

Unique imaging findings in renal artery fibromuscular dysplasia

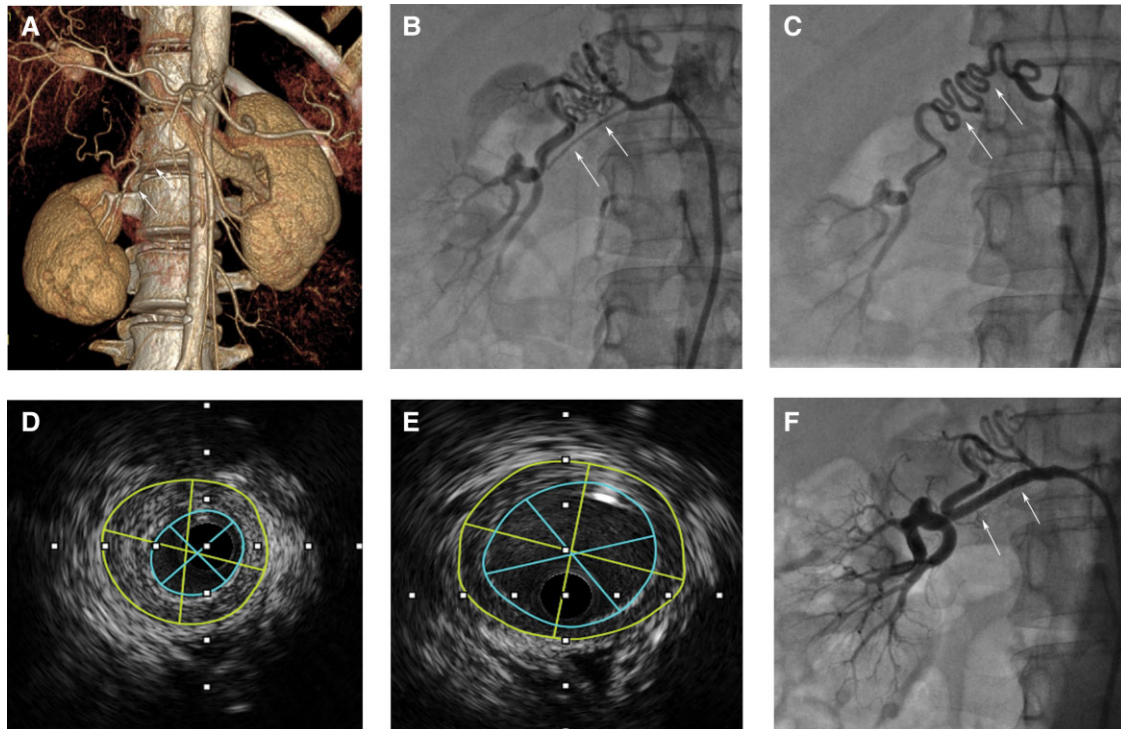
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A 35-year-old female patient with fluctuating blood pressure was referred to hypertension department for investigation of possible secondary hypertension. Computed tomographic angiography of the renal arteries was performed, demonstrating a thin and long vessel at the mid-portion of right renal artery and right kidney atrophy

(right 79 × 35 mm, left 109 × 45 mm; Panel A). Subsequent catheter-based renal angiography confirmed the slender right renal artery (Panel B, [Supplementary material online, Video S1](#)) and the established large severe tortuosity collateral vessel from the abdominal aorta (Panel C). The treatment of the slender renal artery in this young



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woman was challenging and surgery was generally recommended. However, intravascular ultrasound (IVUS) revealed that it was not congenital slender artery, but concentric intimal thickening caused stenosis of the vessel (*Panel D*, [Supplementary material online, Video S2](#)). Therefore, renal artery fibromuscular dysplasia (FMD) was diagnosed and considered to be intimal type. Balloon angioplasty was performed, and IVUS showed that the lesion lumen was dilated successfully (*Panel E*). However, a bailout stent had to be placed because of intimal dissection during angioplasty, and renal blood flow was restored after procedure (*Panel F*). The patient was recommended dual antiplatelet therapy for 1 year. One month after the procedure, the patient was normotensive without any antihypertensive medication. At 1 year follow-up, the ^{99m}Tc -glomerular filtration rate of the right kidney increased from 19.7 to 40.4 mL/min.

The FMD is a nonatherosclerotic, noninflammatory vascular disease that most commonly affects renal arteries.¹ In the 1970s, FMD was proposed to classify as three main types (medial, intimal fibroplasia, and adventitial hyperplasia) by pathological specimens. Medial hyperplasia accounted for about 85% of FMD, while intimal hyperplasia accounted for only 5%.² The IVUS is a method for detecting endoluminal and arterial wall anatomy which can be underestimated or even completely inapparent on angiography, and may be used to further characterize the renal artery and to guide the success of endovascular therapy.³ In the present case, such a long tubular stenosis of renal artery FMD was rare, and the diagnosis was confirmed by IVUS. The IVUS may be a useful tool for the diagnosis of focal FMD.

Supplementary material

[Supplementary material](#) is available at *European Heart Journal – Case Reports* online.

Consent: The authors confirm that written consent for submission and publication of this case report including images and associated text has been obtained from the patient in line with COPE guidance.

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Data availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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