Case Reports

Congenital Candidiasis

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While Candida albicans is a common inhabitant of the maternal genital tract during pregnancy, congenital candidiasis is rare(l,2). A limited number of cases is reported in the world literature(3,4). We report 2 cases of congenital candidiasis, which to the best of our knowledge, is the first report from India.

Case Report

Case 1. A 1150 g girl, first of twins, was delivered by Cesarean section to 24 year-old-primigravida at 30 weeks gestation. The mother did not have any medical or surgical illness. The second twin was a 1250 g baby girl. The placenta was monochorionic diamniotic, weighed 750 g and was grossly normal. The first baby had clinical and radiological features of respiratory distress syndrome. At birth, three to four blisters were noticed on each leg ranging from 1-3 cm in diameter, filled with clear fluid with an erythematous base. The baby worsened progressively and went into cardiorespiratory arrest and could not be revived. The blisters were ruptured and the fluid sent for smear and culture.

It showed presence of budding cells of *Candida.* The culture from the blister fluid grew *Candida albicans.* Postmortem examination showed several colonies of *Candida* in yeast and pseudohyphal forms scattered in the lung parenchyma along with intra-alveolar and luminal infiltration with polymorphonuclear leucocytes. The second twin also had similar blisters on the feet, showing yeast cells on smear and culture, and succumbed within 48 hr. Postmortem examination did not reveal any systemic candidiasis.

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The mother was later screened for human immunodeficiency virus(HIV) antibodies, and found to be negative.

Case 2. A 1300 g baby boy, product of a 28 week gestation was born to a 24 yr old second gravida mother. She had a premature onset of labor at 27 weeks of amenorrhea and required cervical os tightening by MacDonald's method. She had no history of leucorrhea or pruritis vulvae. She went into spontaneous labor a week later and delivered a baby with Apgar scores of 3 and 6 at 1 and 5 minutes. The baby had poor respiration at birth and required positive pressure ventilation for two minutes.

On examination, the baby had respiratory distress with chest retractions and grunting. An erythematous maculopapular rash was noticed on both lower limbs, back and buttocks but sparing the diaper area *(Fig.* 1). The amniotic surface of the placenta and umbilical cord had whitish nodular

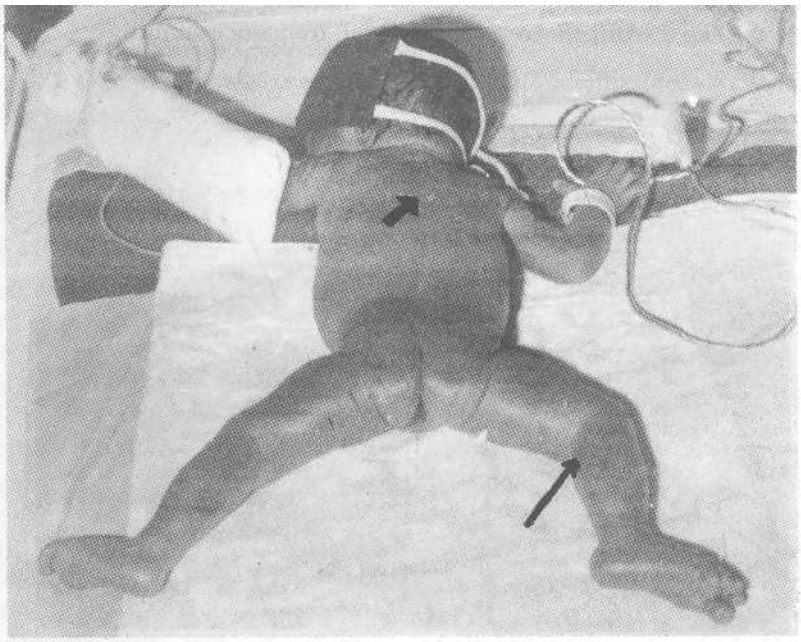

Fig. 1. Erythematous maculopapular rash on lower limbs (long arrow) and desquamation on the back (short arrow) of congenital cutaneous candidiasis.

lesions ranging from 2 to 4 mm in diameter. The scrapings of skin lesions showed budding yeast cells and pseudomycelia suggestive of *Candida.* Placental histopathology and sections of the umbilical cord showed polymorphonuclear infiltration and myelial forms of *Candida. (Fig. I).* The gastric aspirate showed no fungi. The skin rash became vesiculopustular and subsequently started scaling by 7-10 days. Investigations showed a total leucocyte count of 21,600 per cu mm. with 69% polymorphs, 18% bands and presence of toxic granules. Cultures of blood, CSF and urine was negative for *Candida.* Chest X-ray showed a reticulogranular pattern. The mother and the baby were negative for antibodies against HIV. In view of respiratory distress, the baby was treated with liposomal amphotericin-B (L-Amp B) (Liposome Research Laboratory, Department of Pharmacology, KEM Hospital) after an informed consent from the parents. After a test dose of 0.1 mg/kg, increasing doses of 0.2, 0.4 and 1 mg/kg L-Amp B were administered over a period of 3 days. Thereafter, a daily dose of 1 mg/kg was given diluted in normal saline infused over a period of 60 minutes. The baby was monitored for toxicity by weekly hemograms, blood urea creatinine, electrolytes, liver functions and urine pH. Ultrasonography of kidneys was done to rule out "fungus balls" or renal abscesses. Ophthalmic examination did not show endophthalmitis. A total cumulative dose of 30 mg/kg of L-Amp B was given.

