Bicuspid Aortic Valve as a Cause of Aortic Regurgitation in our Population

Javaidur Rehman[1], Asifullah[2], Muhammad Ilyas[3], Abdul Hadi[4]

ABSTRACT

Background: Although Rheumatic heart disease is the commonest cause of aortic incompetence in our society however so many cases are present in which no proper RHD can be diagnosed .

Objective: This study is conducted to determine frequency of aortic incompetence as a result of bicuspid aortic valve.

Materials & Methods: This crosssectional study was conducted at the Cardiology Department of Hayatabad Medical Complex,Peshawar. A total of 70 cases of Aortic regurgitation were included through consecutive sampling technique.

Results: Out of total 70,30 patients (42.85%) were having aortic regurgitation due to bicuspid aortic valve. All patients with bicuspid aortic valve & aortic regurgitation belonged to age group 21-40 years. Out of 30 patients with aortic regurgitation due to bicuspid aortic valve, 20(66.66%) were females.

Conclusion: Bicuspid aortic valve is second most common cause of AR,after the RHD.It appears to be more often found in young ladies.

Key words: Aortic regurgitation, bicuspid, aortic valve

This article may be cited as: Rehman J, Asifullah, Ilyas M, Hadi A
Bicuspid Aortic Valve as a Cause of Aortic Regurgitation in our Population JSMC 2018.8;2:70-71.

INTRODUCTION

Bicuspid aortic valve is a common congenital defect. It is associated with diffuse aortopathy, aortic aneurysm formation & aortic dissection. It can also lead to severe aortic regurgitation[1].Bicuspid aortic valve is cause of severe aortic regurgitation in 25% cases of bicuspid aortic valve[2].Frequency of BAV in general population is 1.3%.It appears to be more common in males in the western population.10-12% cases of turner syndrome also have the BAV[3-5].Such patients have not the disease confined only to their valves, and even at cellular level there is misalignment between smooth muscle cells, increased apoptosis, cystic medial necrosis & loss of elastic fibers[6].High risk of aortic dissection, need of aortic valve replacement & risk of infective endocarditis not only demands early detection but proper follow-up in these patients[7-10]. Unfortunately local data on this subject is nonexistent. Our study main objective is toward generating local data regarding bicuspid aortic valve & the need to follow up for aortopathy and its associated complications in our population, where rheumatic heart disease is also a major problem. Our study is designed to determine aortic insufficiency as a complication of Bicuspid aortic valve ,which may not only be limited to aortic valve alone & might be associated with dreadful complications of aortopathy e.g. aortic dissection..

1. Department of Cardiology Kabir Medical College, Peshawar
2. Department of Cardiology KIMS, DHQ Teaching Hospital KDA Kohat
3. DHQ Hospital Timergara Lower Dir
4. Department of Cardiology Saidu Teaching Hospital, Saidu Sharif

Correspondence: Javaid ur Rahman, Assistant Professor Kabir Medical College, Peshawar
Email: drjavaid354@gmail.com Contact: 03335069591

Received: July 17th 2017, Accepted March 18th 2018

MATERIAL & METHODS:

This crosssectional study was conducted at the Cardiology Department of Hayatabad Medical Complex, Peshawar. A total of 70 cases of Aortic regurgitation were included through consecutive sampling technique.

Inclusion Criteria was based on

1. Age>18 years
2. Aortic regurgitation

Exclusion criteria

1. Mixed Aortic valve stenosis & regurgitation
2. Acute AR secondary to Infective endocarditis , Aortic dissection and RHD

Echocardiography was perfomed by single operator with 20 years experience in echocardiography & licensed by British society of echocardiography.The patients were recruited through OPD. Transthoracic echocardiography was done & aortic regurgitation jet was evaluated in different plans using vena contracta width > 6 mm; pressure half time<250milliseconds,holodiatolic flow reversal & LV dilation as indicators of severe AR. Wherever needed Transesophageal echocardiography was also used. Duration of study was 1 year.

