Coarctatio Aortae Secondary Form of Hypertension-Case Report

Abstract

One of the causes of secondary form of hypertension is the coarctation of the aorta (CoA) When we look for prevalence as congenital heart disease is 5-8% of all, but when we look for aspect of secondary form of hypertension the prevalence is 0,1%. According to last European guidelines for aortic disease from 2015 CoA is not only circumscript narrowing of the aorta but a complex disease of the vasculature. The late presentation of CoA is arterial hypertension which occur usually in adults .We present a case of 21 years old male with headache and rarely nosebleeds, who came to our clinic with high blood pressure. During the hospitalization we do examination –ECG, blood analyses, ABMP, echocardiography echo of abdomen with evaluation of renal artery, aortography with renal arteriography and KT of aorta. The examination confirm the diagnosis of juctaductual coarctation and patient was referer to Cardiosurgical Centre where he go to intervention, stenting of aorta.

Keywords: Coarctation of aorta; Arterial hypertension; Aortic stenting

Case Report

Volume 8 Issue 6 - 2017

Otljanska M*, Boshev M and Otljanski A
University Clinic of Cardiology, Medical Faculty, University "Sts. Cyril and Methodius", Macedonia

***Corresponding author:** Otljanska Magdalena, University Clinic of Cardiology, Medical Faculty, University Campus "Mother Theresa" – Skopje, Republic of Macedonia, Tel: +389 72 231 006; Email: magdalenaotljanska@gmail.com

Received: April 23, 2017 | **Published:** April 28, 2017

Introduction

Coarctation of the aorta (CoA) is a congenital heart disease, it occur rarely during the life after trauma ,in cases of advance form of atherosclerosis of aorta and in Takayasu aortitis. CoA is defined as a constricted segment of thoracic aorta at the insertion of ductus arteriosus or a long segment of the hypoplasia of aorta.. Sometimes coarctation may be in low segments of thoracic aorta and rarely on the abdominal aorta. It may occur with other form of valvular disease like bicuspid aortic valve, different levels of aortic stenosis or mitral valvular stenosis. In the past CoA has been described as preductal, ductal and postductal type (more common in adults) depending on whether the coarctation segment is proximal or distal to the ductus arteriosus, but now all are juxtaductal (the hemodynamic changes between 3 types are not significant) [1,2] (Figure 1).

It is more common in male v.s female (2:1), and clinical presentation depends of severity of narrowing of aorta. The early presentation of CoA in childhood is congestive heart failure and arterial hypertension as late presentation of CoA in adults [3,4]. In some cases (where persistant Berry cerebral aneurysm) intracranial haemorrhage may be the first clinical manifestation. The developing of collateral circulation may delay the symptoms (Figure 2).

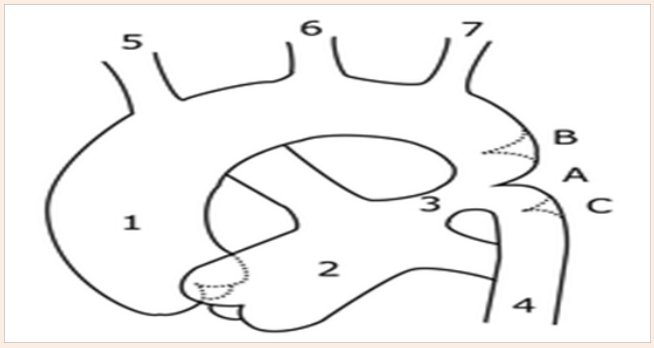

Figure 1: Types of coarctation of aort A-preductal B-ductal C-postductal.

