Case Report

Unsuspected atherosclerotic renal artery stenosis causing renal failure in a patient with adult polycystic kidney disease

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Introduction

Atherosclerotic renal artery stenosis has become increasingly recognized as a cause of end-stage renal disease [1]. Various calculations have been made on the basis of either prospective angiography [2] or clinical probability [3]. Patients have been identified because of the other manifestations of atherosclerotic vascular disease. These calculations have excluded patients with a known primary diagnosis which can potentially cause end-stage renal failure. We report a different mode of presentation with deterioration of renal function in a patient known to have a definitive renal diagnosis which on its own can lead to end-stage renal failure.

Case report

A 52-year-old patient initially presented in acute renal failure. He had a history of intermittent claudication, and angiography had demonstrated a right superficial femoral artery stenosis. Angioplasty to the femoral artery was attempted at his local hospital but the procedure was unsuccessful. He developed an ischaemic left foot that required embolectomy and fasciotomy. His creatinine prior to attempted angioplasty was 134 μmol/l and 2 days later rose to 531 μmol/l. He was transferred to our care with a creatinine of 588 μmol/l. Abdominal ultrasound showed two normal-size kidneys extensively replaced by cysts, with liver cysts compatible with adult polycystic kidney disease. Renal scintigraphy showed no perfusion to the left kidney, but with perfusion on the right. Renal function improved with a creatinine of 312 μmol/l on discharge, with a clinical diagnosis at that point of acute tubular necrosis in the presence of adult polycystic kidney disease. His creatinine reached a nadir of 182 μmol/l a year later.

Over the next 5 years the creatinine rose slowly to 270 μmol/l. The patient was placed on captopril 8 years after initial presentation with no significant deterioration in renal function. One year later he was admitted acutely unwell to his local hospital with a plasma creatinine of 601 μmol/l, and required haemodialysis. Two weeks prior to this admission his creatinine was 270 μmol/l. Renal ultrasound confirmed multiple cysts in both kidneys (Figure 1). A renal mercaptoacetyl triglycine nuclear medicine scan showed reduced perfusion to the right kidney but the left kidney was not visualized. Renal angiography was performed and showed a tight proximal stenosis of the right renal artery (Figure 2a), complete obstruction of the left renal artery, and a diffusely ectatic abdominal aorta.

Angioplasty of the right renal artery was performed, the creatinine fell to 383 μmol/l, and the patient became dialysis independent. Figure 2b shows the post-angioplasty appearance of the right renal artery and demonstrates the abnormal intrarenal vasculature due to polycystic kidney disease.

Fig. 1. Renal ultrasound of the right kidney showing multiple cysts.

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hypertension, but has been overlooked as a cause of significant renal impairment [1]. It is even more likely to be overlooked in a patient known to have renal impairment due to an unrelated renal disease the natural history of which includes progression to end-stage renal failure. The previous estimations have only focused on patients without a known renal diagnosis, with clinical evidence of widespread atherosclerotic vascular disease [2,4].

Mailloux et al. [3] in a study of the causes, clinical correlates, and outcomes of end-stage renal failure over a 20-year period note that it is difficult to clinically establish the renal diagnosis leading to end-stage renal failure, except for polycystic kidney disease and diabetic nephropathy. Our case report shows that even in these groups of patients the diagnosis may not always be that straightforward, as atherosclerotic disease is common in the older population. In the presence of atherosclerotic vascular disease these patients should be considered as having atherosclerotic renal artery stenosis even with a known renal disease. This is especially important as atherosclerotic renal artery stenosis is a potentially curable cause of end-stage renal failure [5].

The diagnosis of atherosclerotic renal artery stenosis should be entertained in patients with pre-existing renal disorders who develop a sudden decline in renal function or flash pulmonary oedema [6], if they are over 60 years of age or have evidence of widespread atherosclerotic vascular disease. This suggests that an even greater proportion of patients than previously estimated reaching end-stage renal failure may have atherosclerotic renal artery stenosis as the cause.

References


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