Table: Severe aortic regurgitation in different age groups

Age group	Severe Aortic regurgitation	Bicuspid Aortic valve	Rheumatic fever
21-30 years	27	15	12
31-40 years	35	15	20
41-50 years	8	0	8
Total	70	30	40

RESULTS:

In our study we included 70 consecutive patients presenting with aorticregurgitation. Out of 70 patients with severe AR, 30(42.85%) had bicuspid aortic valve, whereas 40(57.14%) patients had aortic regurgitation with valvular lesions(excluding aortic stenosis) due to rheumatic carditis. Age wise distribution of BAV seems to be clustered in the age group between 21 to 40 years.15(50%) patients with BAV were between 21 to 30 years & 15(50%) were between 31 to 40 years of age.20(66.6%) patients with BAV were Females, whereas 10(33.3%) were males. we could not find any case for BAV with severeAR in age above 40 years.

Age wise Rheumatic AR was found in 12(30%) between 21-30 years,20(50%) between31 to 40 & 8(20%) between 41 to 50 years, respectively.26 (65%) patients were females & 14(35%) were males among those with Rheumatic heart disease & Severe AR.

DISCUSSION:

In Pakistan & other developing countries, valvular heart disease is usually the result of rheumatic carditis. Usually the involvement of valves result in regurgitant lesions. The aortic valve is affected less commonly by rheumatic carditis, & the aortic regurgitation is more common than stenosis[11].Our study found out rheumatic carditis as leading cause of aortic regurgitation, as opposed to bicuspid aortic valve, similar to study of AurakzaiHA ,et al.

There were more females affected by BAV & AR in our study ,which might be the difference between our local population versus western countries where BAV is more common in males[3-5].

In our study patients usually presented at age of 21-40 years, whereas in western population the age of presentation is above 50 years[12].

\

CONCLUSION:

Bicuspid aortic valve is second most common cause of severe AR,after the RHD.It appears to be more often found in young ladies& present at earlier age in our population. Sothe young ladies with aortic regurgitation may be screened thoroughly for bicuspid valve along with attention to structure of aorta.

REFERENCES

1. SiuSC,SilversidesCK.Bicuspid aortic valve disease.J Am CollCardiol 2010;55(25):2789-2800
2. Roberts WC.The congenitally bicuspid aortic valve:A study of 85 autopsy cases.The American Journal of cardiology.1970;26:72-83
3. Roberts WC. Anatomically isolated aortic valvular disease: the case against its being of rheumatic etiology.Am J Med. 1970;49:151159.
4. Larson EW, Edwards WD. Risk factors for aortic dissection: a necropsy study of 161 cases. Am J Cardiol. 1984;53:849 855.
5. Gray GW, Salisbury DA, Gulino AM. Echocardiographic and color flow Doppler findings in military pilot applicants. Aviat Space Environ Med 1995;66:3234.
6. Fedak PW, Verma S, David TE, Leask RL, Weisel RD, Butany J. Clinical and pathophysiological implications of a bicuspid aortic valve. *Circulation*.2002;106:900 4.
7. Roberts CS, Roberts WC. Dissection of the aorta associated with congenital malformation of the aortic valve. *J Am CollCardiol*. 1991;17:712716.
8. Nistri S, Sorbo MD, Marin M, Palisi M, Scognamiglio R, ThieneG.Aortic root dilatation in young men with normally functioning bicuspid aortic valves. *Heart*. 1999;82:19 22.
9. Mills P, Leech G, Davies M, Leathan A. The natural history of a non-stenotic bicuspid aortic valve. *Br Heart J*. 1978;40:9517.
10. Hansen D, Schmiegelow K, Jacobsen JR. Bacterial endocarditis in children: trends in its diagnosis, course, and prognosis. *Pediatr Cardiol*.1992;13:198 203.
11. Aurakzai HA, Hameed S, Shahbaz A, Gohar S, Moqueet. Echocardiographic profile of rheumatic heart disease at a tertiary cardiac centre. J Ayub Med Coll Abbottabad 2009;21(3):1226.
12. Andrei AC,YadlapatiA,MalaisrieSC,et al. Comparison of outcomes and presentation in men-versus-women with bicuspid aortic valves undergoing aortic valve replacement.Am J Cardiol. 2015 Jul 15;116(2):250-5.