

Case Report

ANOMALOUS INSERTION OF CHORDAE TO INTERVENTRICULAR SEPTUM

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ABSTRACT

Anomalous insertion of chordate to the interventricular septum although many times an incidental or autopsy finding, it has diverse manifestations including atypical chest pain, palpitation and sudden cardiac death. We report rare cases of anomalous insertion of chordae to interventricular septum in three different patients presenting to the AIIMS Cardiology OPD with atypical chest pain and palpitation. Although clinical evaluation and ECG were noninformative in those cases, routine TTE was able to delineate those lesions nicely. Although being a much rare entity, it cannot be ignored so far as outcome is concerned.

Keywords: Anomalous, Chordae, Septum

INTRODUCTION

Anomalies of the mitral subvalvular apparatus can include differing types of papillary muscles and chordae tendineae. Direct insertion of the anomalous papillary muscle into the anterior mitral leaflet or chordae tendineae to the ventricular septum is common findings related to these anomalies (Cittadini *et al.*, 2011). Chordae by conventional nomenclature are divided into primary, inserting into the margin of the leaflet, secondary as inserting into the ventricular surface of leaflet and tertiary as inserting into the basal portion of posterior leaflet. Insertion at other sites like free wall or septum is considered anomalous resulting due to aberrant growth of endocardial cushion. Anomalous insertion of chordae to interventricular septum can be asymptomatic or it can present with chest pain, palpitation, mild to severe LVOT obstruction causing exercise intolerance, syncope on exertion or early repolarisation in ECG (Liu *et al.*, 2015). We report three cases of anomalous chordal insertion to the interventricular septum by routine transthoracic echocardiography in whom clinical and electrocardiographic evaluation was noninformative.

CASES

We report three different male cases of 23years, 35 years and 45 years without conventional risk factors presenting with atypical chest pain and palpitation.



Figure 1: Anomalous thick chordae inserting into IVS (PLAX view) [Patient 1]

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Figure 2: Anomalous thin chordae inserting into IVS (Modified A2CH view) [Patient 2]



Figure 3: Anomalous insertion of chordae to IVS (A4CH view) [Patient 3]

Clinical cardiovascular examination was within normal limit in all those patients including ECG, Chest X-ray and serum chemistry. Routine transthoracic echocardiography revealed anomalous insertion of single chordae into ventricular septum in each of them. The patient with thick chordae (Figure 1) was more symptomatic than thin ones (Figures 2, 3) because the thick chordae exerts more strain in ventricular muscles as compared to thin one. Patients were advised not to do strenuous exertion and treated with β blockers to relieve palpitation.

DISCUSSION

Anomalous chordal insertion to interventricular septum is a rare anomaly with an incidence of 1 per 26,000 echocardiograms in adults (Rovner *et al.*, 2005). Navin Chandra Nanda, a pioneer of echocardiography with Michael (2007) lucidly illustrated the 'chordae tendineae anomalous insertion in interventricular septum'. Ziyad *et al.*, (2006) described anomalous chordal insertions into the left ventricular outflow tract causing LVOT obstruction. Zavaleta *et al.*, also demonstrated anomalous chordal insertion to IVS in one patient causing LVOT obstruction. Thick anomalous chordae exerts strain on ventricular muscles generating atypical cardiac pain. These anomalous insertions may also give rise to arrhythmias, palpitation and syncope. They may present with sudden cardiac death even. These anomalous insertions are associated with congenital anomalies like D-TGA (Yoshimura *et al.*, 2000; Clara *et al.*, 2003), Ebsteins anomaly and HCM (Dearani *et al.*,). Both leaflets and chordae originate from the cushion tissue (Oosthoek *et al.*, 1998) and as each stage of embryological development may be abnormal, the different malformations of the mitral valve can be either associated with those anomalous chordal insertion. Routine echocardiography will delineate those cases easily (Oosthoek *et al.*, 1998); so we should not forget about these rare anomalies while evaluating coronary, even in congenital cases.

Conclusion

Anomalous insertion of chordae although asymptomatic but, if missed can land up the patient in a catastrophe like sudden cardiac death. Routine echocardiography can delineate those lesions with

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accuracy, finding an anomalous chordae does not end the journey there, other associated congenital anomalies must be ruled out. Physicians while evaluating atypical chest pain in outdoor patients must not forget to do an echocardiography so that they will not miss those rare but lethal occurrences.

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