thrombocytopenic purpura is defined by the presence of pentad of symptoms. These include thrombocytopenia, renal failure, seizure/abnormal CNS condition, microangiopathic anemia along with fever [8]. Evidence of microangiopathy may be evident on peripheral blood smear or elevated lactate dehydrogenase. Both of our patients developed these clinical symptoms and relevant laboratory findings during the course of hospitalization.

In adults, sufficient data is available highlighting the association of TAMOF with various conditions but TTP associated with DKA has been reported in one case only [9]. Only one case of TAMOF has been recently reported in a child with diabetic ketoacidosis but in that case, there was also associated pancreatitis which may have contributed to the development of microangiopathy and TAMOF [10]. No other risk factor except diabetic ketoacidosis was identified in our case series which may have led to the development of TAMOF/TTP.

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Neonatal Zygomycosis with Gastric Perforation

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Zygomycosis is a rare infection in neonates. The clinical presentation is non-specific and diagnosis most often is made at autopsy. Surgical debridement performed early improves survival. We report a case of neonatal zygomycosis with gastric perforation.

Keywords: *Neonate, Zygomycosis, Intestinal perforation.*

Neonatal zygomycosis occurs rarely with only 59 cases described in English literature till 2007 [1,2]. Skin is the most common point of entry for these patients. Premature infants represent 72% of cases and the overall mortality rate varies from 64-75% [1,2]. Gastrointestinal tract (GIT) involvement results from ingestion of fungal spores and prematurity is an important predisposing factor [1,3]. Early initiation of therapy is crucial in maximising outcomes and optimal management strategies have not been defined [4]. We present a case of neonatal zygomycosis with gastric perforation.

CASE REPORT

A four-day-old male baby weighing 1880 grams presented with abdominal distension for 30 hours. He was born vaginally at 34 weeks in a private nursing home and had cried immediately after birth. He received oxygen, intravenous fluids and intravenous amikacin and piperacillin-tazobactum for tachypnea, and formula feeds by nasogastric tube by day 2 of life. The baby developed abdominal distension on day 3 and feeds were stopped.

The baby was referred to us in view of no improvement. At admission, he was hypothermic (axillary temperature 35.5º C), heart rate was 160/min, respiratory rate was 62/min and capillary refill time was normal. The oxygen saturation on room air was 84%. Examination revealed tense distended abdomen with absent bowel sounds. Rest of systemic examination was normal. Investigations revealed hemoglobin 17.9 g%, total leucocyte count (TLC) 5050 cells/mm^3 (Polymorphs 79%, Lymphocytes 17%), and platelet count 1.83 lac/mm^3. The immature: total neutrophil ratio was 20% and micro erythrocyte sedimentation rate was 10 mm at the end of first hour. Cerebrospinal fluid examination was normal. Baby was administered oxygen by nasal prongs, intravenous fluids and antibiotics (piperacillin- tazobactum and amikacin) were continued. *X*- ray abdomen revealed free gas under diaphragm. At 12 hours of admission, exploratory laparotomy was performed, which revealed gangrenous perforation (1 × 2 cm) of anterior wall of stomach with loculated fluid collection in peritoneal cavity. Excision of the gangrenous portion and feeding jejunostomy was done. Baby continued to have bilious nasogastric tube aspirates in the post operative period. He developed leucopenia (TLC 4500/mm^3) and thrombocytopenia (platelet count- 78,000/mm^3) by fifth post-operative day. Blood urea was high (58mg/dL). Blood cultures were negative. Gastric wall biopsy received on eighth post-operative day revealed gangrenous segment with fungal colonies of zygomycetes with angioinvasion (***Fig.* 1**). Zygomycetes was also isolated from gastric aspirate samples on eight post-operative day. The baby was started on intravenous fluconazole on day 8 of hospitalisation. Jejeunostomy feeds (expressed breast milk) were initiated by day 8 of antifungal therapy. Repeat gastric aspirates were negative. Both leucopenia and thrombocytopenia began to normalise by day 14 of therapy. The baby started gaining weight and was transited to full jejunostomy feeds by day 16 of therapy. However, parents took the baby home against medical advice for personal reasons on day 21 of treatment.

