CASE REPORT

A Rare Presentation of Coarctation of Aorta as Hemorrhagic Stroke in 22 years old male: A Case Report

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ABSTRACT

Spontaneous intracerebral hemorrhage in young adult is rare phenomena. most of them are due to rupture of arteriovenous malformation and cavernous angioma. Here we are reportinga rare presentation of aortic coarctation in adult as stroke. Most common presentation of previously undiagnosed coarctation of aorta in adult is hypertension. Coarctation of aorta can be easily diagnosed by pulse examination in all for limb. Early diagnosis and so early surgical intervention decide life expectancy of patients. So, we report a case of 22 yr. male presenting for first time as hemorrhagic stroke.

Key words: Intracerebral hemorrhage, Coarctation of aorta, Aneurysm

INTRODUCTION

Coarctation of aorta is relative common congenital heart defect. It accounts for around 5%to8% of all congenital heart defect.[1,2]It occurs due to congenital narrowing of thoracic aorta usually just distal to origin of left subclavian artery. It presents primarily in infantile age as congestive heart failure and rarely present in young adult as hypertension.[3,4]In adult its diagnosis is often missed until high suspicion is kept. Blood pressure measurement in all four limbs should be done in all young adult presenting as hypertension, so that its diagnosis not missed. Increased risk of intracranial aneurysms presents in adult patients, but there is no increased risk of intracranial aneurysm in patients treated in pediatric age group.[5,6] So early diagnosis and early surgical intervention required to increase life expectancy. Here we report a case of 22-year-old presenting as hemorrhagic stroke due to coarctation of aorta.

CASE PRESENTATION

A 22-yr. male without any morbidity since birth presented as sudden onset left side hemiparesis, and slurring of speech, preceded by 3 episodes of projectile vomiting and transient severe headache. His pulse was 74/min regular and was feeble in left hand. His B.P was low in left arm and b/l lower limb. Neck rigidity and kerning sign was absent with bilateral foot planter were extensor.

Patient CBC, renal function, lipid profile and liver profile was normal. His INR, APPTT and b/l carotid artery color Doppler study were normal. His chest x-ray PA view showed rib notching at inferior borders.

NCCT brain showed acute intra parenchymal hemorrhage in right parieto-temporal region with moderately surrounding edema and sub arachnoid hemorrhage. MRI brain support above findings.

His CT angiography of brain, neck and thorax showed ruptured aneurysm in clinoid segment of right internal carotid artery.

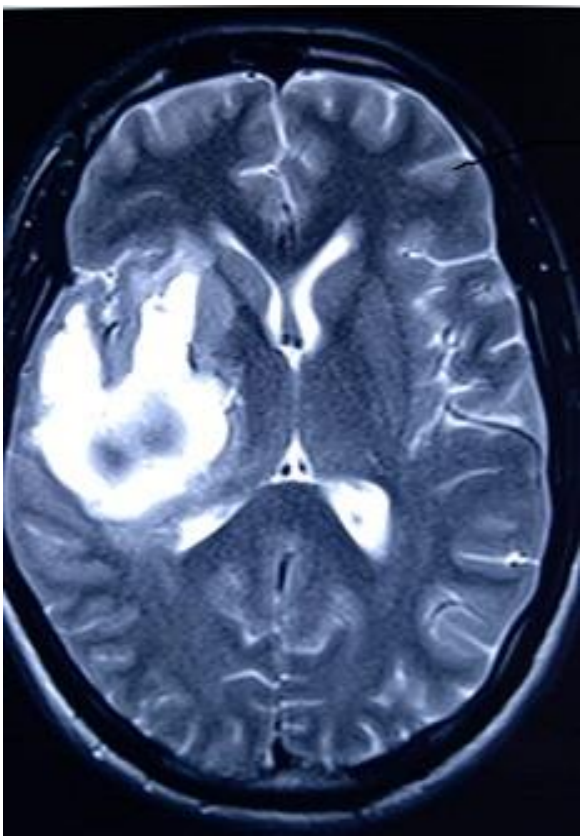
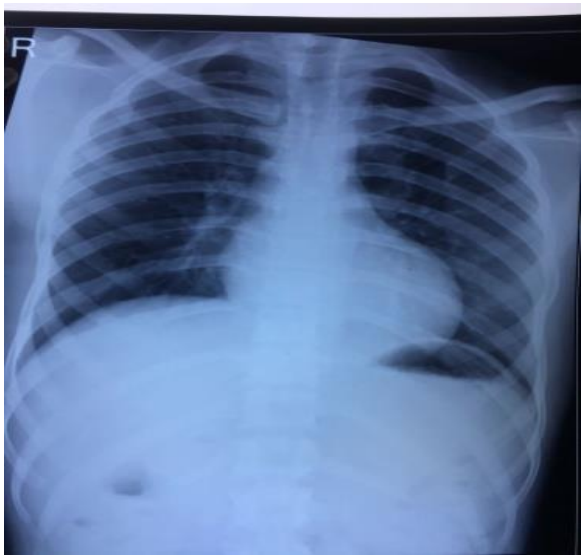


