ORIGINAL ARTICLE

AETIOLOGY OF TRICUSPID REGURGITATION

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Background: Tricuspid regurgitation (TR) is regarded as a secondary disorder. Aim of the study was to know what percentage is secondary to heart and lung disease and its prevalence in normal adults. **Methods**: Two hundred and 30 adults with clinically detectable TR were studied clinically to know the cause of TR. **Results**: Thirteen percent of the adults were normal without any detectable cause for TR. In others, 24% of TR cases were secondary to ischemic heart disease (IHD) and hypertension was found in 14% cases. Sixteen percent had rheumatic heart disease (RHD) while chronic obstructive lung disease was found in 23% cases. The rest of 10% cases of TR had cardiomyopathy (CMP) and congenital heart disease as secondary causes. **Conclusion**: Ischemic heart disease, COPD and hypertension are common causes of TR. Others include RHD, CMP and congenital heart disease. Thirteen percent of apparently normal adults had TR.

Keywords: Tricuspid regurgitation, IHD, Hypertension, COPD

INTRODUCTION

Although the tricuspid regurgitation (TR) makes an impressive bed side case but sub-clinical TR is far more common and is easily missed clinically because of the low pressure gradient across the tricuspid valve.[1,2]

It is also relevant to determine its cause as the underlying disease may be clinically hidden while the TR makes its presence known from the pulsatile JVP and the systolic murmur.[3] While the causes may be left or right sided, the left heart lesions so dominate the picture that TR is often ignored during left sided cardiac valvular surgery.[4] Moreover we come across cases of TR in normal people.

We carried out this study to know the common etiologist behind TR and see the percentage of TR in otherwise normal people.

MATERIAL AND METHODS

Two-hundred- thirty adults with TR were studied for the causes of TR over 13 months between Jan 2010 and Feb 2012, at Department of Medicine at Ayub Medical Institute, Abbottabad. Adults with clinically detectable TR were included. The objective was to see the primary and secondary causes of TR cases where no cause could be found. Clinical examination was done with special reference to hypertension, ischemic heart disease, RHD and COPD. A 12-lead ECG, chest radiograph and Colour Doppler echo-cardiograpy was carried out in each case. Cases without any cause were separately counted. Colour Doppler equipment from Esaote (Mylab-30 Gold Cardiovascular) (Italy) was used with sensitive pulse and continuous wave Doppler modality.

RESULTS

Two hundred and thirty cases were studied between Jan 2010 and Feb 2012. One hundred and thirty (56%) were males and 100 (44%) were females.

Mean age of females was 40±2 years and 52±3 years for the males respectively. COPD, IHD, HTN and RHD were among the main causes of TR. RHD was seen in 16.5% cases. COPD and IHD were noted in 23% and 24% cases respectively. Hypertension and CMP were seen in 14% and 6% cases respectively. Congenital Heart diseases were behind 4% cases of TR in adults. Thirteen percent of the normal adults had TR.

Table-1: Causes of Tricuspid Regurgitation

Aetiology of TR	Number	Total	%
COPD	52	230	23
RHD	38	230	16.5
Congenital HD	9	230	04
IHD	56	230	24
CMP	14	230	6
HTN	32	230	14
Normal adults/TR	29	230	13

DISCUSSION

The fact that TR is a common cardiac valvular lesion in adults cannot be gainsaid. It is important to know the causes of TR in our community although we know that the left heart diseases and parenchymal airway lung disorders are its common causes.[3]

With the advent of more sensitive echo-cardiographic equipment, it has been observed that regurgitant cardiac valvular lesions are far more common then detected clinically.[1,2]

Moreover, false sense of elevation of JVP due to the TR may lead to the overuse of diuretics.[5] Ventricular septal defects and mitral regurgitation may closely mimic the systolic murmur of TR, but inspiratory increase in the intensity of TR murmur sets it aside.[5,6]

While the electrocardiography and chest radiography give evidence of right arterial enlargement, the direct evidence of TR comes from the colour Doppler echocardiography. It can elucidate its cause and magnitude.[7] Hence Doppler and two-dimensional echocardiography has emerged as diagnostic tool of

choice for evaluation of valvular lesions, including the TR. Tricuspid valve prolapse, chordal rupture, infective endocarditis, carcinoid and myxomas are among the primary causes of TR which can be adequately imaged with echo-cardiographic equipment.[8] It can also quantify the regurgitant lesions.[9] The utility of echo-cardiographic diagnosis was proved in this study.

Tricuspid valve annuloplasty with or without prosthetic ring may rectify the severe TR, while operating upon the left sided valves.[10] In our study, COPD, IHD, HTN and RHD were the common causes of TR. Thirteen percent of normal adults had TR as well. The internationally reported figure is 15% for the normal adults with TR.[3] Our figure was also in semblance with figures of 15.77% reported by Yoshida *et al* during a Japanese study.[11]

Pulmonary hypertension is common in the COPD cases. The incidence of TR in COPD was 23% in our study, higher than figure of 15% observed by Keller CA *et al.*[12] The higher incidence in our patients could be because of higher rate of detection of TR today than it was 26 years ago when the study referred to, was conducted. However figures observed by us were almost in conformity with figures of 26.6% reported by Waller BF *et al.*[4]

Rheumatic heart disease is an important cause of TR as observed by us during the present study with 16.5% of cases which is higher than the figures of 10% and 11% reported by Irwin RB *et al*[13] and Waller BF *et al*[4] respectively, though it is comparable with the figures of 19% and 20% observed by Sagie *et al*[14] and Missri J *et al*[15] respectively.

Congenital heart disease was observed in 4% of cases during the current study which is analogous to the observations made by Behm CZ *et al*[16] and comparable to the reported figure of 6.6% by Waller BF *et al.*[4]

We observed that 24% of cases of TR were due to ischemic heart disease which is in accordance with reported figures of 25% by Behm CZ) *et al*[16] and slightly lower than the percentage of 33% observed by Missri J *et al.*[15]

Cardiomyopathy was observed in 6% of cases leading to the secondary TR during our study which is in between the figures of 8% and 14% as observed by Behm CZ *et al*[16] and Missri J *et al*[15] respectively.

The common aetiologies of TR and their comparative importance was brought forth in this cross-sectional descriptive study making the treatment aspects more consequential.

CONCLUSION

Tricuspid regurgitation is common among normal adults. Ischemic heart disease, obstructive airway disease, systemic hypertension and rheumatic heart diseases are among the common causes of secondary tricuspid regurgitation in adults.

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