CASE REPORT

A case report of *Candida pelliculosa* sepsis in newborn nursery ICU

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ABSTRACT

Nosocomial transmission of Candida is a very important cause of infection in the neonatal intensive care unit (ICU). We report a cluster of fungemia cases caused by *Candida pelliculosa* in 17 neonates in our inborn nursery. Of these, 16 were premature babies who showed signs of infection. Yeast colonies isolated from their blood cultures were identified by Vitek 2 System (bioMerieux) at the Regional Cancer Centre Thiruvananthapuram. All the babies were treated with Amphotericin B successfully, with no relapse. Extensive sampling was undertaken from the ICU and cultures performed. Although no definite source could be identified, nosocomial spread of Candida stopped after infection control measures were strictly reinforced in the inborn nursery. This highlights nonalbicans Candida as an emerging pathogen in neonatal ICUs.

Key words: *Candida pelliculosa*, fungemia, neonatal ICU

INTRODUCTION

Nosocomial transmission of Candida is a very important cause of infection in neonatal intensive care unit (ICU).[1] The incidence of neonatal candidiasis in low birth weight (LBW) infants is 7-20% and is associated with significant morbidity and mortality.[2] Even though *Candida albicans* is most often associated with neonatal infection, recent reports suggest an increasing number of infections by nonalbicans Candida, causing common source outbreaks in pediatric ICUs.

CASE REPORT

We report a cluster of fungemia cases caused by *Candida pelliculosa* in 17 neonates in the ICU of the newborn nursery (NICU) of TD Medical College, Alappuzha, Kerala, India. Among 17 neonates, 16 were preterms admitted for preterm care. The term baby was hospitalized for aspiration pneumonia. The gestational age and birth weight of babies varied between 31 and 33 weeks and 1.15-1.5 kg, respectively. The babies developed signs of sepsis after 3-4 days of admission in the ICU.

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MICROBIOLOGY INVESTIGATIONS

The blood samples of the babies were sent for culture. Cerebrospinal fluid (CSF) sample of a preterm was also sent for culture. Yeast like colonies grew on blood agar in all the samples.

Gram stain of colonies showed slightly elongated Gram positive budding cells [Figure 1]. The fungus was presumptively identified as nonalbicans Candida based on negative germ tube test. The urease test was also found to be negative.

All the isolates were identified as *C. pelliculosa* by VITEK 2 System (bioMerieux) at the Regional Cancer Centre, Thiruvananthapuram, Kerala and all were sensitive to Amphotericin B, Fluconazole, and Voriconazole.

During the period, all babies were nursed in the same room by the NICU staff members. Clinical surveillance and extensive sampling was undertaken from fomites and other environmental sources of NICU (including disinfectant solutions, multi dose vials, infusion pumps, medical equipments, and water supply in ICU). Mothers of neonates were also randomly screened for the fungus, yet we could not detect the source.

We analyzed the potential risk factors in our case. All 17 neonates had IV catheterization and were under broad spectrum antibiotic coverage, which might

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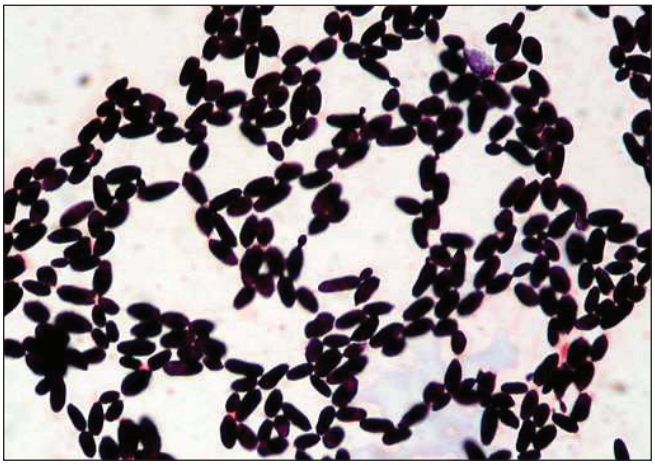

Figure 1: Gram's stain showing Gram positive budding yeast cells

have been the risk factors for invasive fungal infection. There was a practice of reusing the stock solution for total parenteral nutrition in the ICU. This might have been the source of infection. Since it was unavailable for culture, the potential source could not be tested. This wrong practice was stopped. Meanwhile rigorous cleaning measures and fumigation was undertaken in the ICU. All these measures could control the outbreak.

Finally compliance with standard infection control measures including hand washing and adherence to safe use of stock solutions stopped the nosocomial spread.

Clinical outcome of the outbreak was recovery, as all the neonates responded to Amphotericin B with or without Fluconazole. Studies show that some isolates of *C. pelliculosa* show resistance to azoles but resistance to Amphotericin B has not been reported so far.

DISCUSSION

Even though *C. albicans* is the organism most often associated with serious fungal infection other Candida species have emerged as clinically important pathogens associated with opportunistic infections.

Candida pelliculosa (teleomorph *Pichiaanomala* previously called *Hansenulaanomala*) is a yeast frequently found in various fruits, tree exudates, soil, vegetables, and other organic compounds.[3] It grows at 37°C but do not form pellicle, chlamydospores, germtube, or pseudohyphae. It assimilates sugars like glucose, maltose, sucrose, galactose, cellobiose, Xylose, trehalose and ferments glucose, maltose, and sucrose. It utilizes nitrate and produces ascospores.

It has occasionally been reported as a causative agent of fungemia in both immunocompetent and immunocompromized patients. Recently, Lin *et al.* reported an outbreak of *C. pelliculosa* fungemia in a neonatal ICU.[4] Preterm neonates were found to be colonized with *C. pelliculosa* in the hospital setting. It has also been reported as a causative agent of nosocomial cerebral ventriculitis in LBW neonates, endocarditis in IV drug abusers, and UTI in renal transplant recipients.

A mortality rate of 41.2% was reported in an outbreak at a Brazilian pediatric ICU.[5] Fortunately all neonates in our case responded to Amphotericin B and Fluconazole.

This report highlights the clinical importance of emerging nonalbicans Candida in the neonatal ICU. However, the reasons for the occurrence of the majority of *C. pelliculosa* fungemia cases in the pediatric rather than adult age group should be evaluated with further studies.

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