Figure 1: MRI brain showing bleed



Figuree 2: Chest X-ray showing rib notching

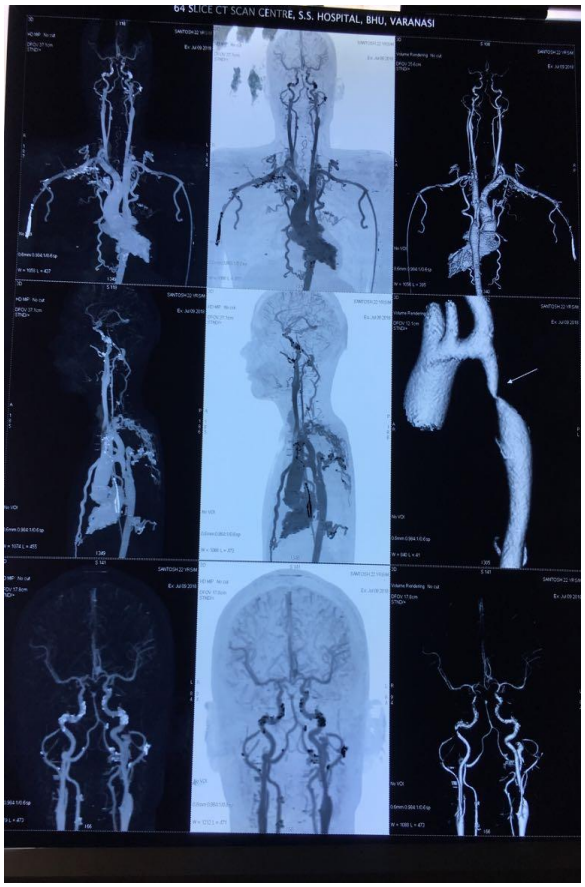


Figure 3: CT Angiography showing coarctation and other changes

There is severe stenosis in descending thoracic aorta 3 cm distal to origin of left subclavian artery with multiple collaterals developed around stenosis. Antero-posterior diameter of aorta in prestenotic segment 14.8mm, narrowest stenotic part 3.4mm, post stenotic segment19.4 and 15mm at level of diaphragm.

Patient is managed conservatively and referred to department of interventional cardiology for angioplasty and stenting.

DISCUSSION

Spontaneous intracerebral hemorrhage (ICH) in people aged < 35 years has been estimated to be 0.3/100 000.[7]The most common causes of ICH were rupture of an arteriovenous malformation in 33%, cavernous angioma in 16%, and hypertension in 11%.[8]Among these coarctation of aorta with intracranial aneurysm is rare cause of ICH.

Coarctation of aorta is relatively common congenital defect occur in 5% to 8% of total congenital cardiac defect.[1,2] It occurs due to narrowing of thoracic aorta near insertion of ducts arteriosus. It is anatomically classified as preductal (infantile) and post ductal(adult).It may occur as isolated defect or with bicuspid aortic valve (50%), VSD.[1,2]

Infant usually present as congestive heart failure due to acute increase of after load due to closure of ductus arteriosus.[1]In rare cases left ventricle after load may increase gradually giving time for arterial collateral vessels to develop and bypass aortic obstruction. These patients usually present in late childhood or later as complication of hypertension.[9]

Chronic hypertension causes development of fibrinoid necrosis, aneurysm which rupture to cause intracranial hemorrhage.[9] MRI angiography based studies shown that intracranial aneurysms present in approximately 10 percent of adult patients, which is substantially higher than the 2 to 3 percent risk reported in the general population.[5]

