

Case report

Bilateral renal artery stenosis causing cardio renal failure and hypertension

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Abstract

Renal artery Stenosis is narrowing or blockage of the artery that supplies blood to the kidneys. It is caused by atherosclerosis fibro muscular dysplasia of the renal arterial wall, or scar formation in artery. The association between heart failure and bilateral renovascular disease was first recorded in 1988 and has since been the subject of numerous reports. The outcome in Renal artery Stenosis seem to vary; some patients with severe proximal artery lesions maintain well preserved renal function, yet others with lesser lesion can still progress to end stage renal disease. Acute or flash pulmonary oedema is well described entity but chronic heart failure can also occur. Heart failure is thought to arise when the kidneys, protected by bilateral stenosis, fail to mount a pressure natriuresis to high arterial pressure. The syndrome is therefore characterized by fluid retention rather than ventricular failure. Clinical clues include the association of cardiac and renal failure with hypertension, wide spread vascular disease, inequality of renal size (>1.5cm difference) on USG, and a reversible increase in serum creatinine concentration on taking ACE inhibitors.

Key Words:

Bilateral renal artery stenosis, systemic hypertension, chronic renal failure, cardiac failure

Case report:

20 years old boy who reported to us with accelerated phase of blood pressure and dyspnoea at rest with mild pedal oedema after receiving ACE inhibition for his blood pressure control, with significant past history of easy fatigue over six months. General physical examination at the time of admission revealed a conscious patient with respiratory rate of 40 per minute with blood pressure of 190/130 mmHg with pedal oedema and bilateral basal crepitations over more than 50% of the lung fields. Investigations revealed normal CBC- ,creatinine -2.5mg/dl- (Normal 0.5 – 1.5). USG showed normal kidneys with normal corticomedullary differentiation on both sides. Echocardiography revealed Left ventricular dysfunction (EF=46%) Renal arteriography showed bilateral renal Stenosis (Figure.1). ACEI was stopped. Patient was put on amlodipine 10mg, frusemide 20mg daily, rozuvasatin 10mg, nebivolol 5mg at the time of discharge. Creatinine regressed to normal range and blood pressure remained at 140/90mmHg.



Figure 1 Renal arteriography showing bilateral renal stenosis

Discussion

Cardio renal failure may be defined as the presence of pulmonary oedema in patients with impaired renal function. The probable reason for this clinical presentation is presence of left ventricular systolic dysfunction with poor renal perfusion which often is made worse by giving ACEIs. The other possible hypothesis for the said presentation appears coexistence of coronary artery disease, obstructive uropathy, malignant hypertension; fluid overload in advanced renal disease and B/L renovascular disease.

A decline in renal function with the use of ACE inhibition can occur in patients with renal artery stenosis either bilateral or unilateral in a solitary functioning kidney. ACEI is well established as the preferred treatment in patients with heart failure due to left ventricular systolic dysfunction; asymptomatic left ventricular dysfunction. A modest increase in serum creatinine is regarded as an acceptable compromise for

improved symptoms and survival. A highest incidence, 32.6% comes from a study by packer et al. The patients in whom renal function declined received higher doses of frusemide and had low filling pressure. An increase in serum creatinine concentration 30% above the baseline value requires further assessment of other precipitating causes, fall in blood pressure, marked dehydration, co- prescription of NSAIDs; CRF or B/L renovascular disease.

Lack of awareness among the clinicians that, those patients presenting with heart failure it is worth while to exclude or confirm the diagnosis of renovascular disease. Features that might prompt such early investigation on the coexistence of cardio-renal failure with one or more of the following ;hypertension, inequality of renal size on USG, renal dysfunction with ACEI, vascular disease at other site .Such patients may be considered for renal arteriography.

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