method which showed *Candida albicans* sensitive for Amphotericin B. She was treated with amphotericin B 50 mg IV 12 hourly for ten days with alternate day monitoring of serum kidney function test. She recovered well and was discharged on post-operative day 14 with blood pressure of 110/70 mmHg and pulse rate of 84 beats per minute.

3. DISCUSSION

Candida is a commensal organism of the gut. In healthy individual its proliferation is kept in check by beneficial bacteria. It becomes pathogenic when the balance is upset by factors like non-judicious use of anti-biotics, change in pH of gastric juice due to prolonged intake of acid suppressing drugs, immune-compromised state and prolonged use of steroids [7]. Fungal

esophagitis frequently appears in literature in both immunocompetent and immunocompromised patients [8-10]. However, exclusive candida infection in gastric mucosa are rare and have been reported mostly in morbid patients undergoing surgery for peptic ulcer disease and its complications or in immunocompromised patients but infrequently so in immunocompetent patients [11-12].

Diabetes Mellitus remains the most common condition predisposing to fungal infections, other

susceptible conditions are HIV infection, chemotherapy, organ transplant, and gastro-oesophageal surgery [13]. But the infection is susceptible to immune-competent individuals too [14-15].

It is also a controversial topic if Candida infection causes delay in gastric ulcer healing. While case reports on delayed gastric ulcer healing due to candida infection is available, recent prospective studies show there is no significant differences in the healing rates [16].

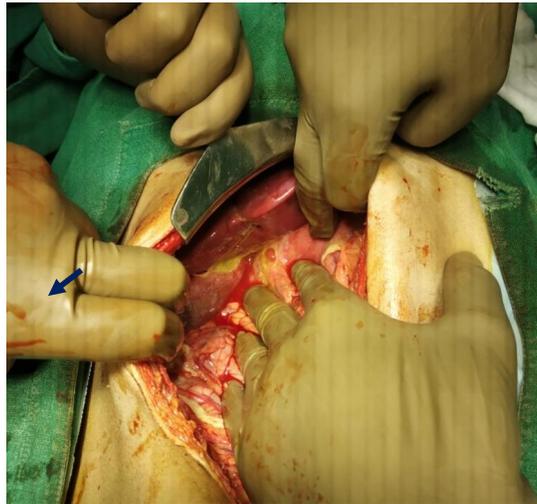


Fig. 1. Perforation site (blue arrow)

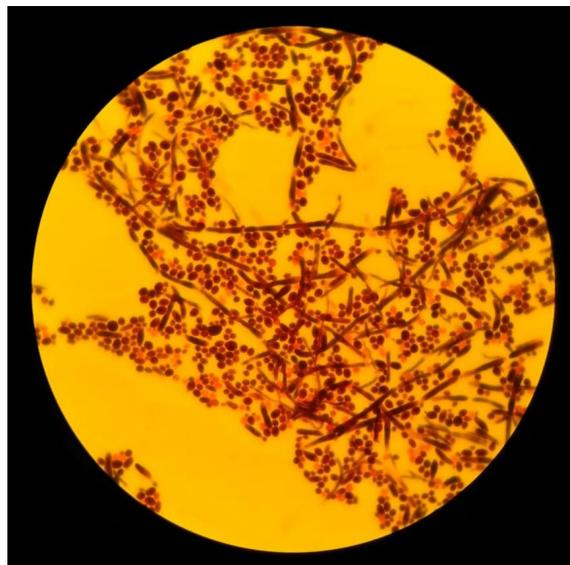


Fig. 2. Gram stain of culture growth with oil immersion lens. Resolution is 1000 times magnification



Fig. 3. Candidal growth on Sabouraud Dextrose agar

In our study, the patient is on Hypertensive medication ever since she was diagnosed with it 3 years ago after an episode of Stroke. She has been taking the medication regularly along with Tablet Pantoprazole 40mg. She was diagnosed with Hollow viscus perforation. Prolonged medication with Telmisartan 40mg for hypertension may be a cause but literature shows that Telmisartan, an Angiotensin receptor blocker, is gastro-protective [17]. Role of acid suppression in promoting gastric Candida infection is also controversial [18]. Studies suggested that there is no remarkable difference in finding higher candida culture rates in those patients who are receiving H2-blockers or Proton pump inhibitors than those who receive no treatment for gastric ulceration [17]. An exploratory laparotomy with Graham's Omentopexy was performed on her. She was started on Injection Amphotericin B on post-operative day 3 after her culture & sensitivity report. There were no remarkable change in her blood pressure due to treatment with Amphotericin B [19-20]. But post-operative Hypokalaemia was corrected after treatment with Amphotericin B was commenced [21]. Injectable Potassium chloride was supplemented and proper monitoring done with Echocardiogram. After commencing oral feeding,

she was instructed to use syrup potassium supplement and was subsequently discharged on post-operative day 14 with stable blood pressure of 110/70 mmHg. She was instructed to follow up with an upper GI endoscopy but she never complied.

