

Isolated Renal Artery Stenosis: Often Missed Etiology

A.K. Gikonyo*, Premanand Ponoth**, H. Wanga***

Authors Affiliation

*International Cardiologist, **Cardio Thoracic & Vascular Surgeon, The Karen Hospital, Nairobi City, Kenya.
***Chief of Cardio Thoracic & Vascular Surgery, Dr. Kamakshi Memorial Hospital, #1, Radial Road, Pallikarani, Chennai, Tamil Nadu 600100, India.

Reprints Requests

Premanand Ponoth, 5B, Grand Residency, 137 Velachery Tambaram main road (behind Grand Mall) Velachery, Chennai -600042.
E-mail: pponoth@gmail.com

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Abstract

Even though the prevalence of secondary hypertension is not well documented, renal artery stenosis due to atherosclerosis or fibromuscular dysplasia is a reason to be evaluated, especially in young female subjects having refractory hypertension to pharmacotherapy. The treatment of choice is percutaneous renal angioplasty with stent which leads to good control of hypertension.

Keywords: Renal Artery; Renal Artery Stenosis; Hypertension; Angioplasty.

Introduction

The prevalence of hypertension in Kenyans can be estimated at 22.8% [1]. The current prevalence of secondary hypertension is not well documented. One of the causes of secondary hypertension is renal artery stenosis due to either atherosclerosis or fibromuscular dysplasia.

Indications for renal artery investigation should be considered in women under the age 30 years, who have hypertension refractory to pharmacotherapy as they have a high likelihood of fibromuscular dysplasia [3,5]

Early diagnosis and treatment is very important for good long-term results. The treatment of choice is percutaneous renal angioplasty with stent placement in selected cases, which frequently leads to very good control of hypertension [2].

Materials & Methods

29 year old female with hypertension diagnosed 2015, currently on Telmisartan/Amlodipine (80/5) and Nebivolol 2.5mg daily. She presented for second

opinion, based on CT scan and ultrasound in 2016 suggesting renal artery stenosis. Her blood pressure control was suboptimal with current blood pressure 160/90mm of Hg. The physical examination was normal with no renal bruit. The kidney function test was normal with Na139mmol/L, K4.2mmol/L, Cl108mmol/L, urea 5.5mmol/L, creatinine78.8 micromol/L, and GFR 77ml/min.

The repeat CT scans (128 slice) and Doppler ultrasound confirmed a significant right renal artery stenosis. Her angiotensin receptor blocker was stopped and she was scheduled for renal artery angioplasty and stent implantation on 25/09/2017 (Hippocampus 5/15mm).

This was performed successfully with no complications. Follow up renal artery Doppler indicated Kidney function post procedure was improving with Na 142 mmol/L, K 4.8 mmol/L, Cl 103 mmol/L, blood urea 5.6mmol/L, serum creatinine 74.23 micromol/L. GFR was 82 ml/min. Blood pressure on follow up was 150/86 mm Hg.

- Interventional Cardiologist
- Cardio thoracic & Vascular Surgeon
- Interventional radiologist.



Fig. 1: CT Aortogram showing focal right renal Artery stenosis



Fig. 2: Post Angioplasty with stent

Discussion

Fibromuscular dysplasia of the renal arteries is a noninflammatory vascular disease, which commonly affects the renal, carotid, and vertebral arteries (2), and presents anatomically as three different types; medial, intimal, and adventitial fibroplasia.(10) This case likely represents either intimal or adventitial dysplasia due to the focal constriction proximal to the ostium of the renal artery.

The pathophysiologic cause of hypertension is activation of the renin-angiotensin-aldosterone

system (RAAS) secondary to poststenotic drop of renal artery pressure and renal ischemia. The increased systemic blood pressure leads to pressure diuresis from the contralateral unobstructed kidney causing plasma volume contraction and further stimulation of RAAS. In these case, relief of the obstruction leads to prompt reduction of the activity of RAAS and decrease in blood pressure [10].

It is important to note, that renal artery stenosis due to artherosclerosis which is more prevalent does not have the morbidity or mortality benefit if treated with renal angioplasty and stenting. Medical therapy is the preferred management strategy for the majority of people with atherosclerotic renal artery stenosis. [12]. This has been confirmed by the CORAL, ASTRAL and STAR trials.

The renal percutaneous transluminal angioplasty is an accepted and durable treatment strategy when the etiology of renovascular hypertension is due to fibromuscular dysplasia. The rate of restenosis varies in the range of 5 to 11% after one year [13]. Renal artery stenosis for fibromuscular dysplasia showed a cure rate of 41% [6]. The blood pressure outcome was strongly influenced by patient age [11].

Conclusion

In cases of hypertension due to signs of renal impairment related to renal arterial ùbromuscular dysplasia, balloon angioplasty with bailout stenting should be considered [12-17]. Screening of women under the age of 30 with hypertension with Doppler ultrasound should be included in the routine work up to identify eligible patients who would benefit from angioplasty and stenting.

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