Iatrogenic pericardial defect

Brett J. Murray, Jacob B. Diamond, Robert F. English
Department of Pediatrics, University of Florida, College of Medicine, Jacksonville, FL, USA

ABSTRACT

Pericardial defects are uncommon, usually congenital, and frequently involve a complete absence of the pericardium. Partial pericardial defects are more likely to result in complications. Iatrogenic pericardial defects are usually partial defects and may present with cardiac strangulation. We present the case of an iatrogenic pericardial defect in an asymptomatic 20-year-old female.

Keywords: Cardiac herniation, cardiac strangulation, iatrogenic pericardial defect

INTRODUCTION

Congenital pericardial defects have an estimated frequency of 0.01%–0.04% and may be asymptomatic or present with cardiac strangulation. They are typically left sided and usually do not require intervention.[1] Iatrogenic pericardial defects are more rare and can present with late cardiac strangulation.[2]

CASE REPORT

An asymptomatic 20-year-old female presented for surveillance echocardiography 6 years after a diagnosis of left femur osteosarcoma. She had undergone chemotherapy with anthracyclines and resection of the tumor along with radiation therapy to the leg. Three years after her diagnosis, she was found to have a metastasis in the lingula of the left lung. At surgery, the affected region of the lung was adherent to the pericardium, so a 3 cm × 3 cm piece of pericardium was resected. Her surveillance echocardiograms showed no changes for the 1st year after the surgery. Her current echocardiogram demonstrated an unusual contour to the posterolateral wall of the left ventricle, suggestive of a left lateral ventricular aneurysm, though the affected region was contractile and of normal thickness [Video 1].

A magnetic resonance imaging (MRI) was obtained which showed a circumferential demarcating line of compression encircling the heart, indicating herniation through the pericardial defect [Figure 1]. It did not discern any significant coronary compression. Cardiac catheterization demonstrated complete occlusion of the left anterior descending and left circumflex coronary arteries in diastole [Figure 2]. The right coronary artery was not affected. She was taken to the operating room where the pericardial defect, which measured 10 cm × 15 cm, was revealed. The apex of the heart was herniated through this defect into the left chest. Two patches of bovine pericardium were required to completely close the defect, returning the heart to the mediastinum. There was no scarring of the heart to the edges of the defect or to the lung. She had an uneventful recovery.

DISCUSSION

Congenital defects can be complete or partial. A complete absence of the pericardium is associated with less

Video Available on: www.annalspc.com

Access this article online

Quick Response Code:

Website: www.annalspc.com

DOI: 10.4103/apc.APC_83_20

How to cite this article: Murray BJ, Diamond JB, English RF. Iatrogenic pericardial defect. Ann Pediatr Card 2021;14:105-6.

Address for correspondence: Dr. Robert F. English, Pediatric Cardiovascular Center, University of Florida, 841 Prudential Drive, Suite 100, Jacksonville, FL 32207, USA. E-mail: robert.english@jax.ufl.edu

Submitted: 25-Apr-2020 **Revised:** 26-Apr-2020 **Accepted:** 17-Jul-2020 **Published:** 23-Sep-2020

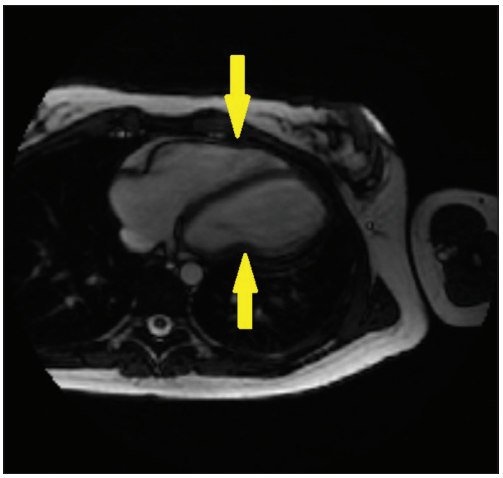

Figure 1: Axial image of the heart showing a line of demarcation (yellow arrows) indicating the edges of the pericardial defect

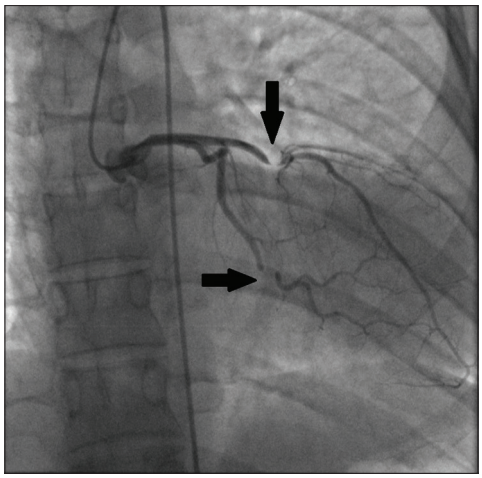

Figure 2: Selective left coronary angiography demonstrates complete diastolic occlusion of the left anterior descending and left circumflex coronary arteries

severe consequences and a better prognosis in general. Iatrogenic pericardial defects are associated with a higher rate of morbidity, as they consistently result in partial defects with the potential for herniation and resultant strangulation.[3] These defects are more common in adults undergoing surgery for lung cancer and are rare in the pediatric population. Echocardiography has been the primary diagnostic tool for this entity. More recently, cardiac MRI has replaced echocardiography as the standard. While the complete absence of the pericardium is often followed clinically, partial defects involving the left ventricle (both congenital and iatrogenic) are often managed operatively even when the patient is asymptomatic because of the potential for severe complications. Defects confined to the upper left heart border permitting only the appendage to protrude are the exception to surgical intervention since the risk for incarceration is minimal.[4]

Our case highlights an unusual complication as partial pericardiectomy is rarely undertaken in the pediatric population. Close follow-up of these patients with frequent echocardiography is needed to prevent serious complications.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Khayata M, Alkharabsheh S, Shah NP, Verma BR, Gentry JL, Summers M, *et al*. Case series, contemporary review and imaging guided diagnostic and management approach of congenital pericardial defects. Open Heart 2020;7:e001103.
2. Ohshima H, Takeuchi H, Yamaguchi T, Takanashi R, Tsunoda K. Late cardiac strangulation due to an iatrogenic pericardial defect. Chest 1993;104:977-8.
3. Shimizu J, Ishida Y, Hirano Y, Tatsuzawa Y, Kawaura Y, Nozawa A, *et al*. Cardiac herniation following intrapericardial pneumonectomy with partial pericardiectomy for advanced lung cancer. Ann Thorac Cardiovasc Surg 2003;9:68-72.
4. Bennett KR. Congenital foramen of the left pericardium. Ann Thorac Surg 2000;70:993-8.