Brief report: Fungal balls in the urinary tract of an infant

Sir,
Newborn survival has improved with better neonatal care; prolonged Intensive Care Unit (ICU) stay is associated with invasive fungal infections.

A male baby, first of twins, born at 32 weeks gestation, weighing 1.6 kg had required neonatal ICU (NICU) care for sepsis, necrotizing enterocolitis, hyperbilirubinemia, and systemic candidiasis for 20 days. He presented at 3rd month with poor feeding and generalized convulsions.

He was lethargic, pale, dehydrated, heart rate 120/min; respiratory rate 50/min. Systemic examination was unremarkable except for hepatomegaly. Urinalysis showed 1+ protein, 15–20 white blood cells (WBCs), 20–30 red blood cells/hpf, and budding yeasts with pseudohyphae. Urine and blood grew *Candida albicans*; hemoglobin 6.7 g%, WBC count 20,310/cumm, C-reactive protein 146 units, blood urea nitrogen 66 mg/dl, creatinine 3.2 mg/dl, CSF and liver functions were normal. Ultrasonogram showed dilated pelvicalyceal systems bilaterally with solid masses suggestive of fungal balls and cortical abscesses [Figure 1].

He was aggressively hydrated; started on injection amphotericin. The child was too sick for nephrostomy/removal of fungal ball. Dialysis was not needed. *Candida* was sensitive to Fluconazole. After 1 week of amphotericin, injectable fluconazole was given for 2 weeks followed by 8 weeks of oral therapy.

On discharge, he was feeding well, active, with adequate weight gain and near normal renal function. Baby passed fleshy fungal elements in urine and fungal balls resolved over 2 months. At 2 years follow-up, kidneys had scars and calcifications, but serum creatinine had normalized.

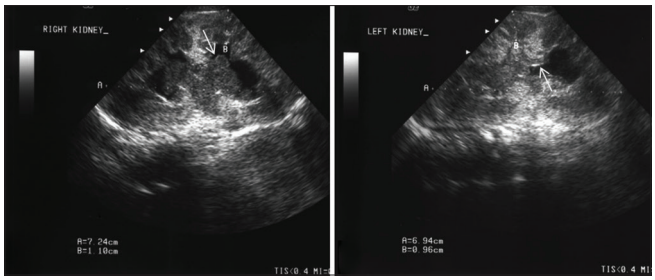

Figure 1: Fungal balls seen in both kidneys (arrow)

Fungal colonization occurs in 10% (1st week) and 64% (4 weeks) of hospitalized babies; commonly in gastrointestinal tract, skin, and mucosa; 5% of low birth weight (LBW) babies develop a systemic infection.[1] Most infections are due to *Candida*, albicans species being common. Risk factors are prolonged NICU stay, broad spectrum antibiotics, central lines, intravenous (IV) alimentation, endotracheal intubation, surgeries, and steroids.[1] Babies may have temperature instability, poor feeding and other nonspecific symptoms.[1] Brain (meningitis/abscesses), eye (endophthalmitis), heart (endocarditis/cardiac failure/pulmonary embolism), bone (osteomyelitis/arthritis), liver and spleen (abscess/infarcts) and kidneys (abscesses/fungal bezoar) can be involved. Candidemia and invasive candidiasis need high degree suspicion and appropriate cultures. Tissue biopsies are diagnostic. Cultures (50%) may be falsely negative. Lysis centrifugation, BACTEC, and BacT/ALERT system that enhance fungal growth provide better sensitivity. Polymerase chain reaction (4–12 h) and T2 *Candida* panel (4 h) detect antigens.

Urinary tract infection could be precursor or consequence of invasive candidiasis. Ultrasonogram may show hypoechoic abscesses, hyperechoic fungal masses in the parenchyma or fungal balls in the collecting system. Differentials are necrotic papillae, blood clot, or tumor.[2]

Guidelines recommend antifungals for both suspected and proven invasive infections.[3]

Surgical debridement is central to successful treatment of fungal balls along with IV antifungals and local amphotericin irrigation; duration of therapy remains undefined.[4] Neonatal mortality with invasive candidiasis is 10–15%.[3] LBW babies may be endowed with lower nephron dosing; further damage leads to chronic kidney disease. Guidelines recommend antifungal therapy, physical removal, and debridement; many neonates may be unfit. Fortunately, this baby was cured with antifungals alone.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Access this article online

Quick Response Code:

Website: www.indianjnephrol.org

DOI: 10.4103/0971-4065.200517

How to cite this article: Anitha A, Babu K, Siddini V, Ballal HS. Brief report: Fungal balls in the urinary tract of an infant. Indian J Nephrol 2017;27:165-6.