Journal of Cardiovascular Diseases & Diagnosis
ISSN: 2329-9517

Mohanty, J Cardiovasc Dis Diagn 2015, 3:6
DOI: 10.4172/2329-9517.1000229

Case Report Open Access

Usefulness of 3D Transthoracic Echocardiography in the Diagnosis of Congenital Left Ventricular Aneurysm

Abhisekh Mohanty*

Department of Cardiology, Continental Hospitals, Hyderabad, India

Abstract

A 29 year-old male without any risk factors for coronary artery disease presented with symptomatic sustained ventricular tachycardia. 2-Dimensional (2D) Transthoracic Echocardiogram (TTE) did not reveal any abnormality. When we did a 3-Dimensional (3D) echocardiogram, a small Left Ventricular (LV) aneurysm was detected near the outflow tract.

After catheter ablation, the patient was discharged without any anti-arrhythmic therapy.

Keywords: Congenital aneurysms; Ventricular tachycardia; 3–Dimensional transthoracic echocardiography; Catheter ablation

Introduction

True congenital aneurysms of left ventricle (LV) are very rarely reported with an incidence of about 0.34%[1]. They are usually asymptomatic. Sometimes they may present with systemic embolization, congestive heart failure, valvular regurgitation, ventricular rupture and arrhythmias. Ventricular tachyarrhythmias are an unusual but significant complication, with only a few cases reported previously. In this article we present a similar case. We also aim to discuss how 3D echocardiogram can be useful alternative of cardiac MRI for diagnosis of structural heart diseases.

Case Report

A 29 year old male presented to emergency department with complaints of palpitation with giddiness. He had tachycardia with systolic blood pressure of 90 mm of Hg. His Electrocardiogram (ECG) showed monomorphic ventricular tachycardia (VT) with right bundle branch block pattern and inferior axis. It got reverted with amiodarone (bolus dose followed by infusion for 24 hours). Initially his 2 D TTE did not reveal any significant cardiac structural abnormality. We then did a detailed 3 D TTE which revealed a small dyskinetic segment near the LV outflow tract in the interventricular septa (Figure 1 and Video 1). His CT coronary angiogram was found to be normal. We discussed the case with the 'Heart Team'. Subsequently he was subjected to Electrophysiological study (EPS) which localised the origin of the VT to the aneurysm, following which catheter ablation (CA) was done. In view of the small size of the aneurysm and absence of any other symptoms like congestive heart failure and systemic embolization, we did not plan for aneurysmectomy. He was discharged without any anti-arrhythmic medications.

He was completely asymptomatic in his follow –up visit after 2 months. His holter electrocardiogram did not show any ventricular premature beats and 3D echocardiogram did not show any new findings. We plan to monitor the size of the aneurysm once every 6 months.

Discussion

Congenital aneurysms of LV are rare structural anomalies detected in adults. The exact epidemiology of such anomalies is not known as they are rare and also under-diagnosed. Based on available reports the incidence is about 0.34% [1] in adults. They are also rarely seen in left atrium.

Most left ventricular aneurysms (VA) occur as a result of myocardial infarction (MI) although some other possible causes are hypertrophic cardiomyopathy (HCM) with midventricular obstruction, heart injury/surgery, tuberculosis, Chagas' disease, anomalous origin of the left coronary artery in the pulmonary artery, rheumatic fever, sarcoidosis, and myocarditis. In our case, he presence of normal coronary arteries excluded MI. Other etiologies well ruled out based on history, echocardiogram and chest X-ray.

Congenital LV aneurysm is a diagnosis of exclusion. The differential diagnosis of congenital LV aneurysm includes LV diverticulum. Congenital LV aneurysm has a large LV communicating neck with a fibroelastic wall and dyskinetic motion abnormality. In contrast, LV diverticulum has a narrow neck with a normal wall and it contracts synchronously with LV. In addition, whereas aneurysms are usually isolated congenital defects, 70% of LV diverticulum are associated with