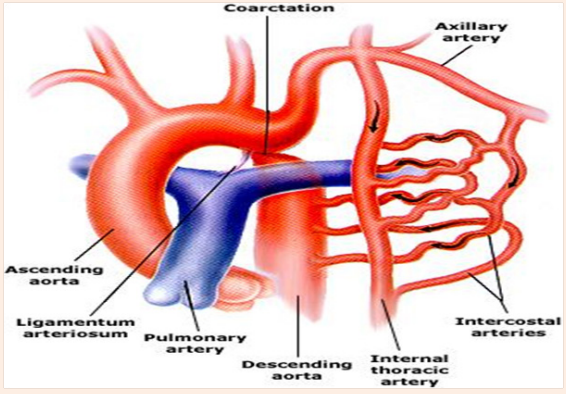

Figure 2: Collaterals in coarctation of aortae.

Case Report

The 21 years old male comes in our clinic with high blood pressure and symptoms of headache and rarely nosebleeds. One year ago his doctor measure his blood pressure 240/110mmHg and prescribe antihypertensive therapy beta blockers and, ace inhibitors. In the beginning his blood pressure was reduce but not control and after 6-7 months he stopped to receive antihypertensive therapy. On the time of hospitalisaton his blood pressure was 170/100 mmHg on both arms, with simulating palpation of radial and femoral pulse we found radio femoral pulse delay and no palpabile collaterals on his back. We done ECG - without signs of left ventricular hypertrophy and ABMP (Figure 3) with results of 24h high blood pressure.

Echocardiography showed normal left ventricular dimension with moderate left ventricular hypertrophy, IVS-13mm, ZZ -11mm, and the high pressure gradient (56mmHg) by Doppler echocardiography at the across stenotic segment. This finding make a suspicion of coarctation of aorta and we done aortography (Figure 4) which confirm the diagnosis of juxtaductal coarctation. The renal angiography (Figure 5) was normal. The computed tomography (KT) aorta (Figure 6) showed juxtaductal coarctationwith high stenosis 77%-80% and prominent a.mamaria internal with collateral vessels across inferior epigastric, intercostal and scapular artery.

After confirming the diagnosis coarctation of aorta the intervention was recommended and balloon angioplasty with stent 8 zig 4,5 implantation was done in Cardiosurgical Centre on the patient. The patient was discharged three days after the procedure with recommendations for clinical and follow –up at 3months with prescribed antihypertensive and antiagregatione therapy.

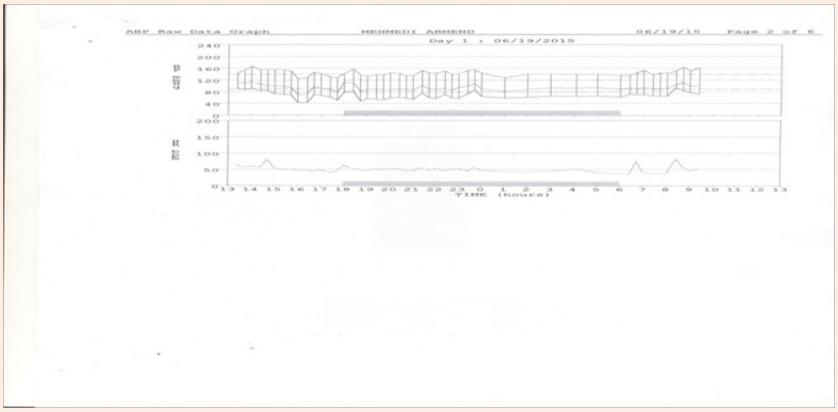

Figure 3: AMBP with high value of blood pressure.

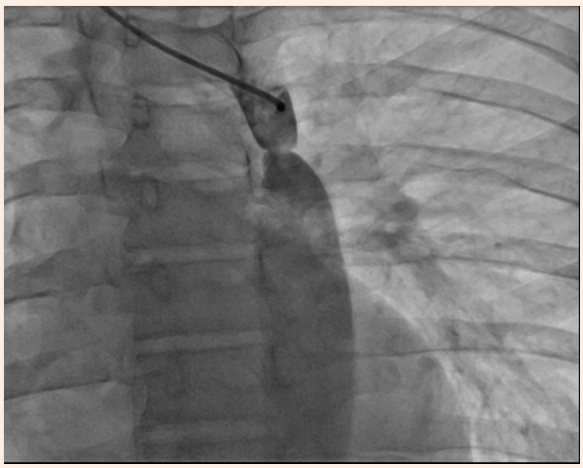

Figure 4: Aortography with juctaductal coarctatio.

