



Unexpected cause and successful management of typical urinary tract infection symptoms: Questions

Demet Alaygut¹ · Özgür Özdemir-Şimşek¹ · Fatma Ceren Sarioglu² · Seçil Arslansoyu-Çamlar¹ · Fatma Mutlubaş¹ · Belde Kasap-Demir³

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Case

A 6-year-old girl was brought with fever, vomiting, and burning pain while urinating 3 days before. It was learned that amoxicillin–clavulanate treatment was initiated with the initial diagnosis of urinary tract infection, but persistent fever (39 °C), weakness, nausea, vomiting, deficient oral intake, flank pain, and widespread abdominal pain continued despite the treatment. Her personal and family history were unremarkable. A history of urinary tract infection was also not specified. Physical examination findings at admission were as follows: body weight: 18 kg (50–75 %tile), height: 112 cm (50–75 %tile), body temperature: 38.7 °C, blood pressure: 100/60 mmHg, heart rate: 148 bpm, and respiratory rate: 24/min. The patient was cooperative and oriented. The patient was dehydrated with sunken eyeballs, and tenderness on the left costovertebral angle and in the left lower abdominal quadrant on palpation. Physical examination of other of organ systems was within normal limits. Selected laboratory test

results were as follows: WBC: 21,100/mm³ (N: 4200–10,500), ANS: 18,300/mm³ (N: 2000–6900), Hb: 12 g/dL (N: 12.2–16.2), platelet counts: 174,000/mm³, procalcitonin: 5.25 µg/L (N: 0.04–0.1), CRP: 290 mg/L (n: 0–5), urea: 19 mg/dL (n: 10–38), creatinine: 0.5 mg/dL, fibrinogen: 768 mg/dL (n: 170–420), D-dimer: 1620 µg/L (n: 0–440). Liver function test results and electrolytes were within normal limits. In urinalysis, density: 1018, pH: 6.5, protein +1, leukocytes +3, erythrocytes +3, nitrite (–), abundant leukocytes, and bacteria were seen in all microscopic images. Size, echogenicity, and parenchymal thickness of the right kidney on ultrasonography were normal, while the left kidney was edematous, enlarged with heterogeneously contrasting parenchyma. Any pathological finding was not detected in the mesentery, except for lymph nodes with increased reactive appearance and a short diameter not exceeding 1 cm. The COVID-19 PCR test result was negative. Direct urinary system radiography was not remarkable.

An abdominal MRI was performed in order to distinguish other possible pathologies due to persistent high fever, abnormal physical examination findings, and increased levels of acute phase reactants. In contrast-enhanced abdomen MRI T1-weighted fat-suppressed coronal sections, the right kidney was within normal limits, the left kidney was increased in size, and the parenchyma was markedly edematous. Non-enhancing area in the upper pole of the left kidney and millimetric hypointense air signals in the periphery of this area were observed (Fig. 1a, yellow arrow). There were non-enhancing patchy areas in the middle and lower poles, and diffusion restriction was not observed in non-enhancing areas. Lymphadenopathies were observed adjacent to the renal hilus and the short axis of the larger lymph node was 12 mm in diameter (Fig. 1b).

The answers to these questions can be found at <https://doi.org/10.1007/s00467-021-05091-y>.

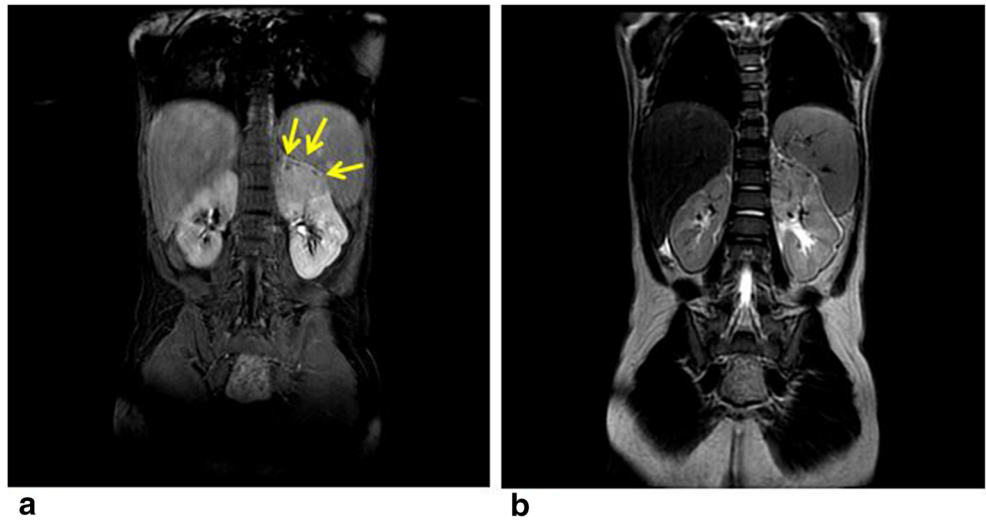
✉ Demet Alaygut
alaygutdemet@gmail.com

¹ Department of Pediatric Nephrology, University of Health Sciences Tepecik Training and Research Hospital, Konak, Izmir, Turkey

² Department of Radiology, Division of Pediatric Nephrology, University of Health Sciences Tepecik Training and Research Hospital, Konak, Izmir, Turkey

³ Faculty of Medicine, Department of Pediatric Nephrology and Rheumatology, Izmir Katip Celebi University, Izmir, Turkey

Fig. 1 **a** Non-enhancing area in the upper pole of the left kidney and millimetric hypointense air signals in the periphery of this area. **b** Lymphadenopathies were observed adjacent to the renal hilus and the short axis of the larger lymph node was 12 mm in diameter



Questions

1. What is your probable diagnosis for this patient? Which diagnosis is supported by the finding indicated in the scans?
2. What conditions should be considered in differential diagnosis? How should the patient be managed?

Declarations

Conflict of interest The authors declare no competing interests.

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