The respiratory distress settled in 4 days and maximum oxygen required was FiO_2 of 0.6. The baby had recurrent apneic spells on day 4 requiring positive pressure ventilation for 2 days followed by an uneventful recovery. Ultrasonography of the skull revealed a germinal matrix bleed on the right side. At 6 months postnatal age, the baby has a developmental quotient of 3 months, retinopathy of prematurity grade III in right eye and grade IV in the left, and bilateral moderate to severe hearing loss to high frequency stimuli.

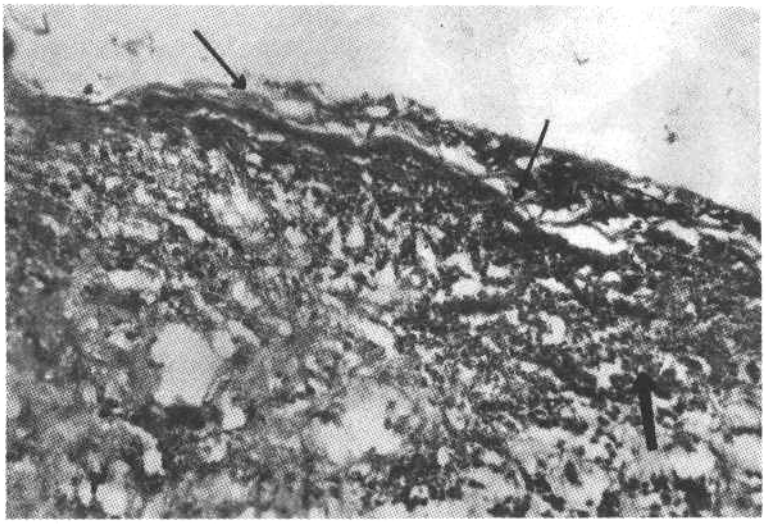

Fig. 2. Placenta histopathology showing myelial forms of Candida albicans (thin arrow) and intense polymorphonuclear infiltration (thick arrow); (Periodic Acid Schiff).

Discussion

Candidal infection of the fetus has been responsible for intrauterine fetal death(5,6). Two possible routes of intrauterine infection are postulated(7). Organisms from the maternal circulation may reach the fetus through the placenta or those in the vagina may reach the amniotic fluid through intact or ruptured membranes. Transplacental infection is rare and results in an extensive visceral involvement with prominent lesions in the liver. When infection ascends from the vagina, it causes inflammation of the amniotic surface of the placenta and the umbilical cord. The fetal affection is seen in form of cutaneous infection. Ascending infection is the most common route of fetal infection and amniotic fluid has been found to support the growth of *Candida albicans in vitro(8).* Aspiration of infected amniotic fluid can cause severe involvement of the respiratory and gastrointestinal tracts and lead to candidal septicemia(9). The cases reported above probably had ascending route of infection as cutaneous and pulmonary lesions were seen. In one case placenta and cord showed lesions on their amniotic surface.

In a review of 31 cases of congenital candidiasis, various maternal high risk factors like premature rupture of membranes, antenatal use of antibiotics, asymptomatic or symptomatic vaginal candidiasis or presence of vaginal foreign body were studied. Apart from the presence of vaginal foreign body, no other risk factor reliably predicted the presence of severity of congenital candidiasis(3). Control study showed no significant effect of antenatal steroids on the incidence of congenital candidiasis(4). Presence of vaginal infection is considered a high risk factor for congenital candidiasis with 50% of infants born to symptomatic mothers being affected(10). Congenital candidiasis can manifest as local disease restricted to the skin, or a systemic disease. Local disease is manifest at or soon after birth(8,9,ll-13). It involves the skin of the head, trunk, extremities with severe affection of the back, intertriginous areas and extensor surfaces of the extremities, with no involvement of the mucus membranes. The diaper area is conspicuously spared(9). Involvement of palms and soles, and affection of nails with paronychia has also been reported(8). The lesions in full-term neonates are in form of an intense erythematous maculopapular rash. There may be small yellowish white papules which over a period of day's progress to vesicles and pustules and may sometimes form microbscesses. Postnatally acquired cutaneous candidiasis however involves the oral or anal mucus membranes and is severe in the diaper area(9). Systemic disease with congenital candidiasis may manifest as bronchopneumonia, meningitis, arthritis, endocarditis or microabscesses in liver, brain, kidneys or spleen(3,14).

Infection with *Candida* can be diagnosed at birth by a careful examination of the cord and placental membranes. The discrete yellow plaques and nodules are characteristic(4). Placental involvement is seen in form of subamniotic microabscesses with intense polymorphonuclear infiltrates and candidal hyphae and spores.

Systemic antifungal therapy is indicated in all cases with evidence of Candida amnionitis, funisitis and cutaneous candidiasis when the following factors are present: birth weight less than 1500 g, early onset respiratory distress or pneumonia or signs of sepsis, use of broad spectrum antibiotics, positive blood, CSF or urine culture, invasive instrumentation or evidence of altered immune response. Systemic therapy is given as amphotericin 25-35 mg/kg total dose, at doses of 1 mg/kg/day after

starting at 0.1 mg/kg/day. We used L-Amp B which is supposed to be less toxic and as effective in treatment of systemic candidiasis(15). 5-flucytosine may be used in doses of 150 mg/kg/day orally for 2-6 weeks. Topical therapy is with local application of nystatin to the lesions.

A satisfactory response is seen following systemic therapy and mortality is low if treatment is started early. However, morbidity is high and neurodevelopmental outcome is poor especially in cases with infection of the central nervous system.

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