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CASE REPORT

Congenital Candidiasis

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Congenital candidiasis presents with a variety of clinical features. We report two neonates with congenital candidiasis characterized by diffuse erythematous papules associated with pneumonia and respiratory distress. *Candida* pseudohyphae were identifiable in skin scrapings. Systemic cultures were negative, but urine and sputum cultures grew *Candida albicans*. After prompt systemic antifungal therapy, the infants were discharged from hospital with no overt complications. This report highlights the presence of characteristic skin lesions associated with candidal infection, occurring within 24 hours of birth. This is an important observation which could help in the early diagnosis of congenital candidal infection.

1. Introduction

Congenital candidiasis is a disease rarely reported in the medical literature.[1] Congenital candidal infection can be associated with intrauterine or neonatal death due to disseminated disease.[2] The more premature the newborn infant, the greater the risk.[2] Congenital candidiasis is characterized by a variety of clinical features.[1] We present two infants with congenital candidiasis who presented with cutaneous candidiasis and pneumonia. This report highlights the presence of characteristic skin lesions caused by *Candida* species, occurring within 24 hours of birth. This important observation could help in the early diagnosis of congenital candidal infection. High mortality has been reported in congenital disseminated candidiasis, but early recognition and treatment could increase the chance of a favorable outcome.[1]

2. Case Reports

2.1. Case 1

A 1-day-old female infant was referred to our hospital with tachypnea. She was born at 34 weeks' gestation by cesarean section (following a previous cesarean section) with a birth weight of 2012 g. The mother had a vaginal discharge 3 months prior to delivery. Apgar scores were 2 and 9 at 1 and 5 minutes, respectively. After birth, the infant showed poor activity, hypotonia and severe respiratory distress, and was intubated immediately. Upon arrival, skin eruptions and respiratory distress were noted, and her skin showed diffuse papules (Figure 1). Owing to suspicion of congenital candidiasis, systemic amphotericin B was given from admission. A potassium hydroxide preparation of skin scrapings made by a dermatologist showed the presence

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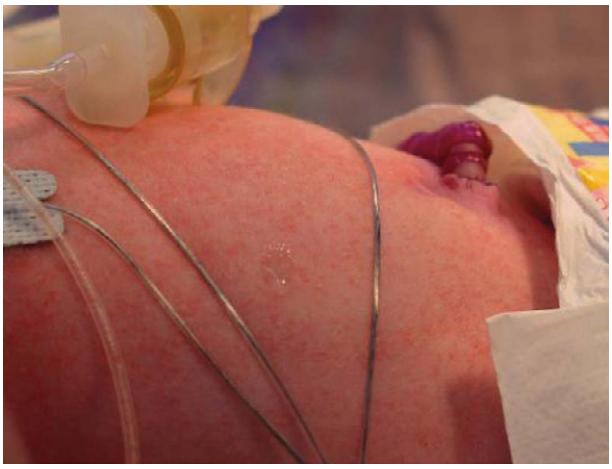

Figure 1 Papular skin rash.

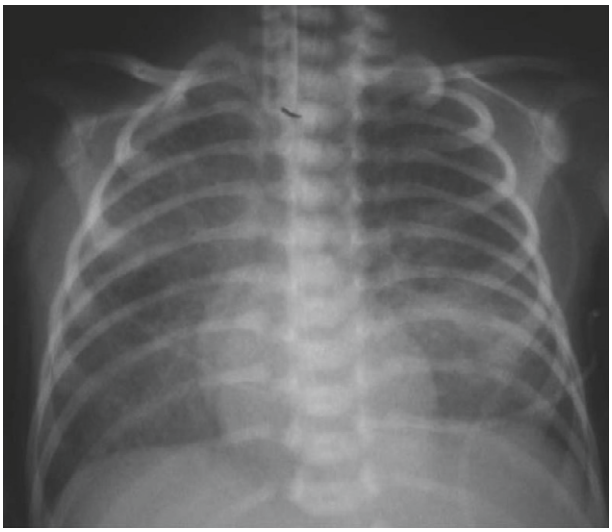

Figure 2 Chest radiograph taken on the third day of life, showing reticular nodular pattern infiltration.

of pseudohyphae. A complete blood count on admission showed a total leukocyte count of 21,900/μL, with 53% polymorphonuclear leucocytes, 7% band forms, 31% lymphocytes, 4% monocytes, 3% eosinophils and a platelet count of 305,000/μL. The initial chest radiograph showed respiratory distress syndrome. Surfactant replacement therapy was performed. A chest film was taken on the third day of life following persistent tachypnea, and revealed reticular nodular pattern infiltration (Figure 2). Fungal pneumonitis was diagnosed, and an endotracheal tube was extubated on the fourth day of life. Blood cultures showed no bacteria or fungi, but urine and sputum cultures were positive for *Candida albicans*. Vomiting and abdominal distension were noted on the 10th day of life, and a complete blood count was performed and blood and cerebrospinal fluid (CSF) cultures were taken. The blood count showed leukocytosis, with a total leukocyte count of 45,100/μL with 78% polymorphonuclear leukocytes, 7% band forms, 11% lymphocytes, 8% monocytes and a platelet count of 373,000/μL. Blood and CSF cultures failed to show bacteria or fungi. The superficial papules improved, and desquamation occurred from the third day of life, resolving on the 12th day of life. The infant was discharged from the hospital at 27 days old after a 3-week course of amphotericin B therapy, with no overt complications.

