

Case Report

An Uncommon Presentation of Renal Atherosclerosis Disease

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Abbreviations

ED: Emergency Department; EKG: Electrocardiogram; UN: Ureic Nitrogen; CT: Computed Tomography; MR: Magnetic Resonance; PAN: Polyarteritis Nodosa; ANCA: Antineutrophil Cytoplasmic Antibodies; EEC: External Counter-Pulsation therapy

Case Report

A 57 year old male, with past medical history of cigarette smoking, arterial hypertension, type 2 diabetes, peripheral neuropathy and foot diabetic ulcer, presented to the ED with an intense headache. On physical exam, his blood pressure was 240/110 mmHg in both upper limbs, no exudates were found on fundoscopy and focal neurologic deficit was absent. During cardiovascular examination a loud S2 in the second right inter costal space - right sternal border, and S4 in the apex were heard; peripheral pulses had normal amplitude. No rales or crepitus on lung auscultation. Management began with intravenous nitrate and oral antihypertensive medications; as the blood pressure was gradually decreasing the symptoms improved. Initial diagnostic work up revealed a creatinine of 2.7 mg/dl, BUN of 60 mg/dl; the EKG demonstrated sinus rhythm, left ventricular hypertrophy and systolic overload. Both kidneys preserved their normal size, but, increase resistance in the lobar arteries was noticed in Duplex Ultrasonography. No further studies of perfusion were conducted.

After creatinine levels dropped, within the first three days, Renal Arteriography was performed (we used 20ml of contrast) showing multiple stenotic lesions of lobar and interlobar arteries with narrowing of 50-90% of the blood vessel lumen with no aneurysms, and reduction of distal blood flow; the main renal arteries were conserved (Figure 1). Diagnostic work-up for vasculitis was negative. Subsequently, Enhanced External Counter-Pulsation Therapy (EECP) was established with the goal of improving renal perfusion, the initial setup was for 35 sessions; however, after a few sessions the patient loss to follow-up. The last serum creatinine did not change or improve as was expected.

Discussion

Atherosclerosis is widely known as the leading cause of renal

Abstract

Renal artery stenosis is the leading cause of secondary hypertension in the adult population, it commonly results from atherosclerosis. Renal angiography is the gold standard diagnostic study. Frequently the involved vessels are the perirenal aorta, ostium and the third proximal portion of the main renal artery; however, at latter stages the lobar arteries beyond the first bifurcation might undergo atherosclerotic changes. We aim to present a case of diffuse intra-renal artery atherosclerosis in a patient with previous history of diabetes mellitus and systemic arterial hypertension.

Keywords: Renal artery stenosis; Atherosclerosis; Secondary hypertension

stenosis up to 85%, followed by fibro muscular dysplasia with approximately 10%, and other less common causes including neurofibromatosis, radiotherapy, trauma, aortic dissection and arthritis [1,2]. The evidence has shown that stenosis of renal arteries due to atherosclerosis is the main cause of secondary hypertension in people older than 60 years old, and is commonly associated with main cardiovascular risk factors [3]. The pathophysiology lies in chronic decrease blood flow resulting in diminished renal mass and atrophy. In 14% of patients with end-stage renal disease in whom dialysis was initiated, the aetiology was atherosclerotic renal artery stenosis [3]. Suspicion of renal artery stenosis should be raised in patients above 50 years old with new onset hypertension, atherosclerosis encountered in other vascular territories, and unexplained renal insufficiency or sudden decrease renal function after the use of renin angiotensin system inhibitor drugs. On physical examination, an abdominal murmur is usually found in a low percentage of patients [4]. Although CT and MR angiography may demonstrate better visualization, the first common diagnostic study is Duplex Ultrasonography, and Arteriography remains as the gold standard [1]. Commonly, unilateral disease is found with involvement of the perirenal aorta, and proximal portion of the renal artery. Up to 3% of patients with advanced disease have atherosclerosis beyond the first bifurcation of the main renal artery, involving the proximal portions of the lobar arteries [1-3]. We did not find literature describing intrarenal atherosclerosis, affecting the lobar and interlobar arteries, sparing the principal renal artery. Also, there is no standard treatment for this type of pathology, therefore, we deemed using EEC expecting renal perfusion improvement [5]. Systemic vasculitis as Polyarteritis Nodosa (PAN) should be considered as a differential diagnosis, since it affects medium-sized and small arteries, preferentially at vessel bifurcations resulting in microaneurysm formation [6,7]. The clinical picture of renal involvement in PAN is usually hypertension, proteinuria and no active sediment. Isolated renal disease is rare. PAN is an ANCA (Antineutrophil Cytoplasmic Antibodies) negative vasculitis occasionally associated with hepatitis B [6,7]. This patient was negative for vasculitis.

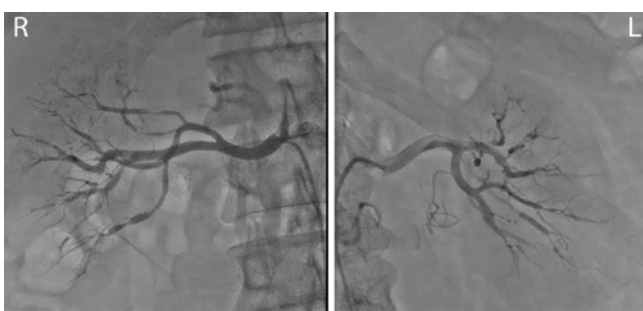


Figure 1: Bilateral renal angiography (Left and Right). Both main renal arteries with no lesions. Lobar and interlobar arteries shows diffuse pathology with stenotic lesions of different longitude; see occlusion of 50-90 % of the lumen causing significant decreased blood flow. R: Right kidney, L: Left kidney.

Conclusion

Renal artery stenosis is the most common cause of secondary hypertension in adult people. In a low percentage population with extensive atherosclerosis, stenosis of the lobar arteries might be found. The addition of each stenotic lesion may result in global renal hypoperfusion, secondary hypertension and ischemic nephropathy. This is the first case report to our knowledge of intrarenal artery diffuse atheromatoses sparing the main renal artery. The appropriate management and prognosis for this type of disease is unknown.

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