

A Rare Case of Atrial Functional Tricuspid Regurgitation Associated with Pulmonary Artery Hypertension

Dr. Lakshmi Prasanna Koya^{1*}; Dr. K Nagarajan²; Dr. Lanord Stanley Jawahar³

¹Postgraduate MD General medicine-Shri Sathya' Sai Medical College And Research Institute

²Professor and HOD MD General medicine-Shri Sathya' Sai Medical College And Research Institute

³Professor MD General medicine - Shri Sathya' Sai Medical College And Research Institute

Abstract:- Atrial Functional' Tricuspid Regurgitation' (AFTR) is defined as Tricuspid Regurgitation due to right' atrial (RA) remodelling or due to lone tricuspid annular dilatation, without any primary or secondary cause, except for Atrial Fibrillation/Atrial Flutter induced and without any left heart failure and pulmonary hypertension.

I. INTRODUCTION

Atrial fibrillation is highly found in patients with Atrial Functional Tricuspid Regurgitation and is considered a major cause of it's occurrence. Other cause may include atrial flutter.

The association of pulmonary artery hypertension with Atrial Functional Tricuspid Regurgitation is a rare entity , and it has been found in many studies that some cases of Atrial Functional Tricuspid Regurgitation are found to have elevated pulmonary artery pressures.

II. CASE REPRESENTATION

Patient is a 80' year old male, who presented to our outpatient department with history of fatigue, loss of appetite , weight loss , breathlessness which progressed from grade 2 to grade 3 NYHA and irregular palpitations since 1 month. Patient is a known alcoholic and smoker with no other co-morbidities.

➤ General Physical Examination

- Patient is conscious , oriented' to time , place and person and afebrile.
- Patient is thin built and ill nourished
- Mild pallor , clubbing – grade 2 present
- No history of facial puffiness / pedal oedema / icterus / cyanosis / lymphadenopathy

➤ Blood pressure - 130/60 mm hg

- Pulse rate - 70/min , irregularly irregular, High volume pulse, no special characters , No radio-radial delay and

radio femoral delay, Condition of the vessel wall – normal , Apex-pulse deficit - 30

- Spo2 – 98% at room air
- Respiratory rate – 20/min , abdomino thoracic type of breathing
- JVP – Elevated with prominent v wave and y descent . Hepatojugular reflex present.

➤ Cardiovascular system Examination

➤ Inspection :

- Trachea is in the midline
- Shape of the precordium – Normal , No precordial bulge seen
- Apical impulse seen –in the 5th intercostal space lateral to the mid clavicular line
- Epigastric pulsations are visible, No other visible pulsations seen
- No dilated veins /scars / sinuses seen

➤ Palpation:

- Trachea position – Midline , No deviation felt
- Apical impulse – is felt in the 5th intercostal space half inch lateral to the midclavicular line , Hyperdynamic apex
- Left parasternal heave is present –grade 2
- Epigastric pulsations felt on the tip of the thumb
- Liver pulsations (systolic) are palpable
- No other pulsations felt
- No thrills felt

➤ Auscultation:

- Mitral area: S1 S2 are present. No murmur heard
- Tricuspid area: S1 S2 present. Blowing holosystolic murmur heard which is of grade -3, increases on inspiration and lying down position with no radiation and best heard with the diaphragm of the stethoscope in supine position.
- Pulmonary area: S1 S2 present .S2 loud. Functional flow murmur present.
- Aortic area: S1 S2 present, No Murmur heard.



Fig 1: The Thin Built of the Patient with Prominent Ribs and Intercostal Spaces

➤ *Other Systems Examination*

Respiratory system: Bilateral normal vesicular breath sounds were heard . Bilateral basal crepts were heard CNS and per abdomen examination was under normal limits.

➤ *Evaluation and management*

All necessary investigations were done.

