

Indentation in the Right Ventricle by an Incomplete Pericardium on 3-Dimensional Reconstructed Computed Tomography

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We report the case of a 17-year-old girl who presented with an indentation in the right ventricle caused by an incomplete pericardium on preoperative 3-dimensional reconstructed computed tomography. She was to undergo surgery for a partial atrioventricular septal defect and secundum atrial septal defect. Preoperative electrocardiography revealed occasional premature ventricular beats. We found the absence of the left side of the pericardium intraoperatively, and this absence caused strangulation of the diaphragmatic surface of the right ventricle. After correcting the lesion, the patient's rhythm disturbances improved.

Key words: 1. Indentation of the right ventricle
2. Incomplete pericardium
3. Ventricular premature beat

Case report

A 17-year-old girl from Vietnam with a body weight of 35.7 kg and height of 161.5 cm visited author's hospital to undergo open heart surgery for a known partial atrioventricular septal defect and secundum atrial septal defect. There were no significant symptoms or signs except mild dyspnea and occasional premature ventricular beats on electrocardiography. Preoperative echocardiography confirmed the above lesion, and computed tomography (CT) showed an indentation on the inferior surface of the right ventricle (Fig. 1A).

After sternotomy, we observed the absence of the left side of the pericardium, and found that the heart was herniated into the left pleural cavity. The right side of the pericardium was intact. The left margin of the posterior pericardium ended at the middle of the

mediastinal space and connected to the anterior pericardium in a way that strangled the diaphragmatic surface of the right ventricle near the right atrioventricular junction (Fig. 1B). We divided the connection between the anterior and inferior pericardium to release the strangling, and also performed corrective surgery. The patient's postoperative course was uneventful, and she did not show premature ventricular beats over the course of follow-up, which lasted until she returned to her country.

Discussion

Several case reports have described congenital pericardial defects [1-3]; however, to our best knowledge, few reports have included 3-dimensional reconstructed CT images showing an indentation caused by an incomplete pericardium. Before opening the

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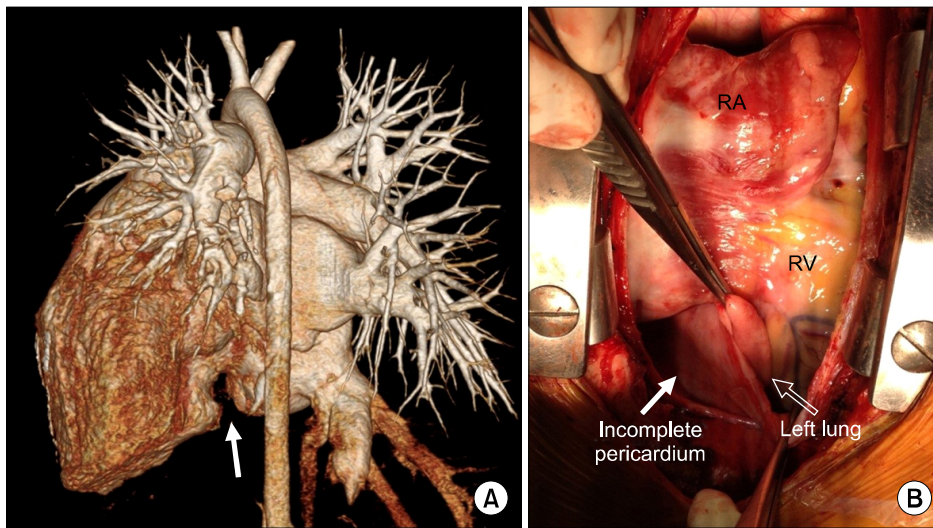


Fig. 1. (A) An anterior-posterior view of 3-dimensional reconstructed computed tomography. The white arrow indicates the indentation caused by the incomplete pericardium. (B) A picture from the operative field. The white arrow indicates the incomplete pericardium, which strangled the diaphragmatic surface of the RV. The empty arrow shows the left lung from the left pleural cavity. RA, right atrium; RV, right ventricle.

chest, we did not surmise that the indentation of the right ventricle would be associated with a congenital pericardial defect. Fortunately, our patient had not showed any symptoms or signs associated with strangling of the right ventricle by the incomplete pericardium until the operation, except for occasional premature ventricular beats. However, several reports have described chest pain caused by strangulation of the coronary arteries [1] or left atrial appendage [2], as well as mortality due to incarceration of the myocardium [3] by a partial pericardial defect, as in our case. We suggest that the patient's premature ventricular beats were associated with the strangulation of the right ventricle, and if we had not released this strangulation, the patient might have continued to show persistent frequent premature ventricular beats or ischemic symptoms in the future. Even though the patients did not complain of certain symptoms, it was necessary to treat this anomaly to prevent future disasters, such as myocardial ischemia or ventricular arrhythmia.

Strangulation by an incomplete pericardium should

be considered when we observe an abnormal indentation on the ventricles in preoperative imaging studies, especially CT. We report our rare case with a unique 3-dimensional reconstructed CT image and a presentation of the operative findings.

Conflict of interest

No potential conflict of interest relevant to this article was reported.

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