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CASE REPORT

Fibromuscular dysplasia in an adult male as a cause of renal artery stenosis and secondary hypertension treated with renal artery stenting



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KEYWORDS

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Abstract *Background:* Renovascular hypertension due to fibromuscular dysplasia is an uncommon cause of secondary hypertension and is more common in females. This entity is an important treatable cause of secondary hypertension.

Case presentation: We report the case of a 21-year-old asymptomatic male found to have high blood pressure on routine checkup. Renal angiogram revealed fibromuscular dysplasia involving the right renal artery. He underwent percutaneous angioplasty with complete recovery. The single antihypertensive which he was on was stopped next month.

Conclusion: Fibromuscular dysplasia causing stenosis of renal artery is uncommon. High degree of suspicion is required for the timely diagnosis and treatment of this potentially treatable cause of secondary hypertension

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1. Introduction

Renovascular hypertension is one of the most common treatable causes of secondary hypertension. The incidence depends upon the clinical presentation with ranges from <1% in cases of mild hypertension¹ to 10 and 45 percent of white patients with severe or malignant hypertension.² The mechanism of hypertension is activation of the renin angiotensin aldosterone

system.³ The characteristic features suggesting renovascular hypertension are hypokalemia, young age of onset and renal bruit.³ The most common cause of renal artery stenosis (RAS) is atherosclerosis of the renal artery (75% of all cases).⁴ Among the patients with renovascular hypertension, fibromuscular dysplasia (FMD) constitutes 35 to 50 percent of cases in children and 5 to 10 percent of cases in adults under the age of 60 years.^{5,6} This etiological diagnosis is particularly important because the goal of treatment is cure from hypertension. In fibromuscular dysplasia, the hypertension is cured or improved in majority of the patients in contrast to atherosclerotic renal artery stenosis.^{7,8}

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2. Case report

We present a case of 21-year-old adult male who was found to have high blood pressure during routine checkup. He did not have any symptoms prior to the hospital visit. There was no family history of hypertension or familial dyslipidemia. His maximal recorded blood pressure was 230/140 mmHg in both the arms. All peripheral pulses were palpable with no radio-radial or radio-femoral delay.

General physical examination did not reveal any abnormality. His body weight was normal with Body Mass Index of 23.5 kg/m². The precordial, respiratory and neurological system examinations were normal. There were no features of hypo- or hyperthyroidism and Cushing's disease. On auscultation, there was an audible renal artery bruit. Routine blood investigations including urea, creatinine and serum electrolytes were normal. His chest X-ray, ECG and echocardiogram were normal.

We started him on standard anti-hypertensive medications and did further investigations. As renal artery stenosis was suspected from clinical examination, renal Doppler was performed, which did not reveal any renal artery stenosis but there was significant discrepancy in the sizes of the right and left kidneys. The right kidney was 8 cm and left kidney 10 cm in size with normal cortico-medullary differentiation. Because of low sensitivity of the renal Doppler examination, arterial stenosis was not ruled out. Since clinical examination and different kidney sizes were in favor of renal artery stenosis, we decided to go for invasive renal angiogram.

Renal artery angiogram of right renal artery revealed multifocal renal FMD with angiographic appearance of strings of beads (Fig. 1). The left renal artery was normal (Fig. 2). Subsequently, the patient underwent balloon angioplasty but due to suboptimal dilatation (Fig. 3), stenting of right renal artery was performed (Fig. 4). His blood pressure was controlled with only one antihypertensive medication, which was



Figure 1 Right renal angiogram.

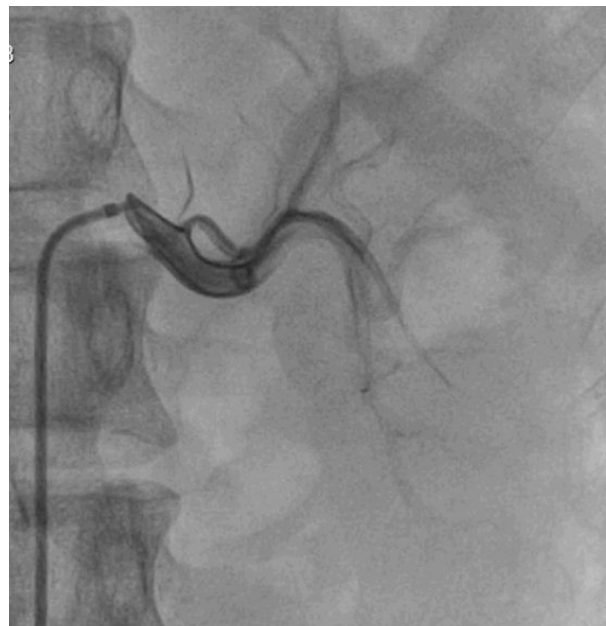


Figure 2 Left renal angiogram.

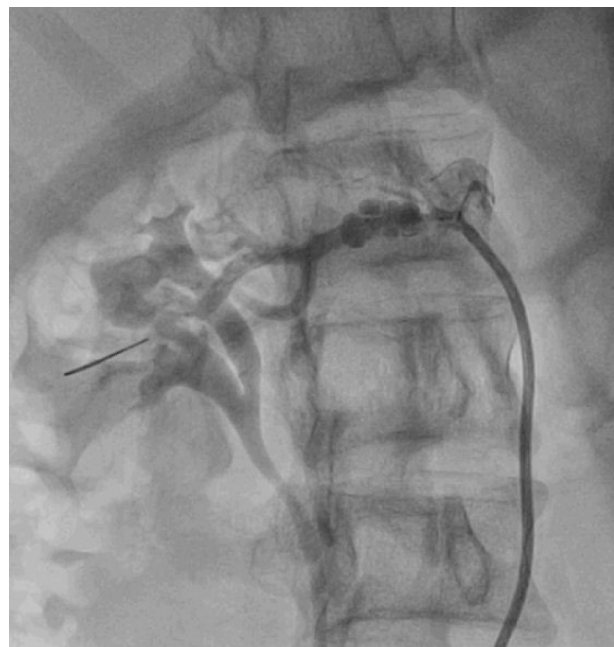


Figure 3 Angiogram post ballooning.

also stopped after one month. There were no procedural complications and his hospital stay was uneventful.

3. Discussion

Fibromuscular dysplasia is an uncommon cause of arterial disease that predominantly affects females.⁹ It is a non-inflammatory, non-atherosclerotic disease that mostly involves the renal and carotid arteries but can involve any arterial bed. Renal artery is involved in around 60–75% of patients.⁷ Histologically, FMD is classified based on the dominant

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