Citation: Otljanska M, Boshev M, Otljanski A (2017) Coarctatio Aortae Secondary Form of Hypertension-Case Report. J Cardiol Curr Res 8(6): 00300. DOI: 10.15406/jccr.2017.08.00300

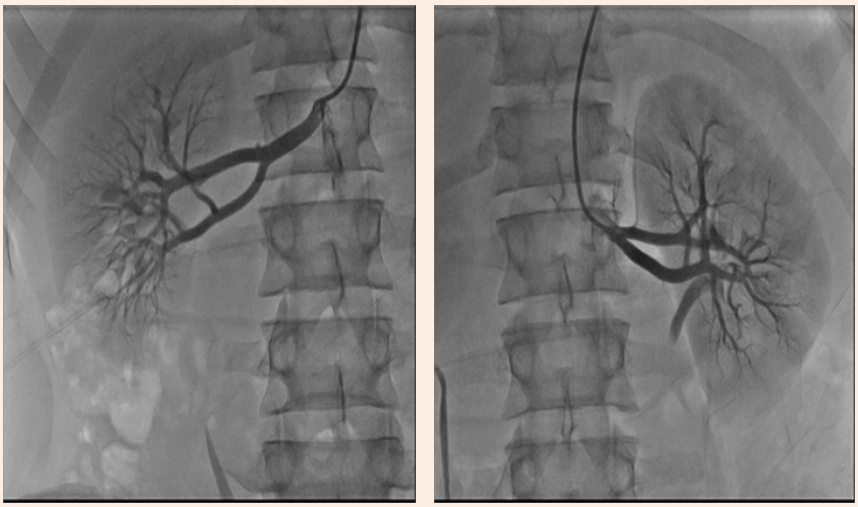

Figure 5: Normal renal angiography.

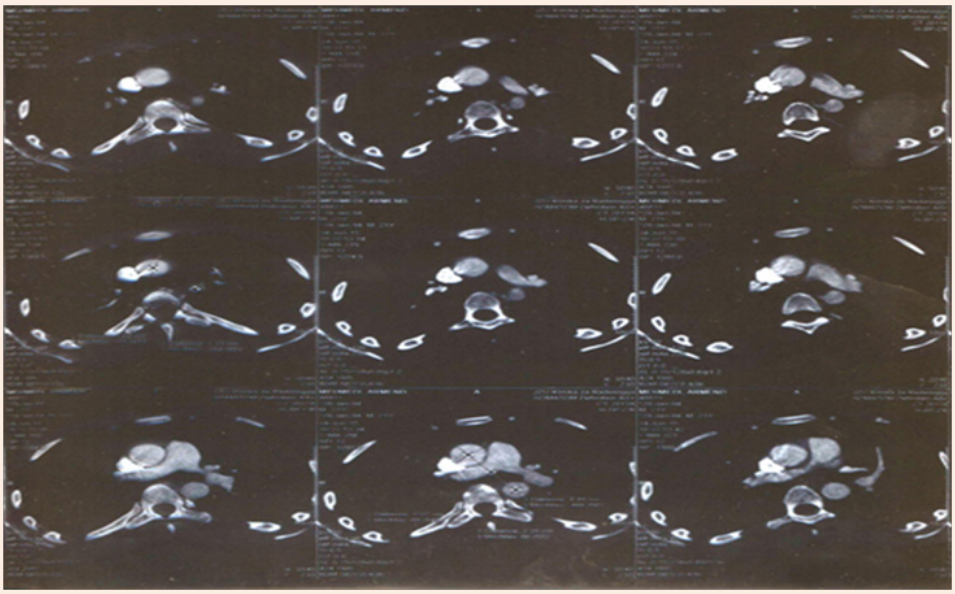

Figure 6: KT aorta with coarctation aorta.