DISCUSSION

Zygomycosis is the new taxonomic classification which includes organisms in the order Entomophthorales and Mucorales [1]. The fungi in the order Mucorales have been associated with human disease; and are collectively referred to as zygomycetes [5]. The predisposing factors for zygomycosis include prematurity, asphyxia, umbilical catheterization and assisted ventilation [1,6]. Gastrointestinal tract is the most commonly involved site in neonates followed by cutaneous involvement [2]. Skin is the most common portal of entry in neonates with adhesive tape, monitor leads or central venous access sites predominating. Gastrointestinal infection results from ingestion of fungal spores either from environment or from colonised upper airways. Occasionally hematogenous or direct extension route can result in intestinal involvement [1]. All sites in GIT can be involved with stomach and colon being most preferred sites [1]. Premature infants with gastrointestinal mucormycosis may experience necrotising enterocolitis with or without pneumatosis intestinalis. Perforation after bowel wall necrosis is a common occurrence [1,3]. The baby is generally sick with low counts and may show a poor response to conventional chemotherapy [2]. The diagnosis is made on histological examination which may reveal thrombosis of the small gut vessels with angio-invasion [1,2,5]. Microbiological cultures are generally negative for fungi. 56% neonates were diagnosed as zygomycosis on histology and 44% were diagnosed on histology and culture [2]. The identification of the zygomycete species is generally not performed in most clinical laboratories due to inexperience in the recognition of microscopic differences among species, unavailability of tester strains to perform mating studies, or a lack of access to materials needed to perform molecular diagnostics. Microscopic evidence of a zygomycete in clinical material from a deep tissue biopsy is sufficient for the confirmed diagnosis of zygomycosis.

The case fatality is high, especially in premature neonates [1]. In an *in vitro* study of 37 isolates of zygomycosis, the mean inhibitory concentration of various antifungals were reported [7]. Amphotericin B has been used in most trials, though occurrence of side effects limits its use [4, 8]. Liposomal amphotericin is less toxic but often not affordable due to its high cost. Azoles have been tested and have proved efficacious. Funada, *et al.* [9] reported improvement in a patient with pulmonary mucormycosis with fluconazole. Similarly,

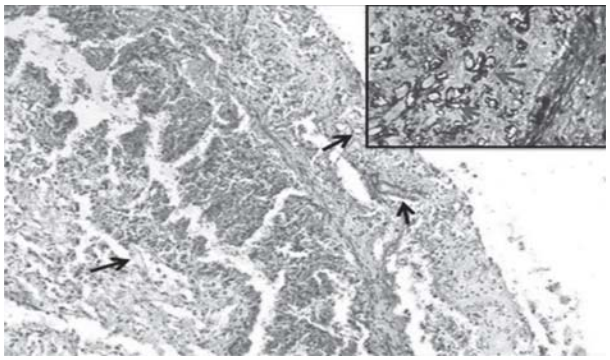

FIG.1 *Ulceration of the gastric mucosa with ulcer bed showing broad branching fungal hyphae (arrow) entrapped in the inflammatory granulation tissue (HCE×40). Inset shows hyphae stained black.*

Selcen, *et al.* [10] reported complete recovery with fluconazole in a diabetic child with mucormycosis. There is a role of newer therapies like hyperbaric oxygen, immunotherapy and iron chelation [4,8].

Mucor is angioinvasive hence surgical debridement is necessary for radical cure [1,2,4]. Most patients need repeated surgical debridement. Outcome was seen to be adversely affected in neonates where surgical debridement could not be performed [4,8].

To conclude, zygomycosis is a rare life threatening infection in neonates. It should be suspected in neonates presenting as acute abdomen. Early diagnosis combined with medical and aggressive surgical approach is the mainstay of therapy.

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Inferior Vena Caval and Right Atrial Thrombosis: Complicating Pyogenic Liver Abscess

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Vascular complication of liver abscess are rare but life-threatening. We herein report a 2 year 9 month boy with pyogenic hepatic abscess complicated by inferior vena cava thrombus extending to right atrium. Early clinical suspicion aided by ultrasonography and echocardiography confirmed the diagnosis. The child was treated successfully with timely medical and surgical intervention.

Key words: *Complication, Liver abcess, Pyogenic.*

The common complications of liver abscess include rupture into pleural, peritoneal cavity and pericardial spaces. Unusual vascular complication like inferior vena cava (IVC) thrombosis has been reported only in adult patients of amebic liver abscess but has never been reported in cases of pyogenic liver abscess [1,2]. We herein report a child with pyogenic (S*taphylococcal aureus*) hepatic abscess complicated with inferior vena cava thrombus extending to right atrium.

CASE REPORT

A 2-year-9 months-old boy presented with high grade fever, abdominal distension and cough for 4 days. On