4. CONCLUSION

Our case report highlights Candidal infection in a non-immunocompromised individual with perforated gastric ulcers. A high index of suspicion is therefore needed when considering such cases and not just limited to immunocompromised patients.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. John E. Edwards Jr. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. 2015;8.
2. Md. Mukhtar Naved, Nishant, Asim A. Minj, Shital Malua. A Rare Case of Gastric Perforation by Candida Albicans: A Case Report. 2017;4(1):76-8.
3. Baha Al- Shawwa, Lynn DA, Diana Quintero. Candida oesophageal perforation and oesophago-pleural fistula. Journal of Medical case report. 2008;2:209.
4. Chahoud J, Kanafani ZA, KANJ SS. Management of Candidemia and Invasive candidiasis in critically ill patients. Int J Antimicrob Agents. 2013;8:134-9.
5. Sartelli M, Catena F, Ansaloni L, Moore E, Malangoni M, Velhams G et.al. Complicated intra-abdominal infections in a worldwide context: an observational prospective study (CIAOW Study). World J Emerg Surg. 2013;2013;8:1.
6. Mohamed E Hamid. Candida and other yeasts of clinical importance in Aseer region, Southern Saudi Arabia. Presentation of isolates from the routine laboratory setting. Saudi Med J. 2014;35(10):1210-4.
7. Girish D. Bakshi, Ashok D. Borisa, Aftab S. Shaikh. Invasive Gastric Candidiasis with perforation. Bombay Hosp. Journal. 2011;53(2):264-5.
8. Badarinarayan G, Gowrisankar R, Muthulakshmi K. Esophageal candidiasis in non-immune suppressed patients in a semi urban town, southern India. Mycopathologia. 2000;149:1-4.
9. Anjum S, Asaad A, Zafar Z, et al. Fungal esophagitis in a child with Insulin dependent Diabetes Mellitus. J Coll Physicians Surg Pak. 2016;26:712-3.
10. Nassar Y, Eljabbour T, Lee H, et al. Possible risk factors for Candida esophagitis in immunocompetent individuals. Gastroenterol Res. 2018;11:195-9.
11. Praveer R, Sunil BC. Giant fungal gastric ulcers in an immunocompetent individual. Saudi J Gastroenterol. 2012;18:282-4.
12. Rajablou M, Ganz RA, Batts KP. Candida infection presenting as multiple ulcerated masses. Gastrointest Endosc. 2007;65:164-6.
13. Celia F Rodrigues, Maria E Rodrigues, Mariana Henriques. Candida sp. Infection in patients with Diabetes Mellitus. J Clin Med. 2019;8(2):76.
14. Pugh TF, Fitch SJ. Invasive Gastric candidiasis. Pediatric radiology. 1986;16:67-8.
15. Tran HA, Vincent J, Slavin M, Griggs A. Esophageal perforation which was secondary to invasive Candida glabrata following a hematopoietic stem cell transplantation. Clinical microbiology and infection. 2003;9:1215-18.
16. Ramani R, Ramani A, Kumari GR, Rao SA, Chakravarthy S, Shivananda PG. Fungal colonization in gastric ulcers. Indian J Pathol Microbiol. 1994;37:389-93.
17. Morsy M, Ashour O, Amin E, Rofaeil R. Gastroprotective effects of telmisartan on experimentally-induced gastric ulcers in rats. Die Pharmazie. 2009;64(9):590-4.
18. M K Goenka, R Kochhar, A Chakrabarti, A Kumar, O Gupta, P Talwar, S K Mehta. Candida overgrowth after treatment of duodenal ulcer. A comparison of cimetidine, famotidine, and omeprazole. J Clin Gastroenterol. 1996;23(1):7-10.
19. Wang K, Lin HJ, Perng CL, Tseng GY, Yu KW, Chang FY et al. The effect of H2 receptor antagonist and proton pump inhibitor on microbial proliferation in the stomach. Hepatogastroenterology. 2004;51:1540-3.
20. Rowles DM. Amphotericin B lipid complex (ABLC)-associated hypertension: case report and review. Clin Infect Dis. 1999;29(6):1564-5.

21. Eiseki Usami, Michio Kimura, Tetsufumi Kanematsu et al. Evaluation of hypokalaemia and potassium supplementation during administration of liposomal-amphotericin B. *Exp Ther Med.* 2014;7(4):941-6.

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