ASPERGILLUS FUMIGATUS: A POTENTIALLY LETHAL UBIQUITOUS FUNGUS IN EXTREMELY LOW BIRTHWEIGHT NEONATES

Abstract: **Although *Aspergillus fumigatus* infection is relatively rare, it should be considered in preterm low birthweight neonates with a rapidly progressive purpuric rash. Prompt diagnosis and treatment is crucial to maximize the chances of survival.**

CASE PRESENTATION

A 760 g baby boy was born at 24 weeks gestation following the spontaneous onset of labor. Born in good condition, he was transferred to the Neonatal Intensive Care Unit (NICU) for further management. He developed a pneumothorax requiring insertion of chest drain. On day three of life, he developed a rapidly progressive purpuric rash with focal areas of ulceration on the chest, back, and limbs, and was commenced on intravenous broad spectrum antibiotics, antivirals, and prophylactic dose of fluconazole, in view of his antibiotic treatment and extremely low birthweight (ELBW). A dermatology review was requested. On examination, he was critically ill with confluent, verrucous and crusted black lesions on his upper back, and similar lesions scattered over his trunk and limbs. At the edges punched-out ulcers were observed (Fig. 1). His skin was dusky in color, with acral ischemic changes. Skin scrapings revealed fungal elements on microscopy (Fig. 2) and fungal culture later identified *Aspergillus fumigatus*. Blood cultures were negative for bacteria and fungi. Despite therapeutic doses of lipid formulation of amphotericin B and fluconazole, he developed multi-organ failure and died at 6 days of age. Postmortem revealed invasive pulmonary aspergillosis.

DISCUSSION

Although Aspergillus is a ubiquitous saprophytic fungus, infection usually occurs in immunocompromised hosts, including ELBW neonates. This may be the result of a functionally immature immune system, and immature skin barrier. The use of systemic antibiotics may increase the risk of opportunistic fungal colonization and infection. Infection can be subdivided into primary cutaneous aspergillosis (PCA), pulmonary aspergillosis, and disseminated invasive aspergillosis (DIA).

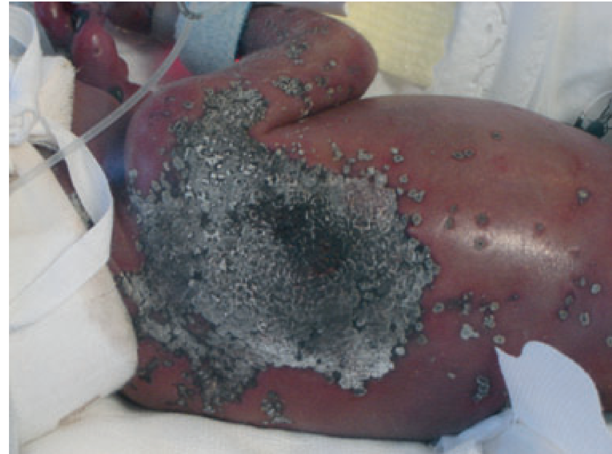

Figure 1. Critically ill baby with confluent, verrucous, and crusted black lesions on upper back. Note the punched-out ulcers at the lesion edges.

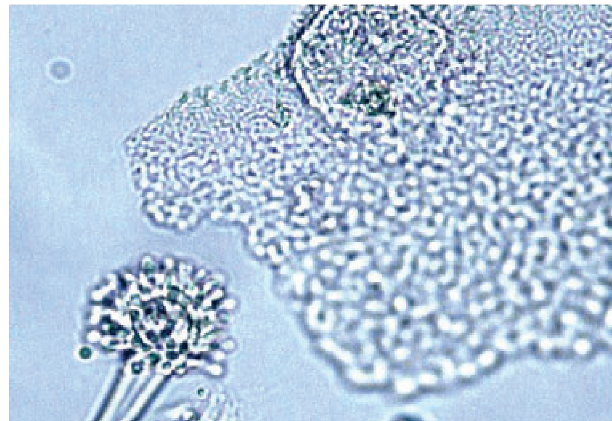

Figure 2. Direct wet mount microscopy of skin scrape showing the fruiting head suggestive of Aspergillus sp.