➤ *ECG – was Suggestive of Atrial Fibrillation*

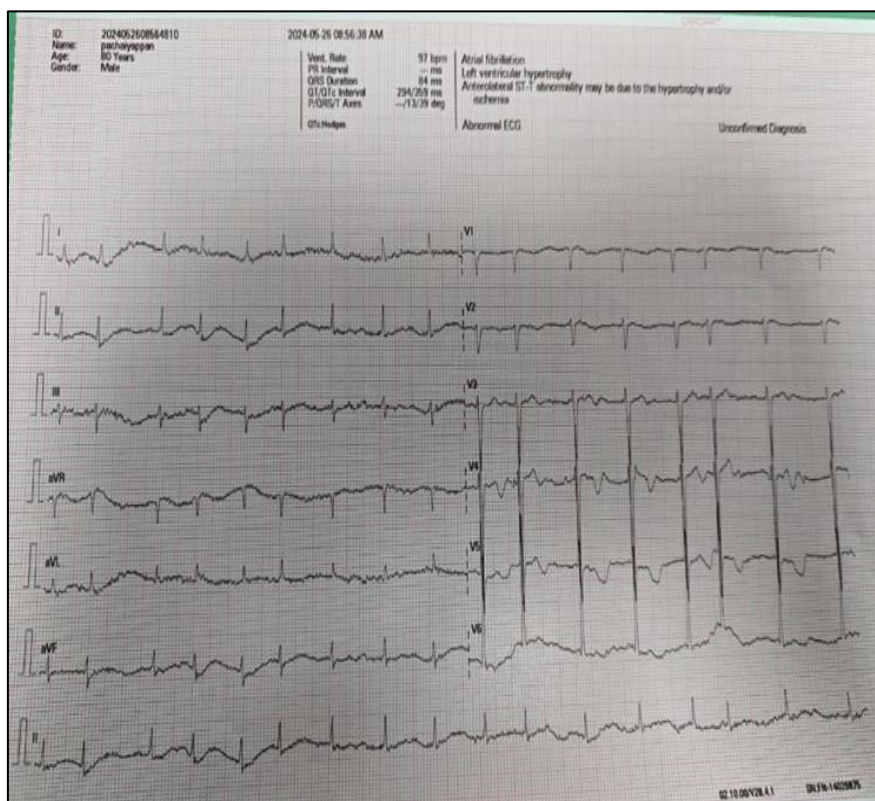


Fig 2: ECG Showing Atrial Fibrillation

➤ *Chest X-Ray:*

- Cardiomegaly present
- Inhomogenous opacities in right upper zone with adjacent bronchiectatic changes – post infective sequelae
- Few reticular opacities in bilateral lower zones-? Infective etiology
- Enlarged Right pulmonary artery



Fig 3: Chest X-Ray of the Patient

Blood investigations revealed low Haemoglobin (7.8), low potassium (3) and slightly elevated INR (1.45). All other blood investigations were under normal limits.

➤ *ECHO:*

- No Regional' wall motion abnormalities
- Normal LV systolic function(Ejection-Fraction -60%)
- Grade 2 diastolic--dysfunction
- RA dilated
- MPA and RPA dilated
- Sclerosed aortic valve
- Severe TR with severe PAH (PAP -61mm Hg)
- Trace PE , No Clots

Based on the above investigations, patient was diagnosed to have atrial functional- Tricuspid Regurgitation associated with severe Pulmonary artery-hypertension. Patient was started on appropriate management with diuretics, PDE-5 inhibitors, beta blockers and rhythm control drugs (digoxin). Patient was symptomatically better and was discharged and was advised for regular follow up.

In case the symptoms persist or aggravate tricuspid valve repair/replacement or percutaneous intervention are done based on the patient's general condition.

III. DISCUSSION

Atrial' Functional Tricuspid regurgitation is a secondary cause of Tricuspid regurgitation most commonly due to Atrial Fibrillation. However in most cases it is unclear if Atrial fibrillation causes TR or TR causes Atrial Fibrillation.

Atrial functional tricuspid regurgitation is due to the increase in annular area which is accompanied by right atrial enlargement.

Regurgitation develops because the free margins of the tricuspid valve leaflets are pulled apart due to the expansion of the annulus. Studies suggests that regurgitation develops only if the increase in annular area is more than 40% when the coaptation reserve is consumed totally.

Previously Pulmonary Artery Pressure(PAP) was used to differentiate isolated/atrial Tricuspid Regurgitation but PAP was not highly different between atrial -Tricuspid Regurgitation and non-atrial' Tricuspid Regurgitation in a study by Florian Sclotter et al , which is a limitation to the definition of atrial Tricuspid Regurgitation .

IV. CONCLUSION

However, in patients with longer history of pulmonary' hypertension there is presence of altered geometry of Right Ventricle along with dilatation of right ventricle;, which is the defining feature of atrial'functional tricuspid regurgitation.

Additionally, in a previous study on atrial -functional Tricuspid Regurgitation, in patients with AF,, patients with findings of significant atrial' funcional tricuspid regurgitation were found to have elevated pulmonary artery pressures(PAP) compared to those without significant atrial functional' tricuspid regurgitation, indicating that elevated Pulmonary artery' pressure may not deny the classification of a case as Atrial'Funational Tricuspid Regurgitation.

The uniqueness of this case lies in the unusual presentation of atrial functional tricuspid regurgitation with severe pulmonary artery hypertension.

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