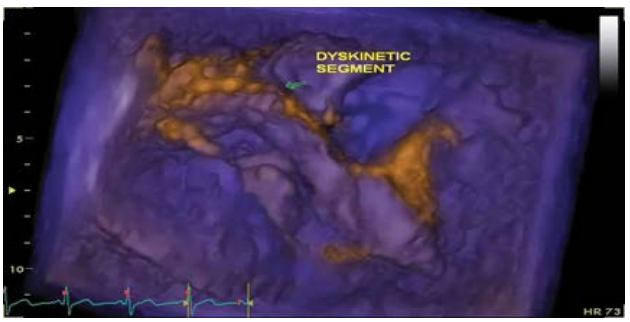
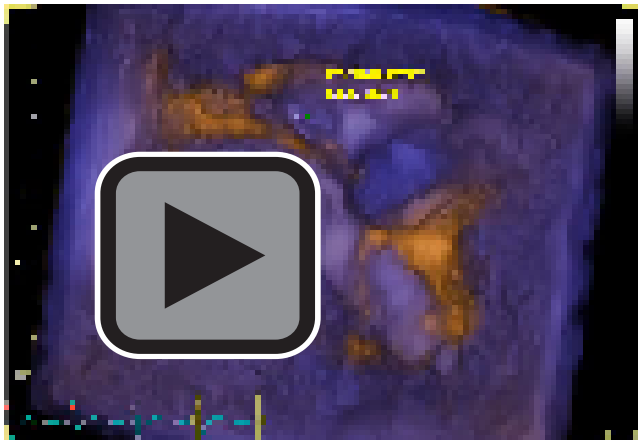


Figure 1: 3 – dimensional echocardiogram showing the congenital aneurysm of left ventricle.

***Corresponding author:** Department of Cardiology, Continental Hospitals, Plot no 3, Road no 2, It & Financial District, Nanakramguda, Gachibowli, Hyderabad, Telengana, India, Tel: +91-9666121115; E-mail: abhisekh.mhnt@gmail.com

Received November 06, 2015; **Accepted** November 12, 2015; **Published** November 18, 2015

Citation: Mohanty A (2015) Usefulness of 3D Transthoracic Echocardiography in the Diagnosis of Congenital Left Ventricular Aneurysm. J Cardiovasc Dis Diagn 3: 229. doi:10.4172/2329-9517.1000229



Video 1: 3-dimensional echocardiogram showing the congenital aneurysm of left ventricle.

congenital midline thoracoabdominal defects and congenital cardiac malformations.

Congenital LV aneurysms can have a variety of presentations. Most of the patients are asymptomatic. The usual presenting symptoms are arrhythmias, heart failure, peripheral embolism, endocarditis, cardiac rupture, tamponade, or even sudden death.

Large aneurysms are easily diagnosed by a routine 2 D echocardiogram. In case of very small aneurysms, like in our case, sometimes it can be missed. In such situations cardiac MRI is usually done to diagnose any structural abnormalities. Our case shows how a 3 Dimensional echocardiogram can be a useful and cheaper alternative for diagnosis of structural heart diseases. One of the significant advances in this field has been the development and refinement of three-dimensional (3D) imaging [2]. Real-time 3D echocardiography allows single-beat acquisition of pyramidal datasets during a breath-hold without the need for off-line reconstruction, thus eliminating motion artefacts. One major advantage of 3D echocardiography is the improvement in the accuracy of evaluation of cardiac chamber volumes by eliminating the need for geometric modeling and the errors caused by foreshortened apical views. Another benefit of 3D imaging is the global perspective visualization of cardiac valves and congenital abnormalities [3].

The management of such cases is still a matter of debate. Most authors advocate resection of symptomatic aneurysms and rapidly enlarging asymptomatic aneurysms [4]. In asymptomatic cases, some groups defend a conservative attitude and employ measures aimed at preventing endocarditis and embolism via oral antiplatelet or anticoagulation agents. Those who present with sustained or non-sustained monomorphic ventricular tachycardia should undergo Electro Physiogical Study (EPS) [5]. Usually Catheter Ablation (CA) is done in such cases, though some authors advise for aneurysmectomy with CA. In some case reports, asymptomatic patients with non-sustained ventricular tachycardia were managed medically with good outcome.

References

1. Ohlow MA, Secknus MA, Geller JC, von Korn H, Lauer B, et al. (2009) Prevalence and outcome of congenital left ventricular aneurysms and diverticula in an adult population. Cardiology 112: 287–93.
2. Fellows CL, Bardy GH, Ivey TD, Werner JA, Draheim JJ, et al. (1986) Ventricular dysrhythmias associated with left ventricular aneurysms. Am J Cardiol 57: 997-999.
3. Marsan NA (2011) Three - dimensional echocardiography for preoperative assessment of patients with left ventricular aneurysm. Ann Thorac Surg 91: 113-121.
4. Okereke OUJ, Cooley DA, Frazier OH (1986) Congenital diverticulum of left ventricle. J Thorac Cardiovasc Surg 91: 208-214.
5. Ogawa M (2004) Successful catheter ablation of ventricular tachycardia originating from idiopathic saccular apical left ventricular aneurysm. Int J Cardiol 93: 343-346.