Aspergillus fumigatus is the most common species isolated in PCA (1), which has a more favorable prognosis than DIA. Patients with PCA remain at risk of developing potentially fatal DIA. The rapidly progressive clinical appearances can mimic meningococcemia. Skin biopsy, with Grocott methenamine silver stain to demonstrate fungal hyphae, is the mainstay of diagnosis of cutaneous Aspergillus. However, this stain cannot reliably distinguish between other filamentous molds. Blood cultures are usually negative in disseminated disease, but Aspergillus serum PCR may aid rapid diagnosis (2). Skin scrapings can be used for direct microscopy and culture.

Amphotericin B remains the cornerstone of treatment for both suspected and proven invasive aspergillosis in neonates. Increasing evidence of Aspergillus resistance is

found (3) and clinical deterioration should prompt the urgent selection of an alternative antifungal agent. Surgical debridement may also improve survival, but in extensive neonatal disease is often not feasible.

Outbreaks of Aspergillus infection in the immunocompromised are well documented, and may be attributed to dressing supplies, faulty air handling systems or construction work (4,5). Indeed, a subsequent case of PCA resulted in the temporary closure of our NICU to new admissions, whilst investigations to determine the source were undertaken. Close liaison with the hospital infection control team is crucial to identify the source of aspergillus and prevent any outbreak or further cases of nosocomial aspergillosis. Our case highlights the importance of a low threshold of suspicion in ELBW neonates with rapidly progressive necrotic rashes. Prompt diagnosis and treatment maximizes the chances of a favorable outcome.

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EWAN A. LANGAN, M.B.CH.B., B.SC., M.R.C.P. (UK)*,†
RAVI P. AGARWAL, M.R.C.P.C.H.‡
CHINARI PRADEEP KUMAR SUBUDHI, M.B.B.S., M.D., F.R.C.PATH. (UK)¶
MARY R. JUDGE, M.D., F.R.C.P. (UK), D.C.H.†
*Dermatological Sciences, University of Manchester, Salford Royal NHS Foundation Trust, Salford, UK, †The Dermatology Centre, Salford Royal NHS Foundation Trust, Salford, UK, ‡Neonatal Intensive Care Unit, Salford Royal NHS Foundation Trust, Salford, UK, ¶Department of Microbiology, Salford Royal NHS Foundation Trust, Salford, UK

Address correspondence to Dr. Ewan A. Langan, Dermatological Sciences, University of Manchester, Salford Royal NHS Foundation Trust, Stott Lane, Salford M6 8HD, UK, or e-mail: ewan.langan@postgrad.manchester.ac.uk.

FULL-THICKNESS CONTACT BURN FROM A WARMING BOTTLE IN A NEWBORN

Abstract: **Major full-thickness burn injuries in newborns are rare but have been reported following the use of medical and warming devices during the early neonatal period. In this report, we present a newborn infant with major full-thickness contact burn injuries of 15% of the total body surface area (TBSA) caused by a water-filled warming bottle applied to the naked skin, and describe the sequential progress of epidermal necrosis and wound healing with autografting.**

CASE REPORT

A two-hour-old full-term female newborn weighing 3,400 g was transferred with hypothermia and tachypnea. On admission, the baby was placed on a heated water-filled rubber bottle for 30 minute (water temperature was 41°C and surface temperature was 40.2°C) (Fig. 1). The skin on the scalp, shoulder, back, and buttocks was erythematous and had liquid-filled bullae with adjacent necrosis on the back and buttock (Fig. 2A). Full-thickness burns of 15% of the total body surface area (TBSA) were noted. The laboratory data revealed a leukocytosis and disseminated intravascular coagulation (DIC).

Fluid resuscitation, antibiotics, analgesic therapy, and enteral feeding were started immediately. Antithrombin III (750 IU/day) was administered for 5 days. Wet dressings of 1% potassium aluminum solution were applied for 24 hours, and Mupirocin ointment thereafter. The epidermal and subcutaneous necrosis progressed intensely (Fig. 2B). By the third day after the injury, respiratory distress and coagulation parameter was improved. On the fifth day, the bullae were removed and

Figure 1. Rubber-made water-filled warming bottle.