Crochetage Sign

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24 years primigravida presented to our outdoor department for evaluation of dyspnea of one month duration. Cardiac auscultation revealed normal first heart sound, fixed and wide split of second heart sound and an ejection systolic murmur best heard in the left upper sternal border. The ECG showed peak P wave in the limb lead II, right axis deviation, tall R wave in V1(0.9mV) and R/S in V1 >1 and a crochetage R wave in inferior limb leads II, III and aVF. Transthoracic echocardiography showed a large ostium secondum ASD with a diameter of 30 mm with left to right shunt and pulmonary hypertension.

Crochetage is a French word which means notch. The first description of notch on R wave in the electrocardiogram of the patient with atrial septal defect was given by Alvarez et al in 1959. The crochetage R wave is defined as a rapid up and down motion of the R wave tracing on its ascendant branch or near its zenith with bifid or M-shaped pattern involving initial 80 milliseconds of the QRS complex in the inferior limb leads in patients with ostium secondum or sinus venosus type of atrial septal defect. The exact patho-physiology is not known. Sensitivity and specificity of this sign approaches 92-100% when present in all the three inferior limb leads.¹

Similar bifid pattern is also seen in right bundle branch block but this conduction defect involves the last part of the QRS complex. This bifid pattern of right bundle branch persists after surgery whereas early disappearance of crochetage R wave has been observed in 33% of operated patients.¹

This pattern of crochetage R wave is also seen in the inferior limb leads of the patients with patent foramen ovale, ventricular septal defect, pulmonary stenosis, mitral stenosis, cor pulmonale and even in normal subjects. But not in all the three inferior limb leads in normal subjects.¹ ²

Clinical significance of this pattern is because of its correlation with shunt severity i.e. occurrence of this pattern increases with larger anatomical defects and greater left to right shunt even if the patient has developed pulmonary hypertension.³ ² Ay et al have reported larger cortical-subcortical infarcts in patients with cryptogenic stroke who have patent foramen ovale and crochetage R wave in inferior limb leads as compared to the patients without this pattern.²

References


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