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Case Report

Crochet age Sign: An important ECG Sign in Detecting ASD

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Abstract

An atrial septal defect is a common congenital heart diseases in the adult population. There are various ECG manifestation of ASD and one of them is crochet age sign.

Keywords: an atrial septal defect; crochet age' sign; electrocardiogram

Introduction

An atrial septal defect is a common congenital heart diseases in the adult population. There are various ECG manifestation of ASD and one of them is notch near the apex of the R wave in leads II, III, if also known as crochet age sign. We report a case of A 37-year-old woman with crochet age sign in ECG and subsequently diagnosed to have ostium secundum ASD.

Case Report

A 37-year-old woman was admitted in for evaluation of for progressive dyspnea on exertion for the last 2 year. She did not have any cardiovascular co-morbidities. Cardiac examination revealed a normal first heart sound, wide and fixed split-second heart sound. The ECG showed sinus rhythm, incomplete right bundle branch block (RBBB) and notch near the apex of the R wave in leads II, III, aVf. also known as 'crochet age' sign (Figure 1).

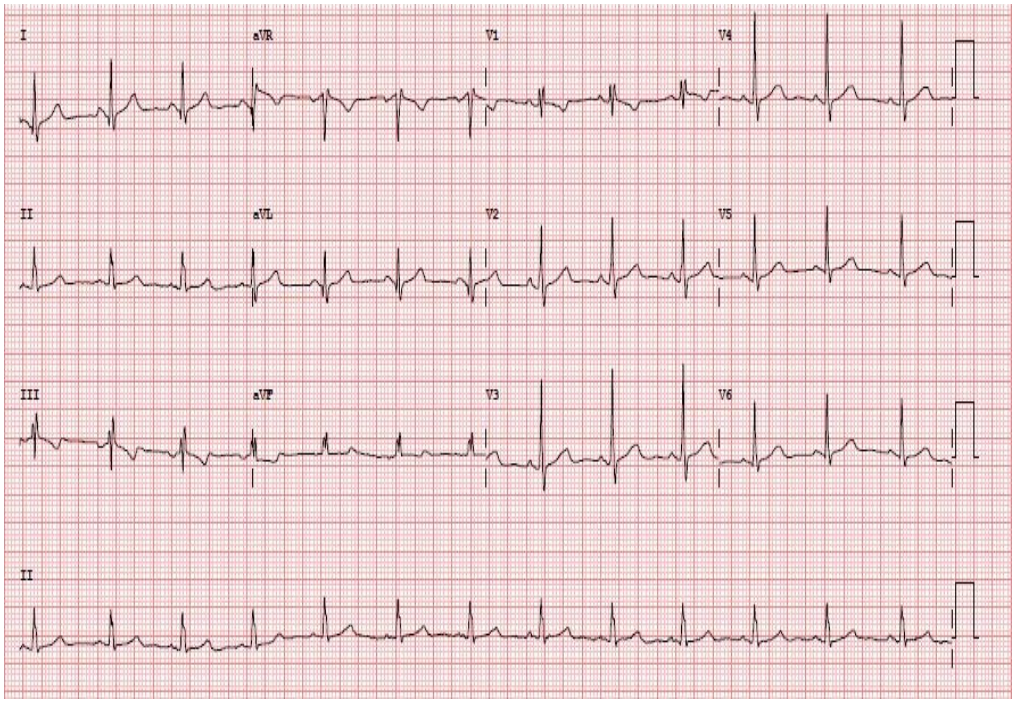

Figure 1: ECG showing notches on the R waves in leads II, III, and aVF with right bundle branch block pattern in lead V_1.

Chest X-ray revealed cardiomegaly with dilated main pulmonary artery. Transthoracic echocardiography (TTE) subsequently confirmed the presence of an ostium secundum ASD (19 mm) with left to right shunt with dilated right atrium and right ventricle. (Fig 2).

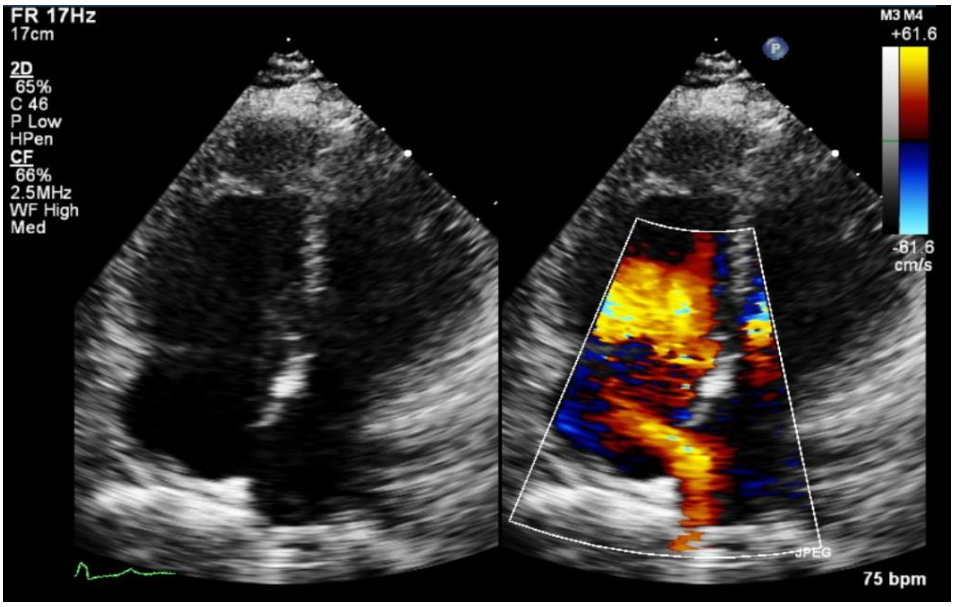

Figure 2: Transthoracic echocardiography showing an ostium secundum ASD with left to right shunt

She underwent ASD device closure with a 22 mm Septal Occlude device. Post procedure at three month follow up, the ECG showed disappearance of crochet age sign with persistent incomplete RBBB pattern. Transthoracic echocardiography (TTE) revealed the device in situ and without any evidence of any residual shunt.

Discussion

An atrial septal defect is one of the most frequent congenital heart diseases of adults. Clinical features of ASD consist of wide and fixed splitting of second heart sound and ejection systolic murmur in upper left sternal border, and echocardiography can confirm the diagnosis. There are various ECG manifestation of ASD and one of them is crochet age sign. It was first described by Toscano et al in 1958 (1) as notch near the apex of the R wave of inferior leads (II, III, if). In 1996, Heller et al concluded that crochet age pattern in inferior limb correlates with shunt severity and the presence of crochet age sign was highly specific for ASD and if present in all three inferior leads specificity reaches 92%–100%. (2) Presence of an incomplete RBBB further helps in diagnosis of ASD. Crochet age pattern is independent of the RBBB. The presence of a RBBB has a sensitivity of 36.1% and specificity of 80% for an ASD, hence crochet age sign could be a better ECG marker of an ASD. (3) In the crochet age pattern, notching of the R-wave generally happens in the initial 80 ms of the QRS complex, whereas in a RBBB pattern, it occurs in the latter part of the QRS complex. (2) After closure of ASD, this sign vanishes in 35% of patients (4).

Conclusion

In conclusion, in the appropriate clinical setting, presence of the crochetage sign on ECG, should be considered as a vital clue for a secundum ASD.

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