

Case Report

A case of refractory hypertension in young age

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Abstract

Renal artery stenosis (RAS) is most common cause of secondary hypertension and accounts for approximately 1–3% of all causes of hypertension. Fibromuscular dysplasia (FMD) is important cause of RAS in young patients. Various therapeutic options are currently available for patients with renovascular hypertension: medical antihypertensive therapy, surgical revascularisation and transluminal angioplasty including stent implantation. We present in this report a female patient with left renal artery & left renal atrophy and segmental marked stenosis of supra renal aorta who presented with hypertensive encephalopathy & viral meningitis. Patient was successfully treated with antiviral agent.

Keywords: Renal artery stenosis (RAS), refractory hypertension, fibromuscular dysplasia (FMD).

Introduction

Refractory hypertension defined as uncontrolled blood pressure despite the use of at least five antihypertensive medications, including a long-acting thiazide diuretic and a mineralocorticoid receptor antagonist¹. Among the four currently published studies on refractory hypertension, the estimated prevalence rates have ranged from approximately 5 to 30%¹. Polycystic kidney disease, coarctation of aorta, Renal vascular disease, endocrine disease, connective tissue disease and gestational hypertension these are most commonly diagnosed cause of secondary hypertension in young age. Among these coarctation of aorta and renal artery stenosis patient presents with refractory hypertension. Renal artery stenosis is one of rare treatable causes. Renal artery stenosis (RAS) is general term that refers to any vascular lesion causing narrowing of the renal artery thereby impairing blood flow to the kidney. This disease encompasses a broad range of pathophysiologies, the two most common being FMD and atherosclerotic renal artery disease². The prevalence of RAS in the general population is small. In general, about 1 to 6% of hypertensive patients have some element of renal

artery stenosis². The two main etiologies of renal artery stenosis are atherosclerosis and fibromuscular dysplasia. In most of the cases it is caused by atherosclerosis but fibromuscular dysplasia involving renal vessel may be responsible for stenosis in case of younger people, mostly woman³. FMD is a non-inflammatory vascular disease that predominantly affects the renal artery, but it can also affect other vascular territory. The most common type of FMD is the media fibroplasia with the characteristic “string of beads” appearance (80-90%), whereas the two other types, the “intimal” and “adventitial” FMD are much less common accounting for 10% and <5% of cases, respectively⁴. When fibromuscular dysplasia involves renal artery, it causes reduced renal perfusion, which activates renal angiotensin aldosterone system and causes hypertension.

Here we are presenting a case of renal artery stenosis probably due to fibromuscular dysplasia.

Case Report:

A 18 years old unmarried girl got admitted into neuro medicine ward, NINHS, Dhaka with the complaints of convulsion for 12 hours, fever for 3 days, blurring of vision for 1 month. She was relatively well 1 month ago, then she developed blurring of vision, which was more marked in left eye and gradually affect both eyes. For this she got admitted into National institute of ophthalmology and treated accordingly. She developed fever followed by convulsion and got admitted to neurology ward, convulsion was not controlled so she was transferred to ICU of National Institute of Neuroscience Hospital. In ICU CT Sscan of Brain showed normal findings. CSF findings: Total cells 60/cubic mm, Lymphocyte was 90%, polymorph was 10%, Protein 85 mg/dl, Glucose was 5.2 mg/dl. So, we diagnosed her as a case of viral Meningitis with secondary hypertension. In ICU she was intubated and was on mechanical ventilator for type-1 respiratory failure due to aspiration.

On the first day her pulse was 112/min, Blood pressure 210/120 mm of Hg, SPO₂ was 98% with 70% FiO₂, GCS was 4/15. Her funduscopy shows grade 4 hypertensive retinopathy (Figure-1) with papilloedema.

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She did not reveal any clinical or biochemical abnormality in favor of connective tissue disorder. Her USG of whole abdomen reveals smaller left kidney with bilaterally mildly raised parenchymal echogenicity. So we have done CT angiography of renal vessels, (Figure -2) which revealed marked narrowing of the left renal artery with left renal atrophy and segmental marked stenosis of supra renal aorta.

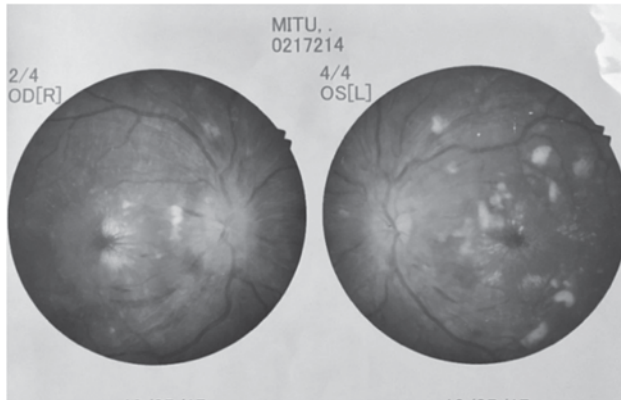


Fig-1:

