Renal Fungal Balls in Neonates

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Port J Pediatr 2022;53:541-2
DOI: https://doi.org/10.25754/pjp.2022.24112

Keypoints

What is known:

- Prematurity and (very) low birth weight are risk factors for neonatal infections, including fungal infections.
- Fungemia can determine mechanical complications, such as fungal balls, in the urinary system.

What is added:

- The occurrence of the renal fungal balls in the neonatal population may be more prevalent than what is described in the literature.
- The inclusion of ultrasound in screening protocols for infectious complications may increase the diagnosis of renal fungal balls in neonates.

Introduction

Renal fungal balls are regarded as unusual or even rare findings[1] for some authors.[2] This article presents four cases of complication of invasive fungal disease in a neonatal intensive care unit in the city of Belém, Brazil, from November 2020 to January 2021. A similar ultrasound aspect was observed in all four cases as well-defined hyperechogenic oval lesions with no acoustic shadow. This number of cases found in a short period suggests that the occurrence of this complication may be higher than what is described in the literature.

The first case was a low birth weight newborn, who was diagnosed with gastroschisis at birth and submitted to surgical correction on the same day. On day 26 of life, the ultrasound evaluation showed a lesion suggestive of a fungal ball (Fig. 1).

The second case concerns a low birth weight and late preterm infant who was born with an imperforate anus and hospitalized for a colostomy. The diagnosis of a fungal ball was made by the researchers on the 58th day of life (Fig. 2).

The third case was a male term newborn with adequate weight, who was diagnosed with congenital megacolon after abdominal distention. A fungal ball was observed on day 17 of birth (Fig. 3).

The fourth case (Fig. 4) was a very-low birth weight male neonate who was very preterm and required ventilatory support at birth due to low oxygen saturation (66%). The mother had a severe case of acute respiratory syndrome coronavirus 2 (SARS-CoV-2).

Ultrasonography assessment has an important role in the context of neonatal fungemia, in the diagnosis and monitoring of complications, especially for the occurrence of fungal balls, as it is the method that provides the most reliable diagnostic findings[3] and is regarded as an important tool in the protocols that aim at early detection of renal complications.

Keywords: Infant, Newborn; Invasive Fungal Infections/complications; Ultrasonography; Kidney Diseases/diagnostic imaging

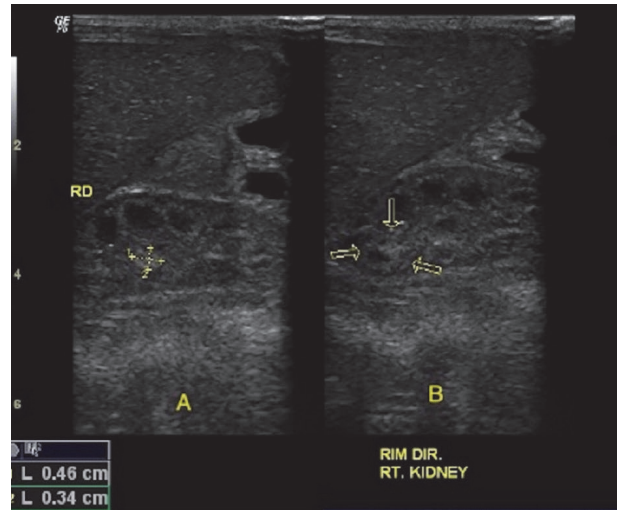

Figure 1. Ultrasonographic assessment of the first patient performed at 26 days of life demonstrating a hyperechogenic oval image suggestive of a fungal ball in the upper calyx group of the right kidney (delimited by the yellow arrows in B and being measured by the calipers in A).

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Received: 31/03/2021 | Accepted: 16/10/2021 | Published online: 01/04/2022 | Published: 01/04/2022

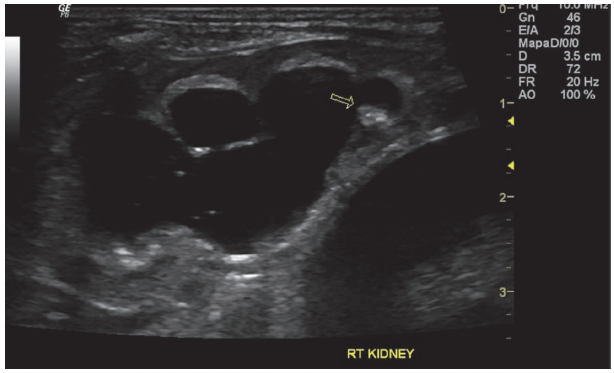

Figure 2. Ultrasonographic evaluation of the second patient performed at 58 days of life demonstrating a hyperechogenic oval image suggestive of a fungal ball in the lower calyx group of the right kidney (delimited by the yellow arrows), besides hydronephrosis with a non-homogeneous urinary content.

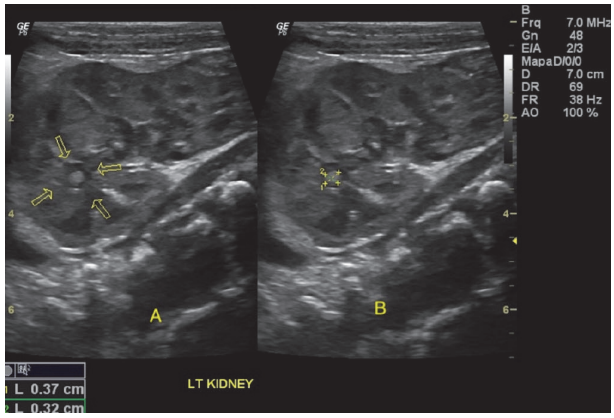

Figure 3. Ultrasonographic assessment of the third patient performed at 17 days of life demonstrating a hyperechogenic oval image suggestive of a fungal ball in the upper calyx group of the right kidney (delimited by the yellow arrows in A and being measured by the calipers in B).

Author Contribuitions

CFR participated in the study conception or design. CFR, ATS and BCR participated in acquisition of data. CFR, ISC and BCR participated in the analysis or interpretation of data. CFR, ISC participated in the drafting of the manuscript. CFR, ISC participated in the critical revision of the manuscript. All authors approved the final manuscript and are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

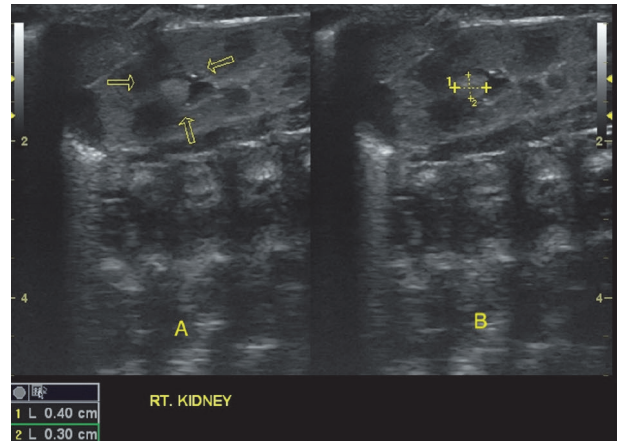

Figure 4. Ultrasonographic assessment of fourth patient performed at 26 days of life demonstrating a hyperechogenic oval image suggestive of a fungal ball in the middle calyx group of the right kidney (delimited by the yellow arrows in A and being measured by the calipers in B).

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

Funding Sources

There were no external funding sources for the realization of this paper.

Protection of human and animal subjects

The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki 2013).

Provenance and peer review

Not commissioned; externally peer reviewed

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

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