Renal artery aneurysm and fibromuscular dysplasia

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A 27-year-old woman was admitted to hospital with occasional headache and severe arterial hypertension, diagnosed 5 months ago. She reported an uneventful pregnancy of twins delivered by Caesarean section 3 years prior to admission. The physical examination was normal and abdominal bruits were absent. The 24-h automatic blood pressure monitoring of the patient showed a mean arterial blood pressure of 153/97 mmHg taking three-drug antihypertensive medication. The laboratory findings showed normal renal function (serum creatinine 53.1 mmol/l) without any haematuria or relevant proteinuria. Colour Doppler sonography showed severe stenosis in the course of the left renal artery with elevated peak systolic velocity and a low poststenotic intrarenal resistive index (Figure 1a) [1]. Flow velocity of the right renal artery and intrarenal resistive index of the right kidney were within the normal range, however, the color mode imaged an aneurysmatic hilar renal artery (Figure 1b). Diagnostic arteriography confirmed both severe fibrodysplastic stenosis of the left renal artery (Figure 2a), which was successfully dilated and the aneurysm of the right renal artery (Figure 2b). After angioplasty of the left renal artery blood pressure improved (140/80 mmHg) requiring a one-drug treatment. There is some controversy in the literature about the risk of rupture of these aneurysms [2,3]. Some reports recommend interventional treatment, whereas others do not. In the present case, the patient had an uneventful pregnancy and delivery of twins 3 years ago without rupture of the aneurysm. The patient was sceptical about any surgical intervention. It was decided not to treat the aneurysm [4]. During a 2-year-follow-up period blood pressure remained slightly elevated requiring administration of one antihypertensive drug. Relevant restenosis of the left renal artery was ruled out by colour Doppler sonography and the size of the renal aneurysm remained stable without any signs of rupture or dissection. In an hypertensive population the prevalence of renal artery aneurysm with fibromuscular dysplasia is low as compared with that of atherosclerotic renal artery stenosis. The simultaneous occurrence of fibromuscular dysplasia and aneurysm has been described previously [2,5]. Colour Doppler sonography may serve as a noninvasive tool to monitor aneurysms, which are left untreated.

Suggested reading

Fig. 1a. The sample volume is positioned in a segmental renal artery of the left kidney. The flow pattern shows a parvus and tardus flow with a low resistive index of 0.38 (RI 0.15) indicating a severe renal artery stenosis on this side.

Fig. 1b. The right kidney is scanned in left-sided decubitus position from the right lumbar side. Red color demonstrates the aneurysm of the hilar renal artery including the midsided segmental arteries. No stenosis was detectable in the area of the aneurysm.
Fig. 2a. Selective arteriography (LAO $30^\circ$) of the left kidney showed severe stenosis of the left renal artery consistent with fibromuscular dysplasia.

Fig. 2b. Selective arteriography (anterior-posterior projection) confirmed the aneurysm of the right hilar renal artery (cross-sectional length $2.0 \times 1.5$ cm). No fibrodysplastic stenosis in the course of the intrarenal arteries.