

Gastrointestinal Fungal Co-Infection Complicating the Course of COVID 19 Infected Post-Surgical Infant

Debashish Bhattacharya^{1*}, Sreekar Gundapaneni¹ and Ibrahim Adnan Sulaiman²

Abstract

Although there is a rare chance of developing fungal co-infection in COVID 19 patients, once established it might cause significant morbidity and mortality. As a result, high index of suspicion of this condition will help in timely diagnosis and subsequent early treatment.

Here in, the author has reported the first case of gastrointestinal fungal infection in an infant age group with COVID 19. The infant was successfully managed with surgical resection, antifungals, and supportive management.

Keywords: Gastrointestinal fungal infections; COVID-19; Amphotericin-B.

Background

During the stay of the COVID-19 patient in the hospital, the patients are susceptible to develop nosocomial bacterial and fungal co-infections. There is an increased risk for fungal infections in COVID 19 patients not only because of the immunosuppressive effects of the primary disease condition but also due to the effects of drugs like steroids which are used for treatment of COVID 19[1]. Mucor mycosis, Aspergillosis and invasive

candidiasis are the most commonly reported fungal co-infections.

Here, Author is presenting a case of gastrointestinal fungal infection following a recent COVID 19 infection, complicating the stay of an infant with NEC stricture. The patient had a good outcome because of an early clinical suspicion, timely diagnosis, and prompt treatment.

¹Department of Paediatric surgery, Sultan Qaboos Hospital, Salalah, Postbox no. 98, Dhofar Governate Sultanate of Oman

²Department of Pathology, Sultan Qaboos Hospital, Salalah, Postbox no. 98, Dhofar Governate, Sultanate of Oman

***Corresponding Author:** Debashish Bhattacharya, Department of Paediatric surgery, Sultan Qaboos Hospital, Salalah, Postbox no. 98, Dhofar Governate Sultanate of Oman.

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Case presentation

A 45-day old child presented with abdominal distension and not passing stools for one week. There is no history of delayed passage of meconium. There was a previous history of resuscitation and prolonged stay in NICU at time of birth. After admission, on routine workup found to have COVID 19 and was kept in isolation and managed conservatively with enema and rectal washes. However, the abdominal distension gradually progressed and resulting in respiratory compromise. Subsequently child was explored and found to have focal colonic stricture (post NEC) at the beginning of ascending colon and underwent resection of ileocolic segment and end to end anastomosis of the segment. Postoperatively, child was started on TPN and remained on ventilator support and repeat COVID 19 PCR test was again positive. The histopathology report showed presence of ganglion cells in appendix and resected ileocolic segment. On postoperative day 9, child was again explored in view of non-passage of stools and contrast enema showing anastomotic leak. On

exploration, proximal segment of anastomosis was dilated, and distal anastomotic colon was collapsed with leak at the posterior side of anastomosis. Diverting stoma was made and the resected anastomotic segment and multiple colonic biopsies were sent for biopsy. The histopathology report on POD 7 of second surgery showed fungal hyphae in the proximal anastomotic segment (Figure 1) and the colonic biopsies showed presence of ganglion cells in all the biopsies. Due to lack of appropriate staining in our center, a fungal staining of the histopathology sample could not be performed in our case to further characterize whether it's a mucor mycosis or not. In view of the report, the child was started on antifungals (amphotericin B) and the child started improving gradually and finally discharged in stable condition after 14 days of antifungals. Child subsequently underwent stoma closure and had uneventful postoperative course. On follow-up, Child is on full orals, gaining adequate weight gain and passing stools regularly.

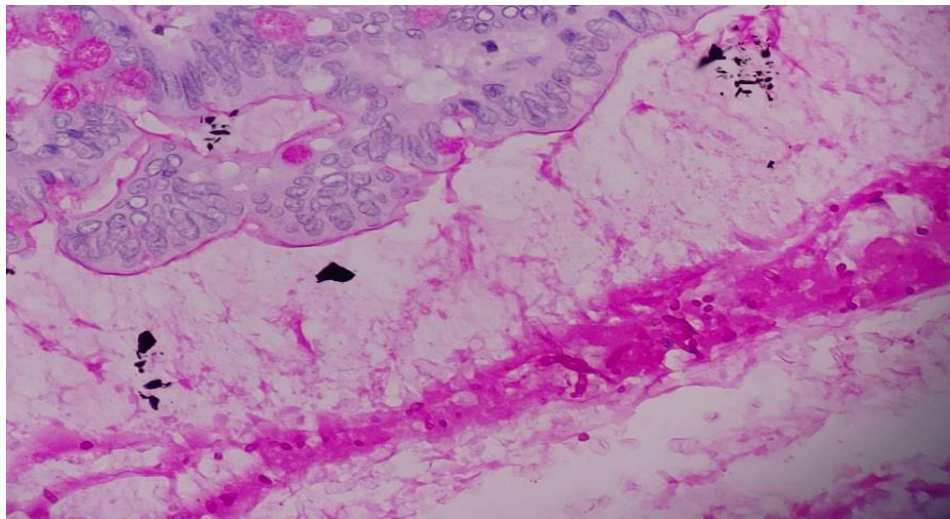


Figure 1: Photomicrograph shows a small bowel type mucosa with inflammatory exudate on the surface containing fungal spores and hyphae (PAS stain 400x).

Discussion

During the recent COVID pandemic, it was noticed that there is an increased incidence of fungal infection in otherwise immunocompetent individuals who were infected with COVID-19. The morbidity and mortality may significantly reduce by early identification of fungal infections. The fungal infections are commonly seen in the nasal sinuses followed by orbit and lungs [2]. Gastrointestinal fungal infections in COVID 19 are rare and there are only few case reports in the adult age group and none in the infant age group. Singh et al reported the first case of gastrointestinal Mucor mycosis in an adult individual after 19 days of the COVID 19 infection who underwent resection of the involved segment and diversion, antifungals started at appropriate time and subsequent stoma closure and the management was also similar in our case[3]. If clinical findings are

suggestive of Mucor mycosis, preemptive therapy should be started. Due to its invasive nature, ability to disseminate to other distant organs and poor outcome, aggressive management is required. In general, management of gastrointestinal fungal infection includes prompt diagnosis, the reversal of underlying predisposing factors, aggressive surgical debridement of infected tissues and the initiation of antifungal therapy. Drug of choice for treatment of Mucor mycosis is liposomal amphotericin B. The fungicidal action of amphotericin B has been shown to enhanced by rifampicin [4]. Second line therapy is Posaconazole. The fungicidal activity of colistin (polymyxin E) in vitro against Mucorales spores and mycelia has been demonstrated by Ben-Ami et al[5]. Very rarely, in patients with severe COVID-19 fungal infections has not responded to antifungal treatment[6]. In our case, the infant responded well with amphotericin B.

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