In contrast, there does not appear to be an increased risk of intracranial aneurysms among children with CoA who undergo treatment early in life.[6]

Adults having coarctation can present as epistaxis, headache or rarely cerebral aneurysm rupture. Mortality is high in untreated patient.[9]Surgical repair of aortic constriction includes end to end anastomosis.[10],aortic resection with graft replacement, prosthetic patch aortoplasty[11] etc. Results of bypass operations are better in adult as aortic growth not occur. Recently angioplasty with or without stenting is used successfully for treatment of defect.[12,13]However, 25% of patient develop restenosis and 20%develop aneurysm.[14,15]

Patient older than 20 yr. as in our case need close follow-up due to more chance of persistent hypertension and cardiovascular complication like aneurysm and pseudo aneurysm occurring either distal or at site of stenosis.[16,17]

REFERENCES

1. Harlan JL, Doty DB, Brandt B 3rd: Coarctation of theaorta in infants. Journal of ThoracicCardiovascular Surgery1984 Dec; 88(6): 1012-9
2. Greenwood RD, Rosenthal A, Parisi L.Extracardiacabnormalities in infants withcongenital heart disease.Paediatrics 1975; 55:485-492
3. Keith JD. Coarctation of the aorta. In: Keith JD, Rowe RD, Vlad P, editors. Heart disease in infancy and childhood. 3rd edition. New York: Macmillan; 1978. p. 736-60.
4. Rudolph AM. Congenital diseases of the heart. Chicago: Yearbook Medical Publishers; 1974.
5. Curtis SL, Bradley M, Wilde P, et al. Results of screening for intracranial aneurysms in patientswith coarctation of the aorta. AJNR Am J Neuroradiol 2012; 33:1182
6. Donti A, Spinardi L, Brighenti M, et al. Frequency of Intracranial Aneurysms Determined by Magnetic ResonanceAngiography in Children (Mean Age 16) Having Operative orEndovascular Treatment of Coarctation of the Aorta (Mean Age 3). Am J Cardiol. 2015 Aug;116(4):630-3
7. Tanaka H, Ueda Y, Hayashi M, Date C, Baba T, Yamashita H, Shoji H, Tanaka Y, Owada K, Detels R. Risk factors for cerebral hemorrhages and cerebral infarction in a Japanese rural community. Stroke.1982; 13:62–73.
8. Sandoval JLR, Cantú C,and Barinagarrementeria F. Intracerebral Hemorrhage in Young People Analysis of Risk Factors, Location, Causes, and Prognosis. Stroke, 1999;30:537–541
9. Campbell M. Natural history of coarctation of the aorta. British Heart Journal 1970; 32: 633-640.
10. Crafoord C, Nylin G. Congenital coarctation of the aortaand its surgical treatment. J Thorac Cardiovasc Surg 1945;14:347-61.
11. Vossschulte K. Surgical correction of coarctation of the aortaby an "isthmusplastic" operation. Thorax 1961; 16:338-45.
12. Svensson LG, Crawford ES. Cardiovascular and vascular diseaseof the aorta. Philadelphia: WB Saunders; 1997. p. 153-74.
13. Lawrie GM, DeBakey ME, Morris GC Jr, Crawford ES, Wagner WF, Glaeser DH. Late repair of coarctation of thedescending thoracic aorta in 190 patients. Results up to 30years after operation. Arch Surg 1981; 116:1557-60.
14. Shaddy RE, Boucek MM, Sturtevant JE,Ruttenbert HD,Jaffe RB, Tani LY, et al. Comparison of angioplasty and surgeryfor unoperated coarctation of the aorta. Circulation1993; 87:793-9.
15. Saul JP, Keane JF, Fellows KE, Lock JE. Balloon dilation angioplastyof postoperative aortic obstructions. Am J Cardiol1987; 59:943-8.
16. Heikkinen L, Sariola H, Salo J, Ala-Kulju K. Morphologicaland histopathological aspects of aneurysms after patchaortoplasty for coarctation. Ann Thorac Surg 1990; 50:946-8.
17. Heikkinen LO, Ala-Kulju KV, Salo JA. Dilatation of ascendingaorta in patients with repaired coarctation. Scand JThorac Cardiovasc Surg 1991; 25:25-8.