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Case Report Open Access

Spontaneous Tricuspid Leaflet Partial Patch Closure of a Muscular Ventricular Septal Defect

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Abstract

Spontaneous closure of congenital ventricular septal defect occurs commonly in infants and young adults. Muscular VSDs usually undergo spontaneous closure as a result of muscular occlusion. We report first time a rare spontaneous partial patch closure of a muscular ventricular septal defect by septal leaflet of tricuspid valve in a 52 years old female diagnosed by cardiovascular magnetic resonance imaging.

Keywords: Ventricular septal defect; Muscular ventricular septal defect; Tricuspid valve

Introduction

Ventricular Septal Defect (VSD) is one of the commonest adult congenital cardiac lesions. Most of the small VSDs close spontaneously before the age of two years and they are unlikely to persist after the age of 10 years. Muscular VSDs usually undergo spontaneous closure as a result of muscular occlusion. Standard transthoracic echocardiography (TTE) is a non-invasive tool that mostly delineates the accurate morphology of VSDs and associated defects but sometime limitations in image quality of TTE prevent evaluation of VSD. We present a case of muscular VSD diagnosed on cardiovascular magnetic resonance (CMR) partially closed by septal leaflet of tricuspid valve.

Case Report

A 52 years old woman was referred to our hospital with few weeks' history of central chest pain. There were no particular aggravating and relieving factors. Physical examination was normal. In view of her strong family history of coronary artery disease and being heavy smoking habits, she was investigated with a 12-lead ECG and single photon emission computed tomography (SPECT), both normal.

Her symptoms were further investigated with a TTE which raised the possibility of a small muscular Ventricular Septal Defect (VSD) (Figure 1). A Cardiovascular Magnetic Resonance (CMR) scan was performed for further assessment as shown in Figure 1. The long-axis and short axis CMR cine images confirmed a small muscular VSD in the mid septum measuring 4×4 mm (area 0.4 cm^2). The septal leaflet of tricuspid valve partially migrated to the septum providing a patch and partial closure of the VSD (*Panels C and D, arrowheads of* Figure 1-*see also supplementary material online, Video*). There was small residual left to right shunt (shunt volume=6 ml) with a normal QP/QS ratio.

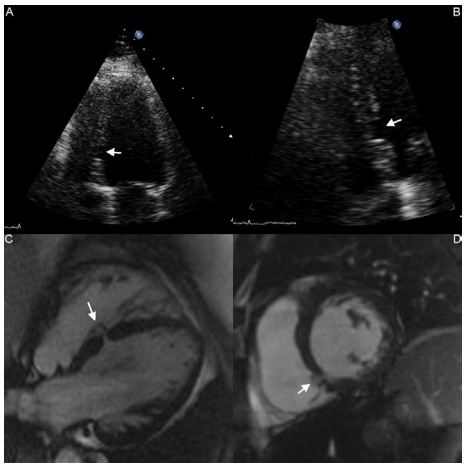
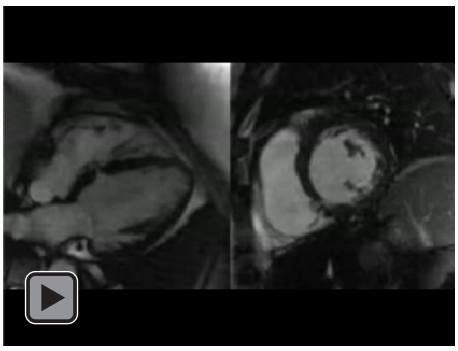


Figure 1: Panel A and B, apical four chambers view on transthoracic echocardiogram raising suspicion of muscular VSD. Panel C (long axis), Panel D (short axis) CMR views confirming the diagnosis of muscular VSD and showing septal leaflet of tricuspid valve partial migration of the septum providing a patch and partial closure of the VSD.

Discussion

Ventricular septal defect is one the commonest adult congenital cardiac lesion encountered after bicuspid aortic valve, and reported up to 20% of congenital cardiac abnormalities as isolated abnormality [1]. Muscular VSDs are one of the most common subtypes of VSDs. Muscular VSDs usually undergo spontaneous closure as a result of muscular occlusion. A spontaneous closure of a muscular VSD's is more common than that of perimembranous defects [2]. Partial or complete closure of perimembranous defects by the septal leaflet of



Video 1:

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the tricuspid valve has been described in the literature by progressive development of aneurysm formation by septal leaflet [3]. This is the first report to demonstrate that the septal tricuspid leaflet has migrated further towards the apex and partially patched a muscular VSD by CMR. CMR is an innovative non-invasive imaging technique that can identify and investigate cardiac abnormalities with high spatial resolution.

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