CASE REPORT

Kodamaea ohmeri Infection in a Neonate

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Kodamaea ohmeri is an extremely uncommon human pathogenic yeast. It causes opportunistic infection in immunocompromised hosts. We report a case of *Kodamaea ohmeri* fungemia in a preterm neonate who succumbed despite antifungal therapy.

Key words: *Fungemia, Kodamaea ohmeri, Preterm, Sepsis.*

The yeast *Kodamaea ohmeri* was earlier described as *Pichia ohmeri* and *Yamadazyma ohmeri*(1). This species is pathogenic to plants and is used in the food industry for fermentation(2). In humans, it is a rare pathogen not so far reported from India. Out of about twenty cases reported in literature till date, seven belong to the pediatric age group, including two neonates(2,3).

CASE REPORT

A preterm male neonate (28 weeks of gestation, birth weight 1300 g) was transferred to the neonatal intensive care unit at our hospital. He was delivered by emergency cesarean section due to abruptio placentae. On admission the baby was having hypoxia, hypothermia, hypotension, pallor and respiratory distress. Baby was intubated and provided mechanical ventilation. After the initial fluid resuscitation, umbilical arterial and venous catheters were inserted. *X*-ray chest was suggestive of hyaline membrane disease. By 48 hours, baby's general condition stabilized after receiving multiple packed cell transfusions, ionotropes, broad spectrum antibiotics and other supportive care. Baby developed patent ductus arteriosus (PDA) on day 5 which responded to pharmacological treatment. On day 5, intravenous fluconazole was added in view of baby's general condition, prolonged presence of invasive devices along with other high risk factors like prematurity, very low birthweight and presence of broad spectrum antibiotics. Baby was weaned-off the ventilator and extubated on day 7 along with the removal of umbilical catheters. Baby required reintubation within 24 hours in view of respiratory distress and appearance of new right lower zone infiltrates on chest *X*-ray. Fresh blood culture was sent and intravenous antibiotic changed. Provisional report of blood culture showed presence of budding yeast cells. Hence, on day 10, conventional amphotericin B (1mg/kg/day) was added, while continuing fluconazole. However, the baby developed manifestations of disseminated intravascular coagulation and died on day 13.

The two aerobic blood cultures drawn from the peripheral vein (BacT/Alert PF) were incubated at 37º C for 7 days in an automated culture system (BacT/Alert 3D - bioMerieux® Marcy l' Etiole -

France). The culture was positive after 28 hours of incubation and a gram stain showed budding yeast cells. The umbilical catheter tip sent for culture also grew the same yeast isolate. Both yeast isolates were germ tube negative and were identified as *Kodamaea ohmeri* based on carbohydrate assimilation tests performed on mini Analytical Profile Index (API) (bioMerieux® Marcy l' Etiole - France) using 32 carbohydrates with an updated database of yeasts. The two isolates were found to be susceptible to all antifungal agents (amphotericin B MIC < 0.5 µg/mL; fluconazole MIC = 4.0 µg/m, Itraconazole MIC <0.125 µg/mL, voriconazole MIC <0.063 µg/mL; 5-flucytosine MIC <4 µg/mL).

Since *K.ohmeri* is an uncommon human pathogen, we sent the isolates to PGIMER, Chandigarh for molecular confirmation. The ribosomal DNA (rDNA) of the two isolates was amplified by polymerase chain reaction (Bangalore Genie) and sequenced using the BigDye terminator cycle (Applied Biosystems, Foster City, CA). Sequence analysis of the 5.8S rDNA was done on Genetic Analyzer 3130 (Applied Biosystems) which proved the two yeast isolates to be identical strains of *Kodamaea ohmeri.*

DISCUSSION

Though *Candida* species remains the commonest opportunistic yeast causing fungaemia in neonates, non *Candida* yeasts like *Trichosporon* species and *Malessezia* species are increasingly being reported as pathogens in preterm neonates with invasive devices(4,5). The present report adds to the above trend.

Kodamaea ohmeri belongs to a genus of ascosporogenous yeasts from the Saccharomycetaceae family(1). This species is a teleomorph of *Candida guilliermondii var. membranaefaciens.* Cases of *K.ohmeri* fungaemia reported so far are from immunocompromised hosts with presence of invasive devices(3,6).

Amongst the various risk factors for invasive fungal infections, fungal colonization of the invasive device is found to be an independent risk factor and predictor of progression to sepsis in preterm very low birthweight neonates(7,8). A colonized central venous cathetar predisposes the infant to tenfold higher risk of progression to invasive fungal infection, as compared to other colonized sites (7).

Management of invasive fungal infection includes removal of the colonized invasive device and specific antifungal therapy. Both isolates from our patient were susceptible to fluconazole and amphotericin B. The patient received both the antifungal agents but repeat cultures to see their efficacy could not be done. It is difficult to know whether lack of response was due to failure of antifungal agents or the setting the DIC with multiorgan failure. Of the two cases of *K. ohmeri* infection in preterms reported in literature, one baby recovered without any antifungal agent after removal of umbilical catheter(3). In the other patient, fluconozole alone as well as combined with amphotericin B did not work, as shown by repeated cultures. Baby responded only after starting liposomal amphotericin B(2). Liposomal amphotericin B scores over the conventional preparation because of its safety profile. Additionally there is increasing evidence to suggest that it may be more efficient in eradicating severe fungal infections in neonates(9,10).

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