Case Report

Acute renal failure with macrohaematuria—don’t be fooled by large hyperechogenic kidneys

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Introduction

The appearance of large hyperechogenic kidneys on ultrasonography in the setting of acute renal failure (ARF) is unusual. We report a case of reversible ARF associated with macrohaematuria with large hyperechogenic kidneys. Renal biopsy showed extensive tubular obstruction by erythrocyte casts in the setting of IgA nephropathy.

Case

A 15-year old girl suffered from sore throat and fever about 48 h prior to admission. Her general practitioner started treatment with amoxicillin. At the same time the patient passed dark urine. A few hours before admission she complained of diffuse abdominal pain. She was referred to the emergency room of our hospital. Initial examination disclosed only purulent tonsillitis, bilaterally enlarged cervical lymph nodes, and fever. Blood pressure was in the normal range and oedema was not present. Abdominal examination was unremarkable. Laboratory examination showed advanced renal insufficiency (serum creatinine of 5.3 mg/dl) with normal haemoglobin and platelet counts. The urine contained 3+ albumin and 3+ haemoglobin. The patient was admitted into the hospital.

Renal ultrasonography showed enlarged kidneys (13.8 cm long) with marked diffuse hyperechogenicity of the parenchyma of both kidneys (Figure 1). The remaining abdominal structures were normal. Immunological monitoring was unremarkable, including antinuclear antibodies, rheumatoid factor, C3, C4, immunoglobulins, antiglomerular basement membrane antibodies, and antineutrophil cytoplasmic antibodies. Serum creatinine continued to increase and reached 6.9 mg/dl 2 days after admission. A renal biopsy was performed, it showed IgA nephropathy with extensive tubular blockade due to erythrocyte casts.

Subsequently renal function improved progressively. Dialysis was not necessary and the patient was discharged 8 days after admission with a serum creatinine

Fig. 1. Intense hyperechogenicity of renal parenchyma during acute phase. Kidney are also enlarged (13.8 cm).

Fig. 2. Six weeks later hyperechogenicity has been completely resolved and kidney size was near normal size (11.8 cm).
of 3.2 mg/dl. Follow-up visits documented complete normalization of renal function and disappearance of echographic abnormalities of the kidneys. Ultrasonography of the kidneys was completely normal 6 weeks after admission (Figure 2).

Discussion

Ultrasonography is an obligatory step in the initial evaluation of patients with renal failure [1]. Our patient suffered from glomerulonephritis. The usual sonographic finding in glomerulonephritis are enlarged kidneys with hypoechoic parenchyma and accentuated medullae. The present case differed from the usual pattern by showing marked hyperechogenicity. We propose that this may be explained by the histologically documented finding of tubular obstruction by erythrocyte casts. We hypothesize that this alters the echogenic property of the renal parenchyma.

More systematic studies are required to confirm or refute this hypothesis.

References