1. Introduction

Acute focal pyelonephritis (AFP) is a variant of pyelonephritis in which acute infection causes single or multiple areas of parenchymal inflammation. The clinical presentation usually includes flank pain, dysuria, fever and/or chills, pyuria, leukocytosis, and elevated C-reactive protein (CRP). Imaging examinations are useful in investigating AFP, and computed tomography (CT) is the most suitable imaging examination for diagnosing AFP. Treatment involves adequate hydration, and suitable and adequate antibiotics administration.

2. Case presentation

An 18-year-old girl visited our emergency room (ER) because of fever, chills, and right flank pain for 3 days that were not relieved by medication in a local medical clinic. A physical examination in the ER revealed tenderness over the right costovertebral angle and a body temperature of 38°C. Laboratory examinations in the ER revealed leukocytosis (19,500/mm³), high CRP (11.37 mg/dl), pyuria, leukocytosis, and elevated C-reactive protein (CRP). Imaging examinations are useful in investigating AFP, and computed tomography (CT) is the most suitable imaging examination for diagnosing AFP. Treatment involves adequate hydration, and suitable and adequate antibiotics administration.

3. Discussion

AFP is a variant of pyelonephritis in which acute infection causes single or multiple discrete areas of parenchymal inflammation. It may also be called acute lobar nephronia and acute focal bacterial nephritis. Most cases are thought to arise from an ascending infection.1–3 A gram-negative pathogen is usually isolated, most commonly E. coli. Predisposing factors include diabetes, immunosuppression, vesicoureteral reflux, and long-term urinary catheterization.

The clinical presentation usually includes flank pain, dysuria, fever and/or chills, pyuria, leukocytosis, and elevated CRP. Imaging examinations for investigating AFP include intravenous urography, ultrasound, CT, and radionuclide imaging. Intravenous urography is normal in approximately 50% of patients with AFP.5 In the remainder of patients, unilateral or bilateral renal enlargement, a poor nephrogram, delayed pelvicalyceal opacification, mild dilatation of the collecting system, and ureteral or pelvic striations are noted.5 AFP shows a variety of sonographic features. It may display rounded or wedge-shaped areas of abnormality that can show a mass effect. The abnormal areas may be of increased, decreased, or mixed echogenicity.6–10 Color Doppler ultrasound shows blood flow throughout the lesion.9 Noncontrast CT scans show only renal enlargement, and on contrast-enhanced CT scans, the characteristic findings are solitary or multiple low-attenuation wedge-shaped lesions radiating from the renal hilum to the renal capsule.8,10,11 Other CT findings of AFP include calyceal distortion and peri-nephritic inflammation, manifested by thickening of Gerota’s fascia and strands of increased density in the perinephritic fat. The affected lesions show contrast material within or around the lesions on delayed scans, thus allowing them to be differentiated from renal abscesses.12,13 Scintigraphic findings include solitary or multiple wedge-shaped or spherical regions of decreased renal activity.4,14 A CT scan is the most suitable imaging examination for diagnosing AFP. On serial follow-up imaging examinations, the findings may regress to normal, or progress to become a renal...
abcess particularly in immunosuppressed patients. The differential diagnosis includes renal abcesses, renal tumors, and renal infarction. Renal abcesses have no enhancement in the affected area on delayed scans. Renal tumors and renal infarctions have different clinical presentations, and short-term follow-up imaging examinations may help, because rapid changes may be observed in AFP after treatment.

Treatment involves adequate hydration, and suitable and adequate antibiotics administration.

Conflicts of interest statement

The author declares that he has no financial or non-financial conflicts of interest related to the subject matter or materials discussed in the manuscript.

References