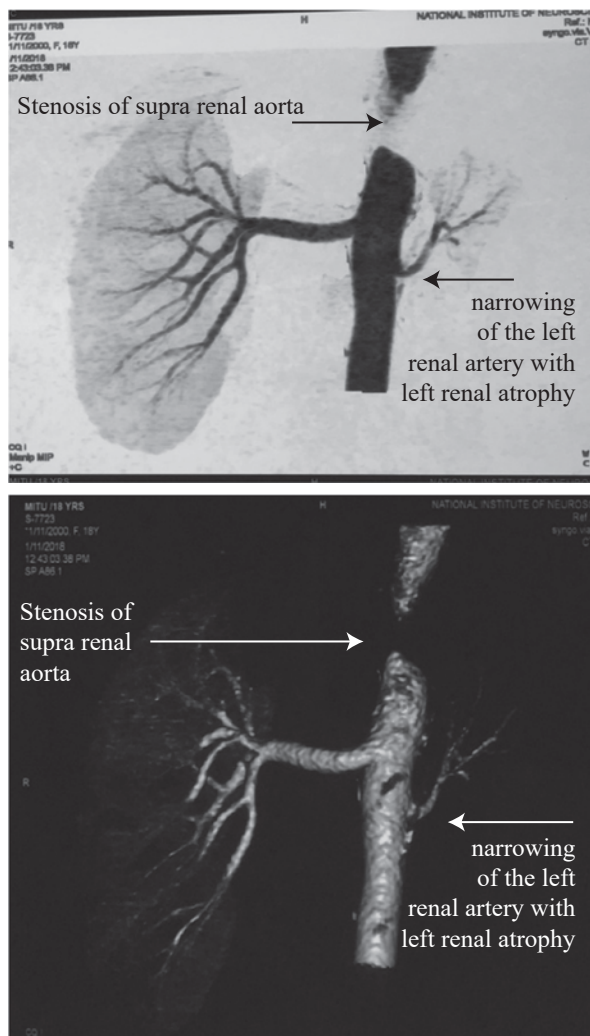


Fig -2

Initially she was treated with injectable labetalol continuous infusion in syringe pump. Her condition improved gradually but her Hypertension was difficult to control by oral antihypertensives. Her BP was controlled with five anti-hypertensive drugs at optimal doses (Carvidolol, amlodipine, alpha methyl dopa, prazosin, thiazide diuretic).

Discussion:

Hypertension is most common non communicable disease now a days. In 95% cases cause of hypertension is unknown. These are essential hypertension. Many factors such as genetic, ethnic, environmental things contribute to essential hypertension. But in 5% of cases hypertension can be shown to be a consequence of a specific disease or abnormality. Renal artery stenosis is one of the rare causes of secondary hypertension. Before diagnosis of renal artery stenosis most of the patient die due to complication of severe refractory hypertension, like stroke or MI, before reaching specialized center and hospital. Keeping in mind these source of patients are easily treatable and morbidity and mortality can be reduced with both pharmacological and mechanical intervention. Most of the renal artery stenosis diagnosed in critical care unit when patient present with flushed pulmonary oedema but in our case patient present with totally different scenario. She is suffering from meningitis and incidentally we found that her hypertensive episodes was not easy to control with usual anti-hypertensive medication doses and patient has already develop grade 4 hypertensive retinopathy and hypertensive change in heart(concentric left ventricular hypertrophy) and in kidney (AKI on CKD). We think of connective tissue disease as cause of hypertension initially but we did not find any abnormality in extractable nuclear antigen report. But her ultrasound of whole abdomen reveal smaller size left kidney, so we did CT angiogram. Medical therapy is a central pillar in the approach to treatment of RAS. Major goals include glycemic control optimization, cholesterol reduction, smoking cessation, blood pressure reduction, and primary prevention with aspirin, if indicated. According to ACC/AHA guidelines, ACE inhibitors, angiotensin receptor blockers, calcium channel blockers, and beta-blockers all receive a class I indication for the treatment of hypertension associated with RAS⁵. Revascularization of the renal artery can be accomplished surgically or endovascularly. Bypass grafts, aortorenal or nonanatomic, and the more technically challenging aortorenal endarterectomy make up the various surgical approaches to revascularization. These techniques are effective treatment options and are comparable to balloon angioplasty; however, major complications associated with surgery have been reported to be twice as common as compared to the endovascular approach⁵. Then we have referred the patient to BSMMU (Bangobandhu Sheikh Mujib Medical University) for intervention. Revascularization of the renal artery can be accomplished surgically or endovascularly. Bypass grafts, aortorenal or nonanatomic, and the more technically challenging aortorenal endarterectomy make up the various surgical approaches to revascularization. These techniques are effective treatment options and are comparable to balloon angioplasty; however,

major complications associated with surgery have been reported to be twice as common as compared to the endovascular approach⁶. For this reason, angioplasty has largely replaced surgical therapy as a first-line treatment. To assess the efficacy of stent placement, angioplasty with stent placement was compared to angioplasty alone in a randomized prospective trial of patients with ostial ARAS⁷. Alternative medical management involves giving low-dose aspirin and lipid-lowering therapy, treat hypertension and monitor function. Where the benefit from revascularisation is uncertain (most cases), this therapy may be prescribed without angiography when the diagnosis is thought likely or possible.

Conclusion:

In resource poor country like Bangladesh it is really hard to do proper screening of secondary Hypertension. In most of the cases these patients die in early life due to hypertensive complications. So it is necessary to initiate mass program to screen out hypertensive patient of young age and rule out the cause of hypertension and treat accordingly.

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