2.2. Case 2

A male infant was born at our hospital at 38 weeks' gestation with a birth weight of 3390 g. He was delivered by cesarean section because of a breech presentation. Amniotic fluid revealed thick meconium. An endotracheal tube was inserted after birth because of poor activity and tachypnea, and was removed on the second day of life. Chest X-ray films showed increased infiltration in bilateral lung fields. Erythematous papules with vesicles erupted on the second day of life. The rash involved the face, back, trunk and limbs, including the palms and soles; and a dermatologist was therefore consulted. Potassium hydroxide staining of skin scrapings revealed pseudohyphae. A Tzanck smear produced negative findings. Clotrimazole was topically applied from the second day of life, and systemic amphotericin B therapy was initiated on the fifth day of life. Complete blood count on admission revealed a total leukocyte count of 9710/μL, with 70% polymorphonuclear leukocytes, 3% band forms, 3% metamyelocytes, 17% lymphocytes, 3% monocytes and 4% eosinophils. Blood cultures were negative for fungi, but urine cultures grew *Candida albicans*. The skin lesions resolved on the ninth day of life. The infant developed a fever at 16 days old and a complete sepsis work-up was performed. Blood and urine cultures grew *Escherichia coli*, but were negative for fungi. The patient was discharged from the hospital at 30 days old after a 2-week course of amphotericin B for congenital candidiasis, and a 2-week course of cefotaxime for *E. coli* urinary tract infection and sepsis.

3. Discussion

Vesiculopustular eruptions are common in newborns. As in the present cases, these lesions may be benign and self-limiting and do not require specific therapy. These self-limiting conditions need to be differentiated from other infections and genetic disorders that may require treatment.

Weerasinghe et al[3] reported a full-term infant with an extensive vesicular pustular rash on the face, arms, legs, chest and back from birth. Broad spectrum antibiotics and intravenous acyclovir therapy

was initiated. Acyclovir and antibiotics were stopped until histologic examination of the cord identified candidal fungal hyphae, and congenital cutaneous candidiasis was diagnosed on day 4. Topical antifungal therapy was then administered and the lesions gradually faded over the next 2 weeks. The rarity of this condition can lead to failure to diagnose it promptly and, hence, to unnecessary treatment and anxiety. We, therefore, report these cases of infants with characteristic candidal skin lesions to highlight symptoms that could lead to the early diagnosis of congenital candidal infection.

Congenital candidiasis presents with a variety of clinical features, ranging from a diffuse erythematous skin eruption, with or without vesicles and pustules, to systemic disease in which the lungs are usually affected.[1,4–6] Congenital candidiasis should be considered in the differential diagnosis of neonatal generalized maculopapular or pustular skin eruptions, along with some other disorders such as *Listeria monocytogenes* infection, impetigo, chickenpox, herpes virus infection, syphilis and epidermolysis bullosa.[4] Diagnosis can be confirmed by microscopic examination and culture of the skin lesions.[1,6] Infants with systemic fungal infections (i.e., positive blood, urine and/or CSF cultures) most commonly present with respiratory distress and an elevated white blood cell count with a left shift, reaching the level of a leukemoid reaction, particularly within the first 3 days of life.[4,7,8] Persistent hyperglycemia and glycosuria have also been reported.[4]

It has been recognized, however, that in full-term infants with congenital candidiasis and skin involvement alone, the clinical course is often benign, and only topical therapy or no therapy at all is required. In infants with respiratory distress and clinical and laboratory signs of sepsis however, systemic antifungal therapy with amphotericin B is recommended.[1]

Very-low-birth-weight infants with congenital *Candida* infection are more likely to present with severe infections, such as pneumonia and widespread dermatitis with focal areas of superficial erosion and desquamation.[9] Extremely-low-birth-weight infants (<1000 g) with congenital cutaneous candidiasis are at greater risk of developing invasive fungal infection (66%) than low-birth-weight or term infants.[1]

In conclusion, vesiculopustular eruptions are common in newborns. Congenital candidiasis may present as this type of skin lesion. The rarity of this condition can lead to failure to recognize it promptly and so to unnecessary treatment and anxiety. Our report suggests that fungal infection should be considered in the diagnosis of such skin lesions in infants, and that every attempt should be made to identify the fungal elements responsible. Prompt systemic therapy should be initiated in the immediate postnatal period in all infants with congenital cutaneous candidiasis who experience respiratory distress and/or demonstrate laboratory signs of sepsis, such as an elevated leukocyte count with an increase in immature forms, or persistent hyperglycemia and glycosuria.

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