Discussion

In our case the diagnosis of CoA is made after hypertension is noted as an incidental finding during evaluation of hypertension with presenting symptoms of headaches. Many patients are asymptomatic during the childhood as our patient except for the incidentally noted hypertension [5]. The diagnosis of coarctation of the aorta may not be recognized by the physician if it is not think about secondary form of hypertension. It is necessary to palpation of femoral pulses and measurement of blood pressure during routine examination and non-invasive pressure difference >20 mmHg between upper and lower limbs help to confirm the diagnosis of CoA In adults simultaneous palpation of femoral and radial pulsus and radiofemoral pulse delay are clinical features

for CoA, as in our case. Echocardiography provides information especially sign of left ventricular hypertrophy and high pressure gradient with Doppler evaluation on the stenosis site of thoracic aorta. Angiography are still gold standard for the evaluation of this condition and KT and MR preferred non invasive techniques for evaluate aorta in adults. When the diagnosis of CoA is comfirm the surgical and interventional treatment with balloon angioplasty and implantation stent are treatment options [6,7]. In our patient with criterium of presence of hypertension and with >50% aortic narrowing relative to the aortic diameter on KT the intervention was recommended [8].

The mechanism for development of hypertension is not clearly understood; mechanical obstruction, renin-angiotensin–mediated humoral mechanisms and baroreceptor disfunction are possible mechanisms [2,9]. The preferred antihypertensive drugs are beta blockers and ACE inhibitors if there is no contraindication or side effects. After intervention in some cases hypertension can persist and patient continue with antihypertensive therapy as in our case. CoA is a lifelong disease with a good prognosis with control of hypertension, follow-up monitoring for recurrent obstruction [10].

Conclusion

Coarctation of aorta is congenital heart disease which can be asimtomatic during childhood and the late presentation is arterial hypertension .We report male adult with arterial hypertension with an undetected and untreated CoA, who go to the intervention procedure Prognosis is good but follow-up of possible recoarctation and control of blood pressure is recommended.

References

1. Rao PS (2005) Coarctation of the aorta. Curr Cardiol Rep 7(6): 425-434.
2. Prisant LM, Mawulawde K, Kapoor D, Joe C (2004) Coarctation of the aorta**:** a secondary cause of hypertension. J Clin Hypertens (Greenwich) 6(6): 347-350.
3. Pappadis SL, Somers MJ (2003) Hypertension in adolescents: a review of diagnosis and management." Curr Opin Pediatr 15(4): 370-378.
4. Divitiis M, Rubba P, Calabro R (2005) Arterial hypertension and cardiovascular prognosis after successful repair of aortic coarctation: a clinical model for the study of vascular function. Nutr Metab Cardiovasc Dis 15(5): 382-394.
5. Will C Seally (1967) Coarctation of the Aorta and Hypertension. The Annals of thoracis surgery 3(1): 15-28.
6. Cheatham JP (2001) Stenting of coarctation of the aorta. Catheter Cardiovasc Interv 54(1): 112-125.
7. Golden AB, Hellenbrand WE (2007) Coarctation of the aorta: stenting in children and adults. Catheter Cardiovasc Interv 69(2): 289-299.
8. Anagnostopoulos-Tzifa A (2007) Management of aortic coarctation in adults: endovascular versus surgical therapy. Hellenic J Cardiol 48(5): 290-295.
9. Farrell B, Streeten DHP, Blackman MS, Sondheimer HM, Anderson GH (1980) Hypertensive mechanisms in coarctation of the aorta—further-studies of the renin-angiotensin system. J Thorac Cardiovasc Surg 80(4): 568-573.
10. O'Sullivan J (2014) Late hypertension in patients with repaired aortic coarctation. Curr Hypertens Rep 16(3): 421.

Citation: Otljanska M, Boshev M, Otljanski A (2017) Coarctatio Aortae Secondary Form of Hypertension-Case Report. J Cardiol Curr Res 8(6): 00300. DOI: 10.15406/jccr.2017.08.00300