
Diagnosis of Pericardial Cyst in a Young Child by Computed Tomography of the Thorax

Dimitris A. Daskalopoulos, M.D., Jerald P. Kuhn, M.D.,
Robert L. Gingell, M.D., and Daniel R. Pieroni, M.D.

Computed tomography can be very useful in the assessment of mediastinal masses in children. In this case, it provided for the specific diagnosis of a pericardial cyst in a young child, obviating the need for invasive evaluation or surgery.

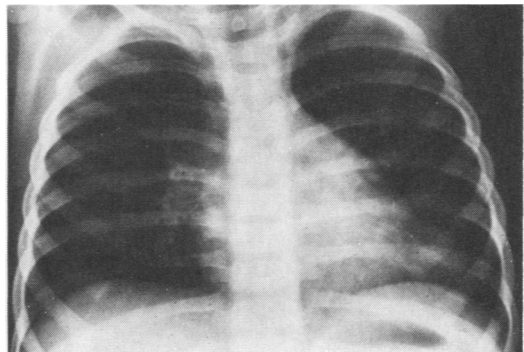
ALTHOUGH the occurrence of pericardial cysts in children is rare,¹ their differentiation from the more significant solid masses of the mediastinum is important. Their accurate diagnosis may prevent unnecessary invasive procedures or surgery.

Our paper reports an asymptomatic young child with a pericardial cyst, diagnosed by computed tomography (CT) of the thorax. This case illustrates the advantage of CT in defining a mediastinal mass in a child, and in modifying the diagnostic and therapeutic approach.

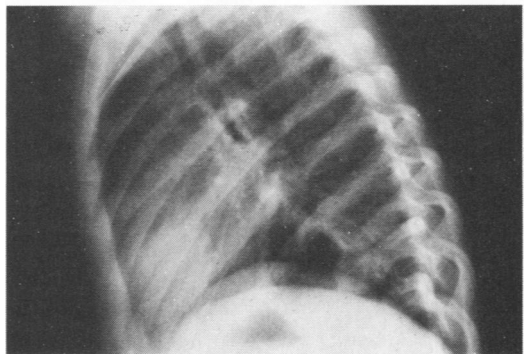
Case Report

A 2-year-old girl was found to have a mediastinal mass, which was noted on a chest radiograph obtained during an episode of pneumonia. She was then referred to our hospital for further evaluation.

The child had been asymptomatic, and the physical examination was unremarkable. The chest radiograph revealed a small bulge along the left heart border laterally and inferiorly, suggestive of a pericardial cyst (Fig. 1). On fluoroscopy, the apical



A



B

Fig. 1 Frontal (A) and lateral (B) chest X rays showing the bulge along the left heart border.

From the E.C. Lambert Department of Cardiology and the Department of Radiology, Children's Hospital of Buffalo, Buffalo, New York.

Address for reprints: D. R. Pieroni, M.D., Children's Hospital of Buffalo, 219 Bryant Street, Buffalo, New York 14222.

bulge did not have primary contractions. The electrocardiogram and M-mode echocardiogram were normal.

The CT scan of the chest showed a fairly well-defined low-density lesion, separate from the left cardiac margin anteriorly. Its density measured approximately that of water and showed no intravenous contrast enhancement (Figs. 2 and 3). The diagnosis of pericardial cyst was made and the child was discharged with plans for periodic follow-up.

Discussion

Although the radiographic appearance of pericardial cysts is usually typical, to make a definitive diagnosis in adults has necessitated the use of invasive methods. Pugatch and associates² diagnosed pericardial cysts in two adults, accurately and non-invasively, by using CT scanning. To our knowledge, the diagnosis of pericardial cysts in children by CT has not been reported.

The occurrence of pericardial cysts in children is very rare. In a large series, comprising 72 cases, the youngest patient was 17 years old,³ and the records of the Armed Forces Institute of Pathology include only one childhood case of this lesion.¹ A collected series from four institutions, comprising 320 cases of mediastinal cysts and primary neoplasms in infants and children, included only two cases of pericardial cyst.¹ They usually do not show until middle adult life. Despite this, they are considered to be congenital, originating from failure of one or more of the primitive pericardial lacunae to fuse during the development of the pericardium in the embryo. Pericardial cysts are usually asymptomatic, although in one series,¹ over one third of the patients were symptomatic, with chest pain (22%) or dyspnea (10%). They most commonly are discovered incidentally on routine chest radiographs, and are usually located anteriorly in the right or the left cardiophrenic angle.³

The differential diagnosis of pericardial cysts includes teratoid cysts and tumors, lymphomas, thymic lesions (including thymic



Fig. 2 Computed tomography scan of the chest showing the lesion on the left side of the heart, anteriorly.

cysts), cysts of foregut origin (i.e., bronchogenic cysts and esophageal duplications), angiomas, cystic hygromas, neurogenic tumors, granulomas, abscesses, aneurysms of the heart and great vessels, foramen of Morgagni diaphragmatic hernia, pericardial fat pad and, rarely, tumors of the heart or the pericardium.^{1,4,5}

Thus, it is important that pericardial cysts be differentiated from the solid masses of the mediastinum, some of which may be malignant. The diagnosis can be especially difficult when they occur outside their typical location in either cardiophrenic angle. Both invasive and noninvasive methods have been utilized for their diagnosis. The invasive methods are thoracotomy and incisions,^{3,4} and puncture and aspiration with or without injection of contrast material,^{5,6} whereas the noninvasive methods are fluoroscopy,^{3,5} ultrasonography,⁶ and CT.²

Computed tomography of the chest can establish the cystic nature of a mediastinal mass and obviate the need for invasive procedures.^{2,7,8} It does not, of course, establish a pathologic diagnosis, nor does it always differentiate a pericardial cyst from other benign cysts, such as cysts of foregut origin, thymic cysts and cystic hygromas. However, knowing that a benign lesion is cystic often allows one the luxury of observation, thus

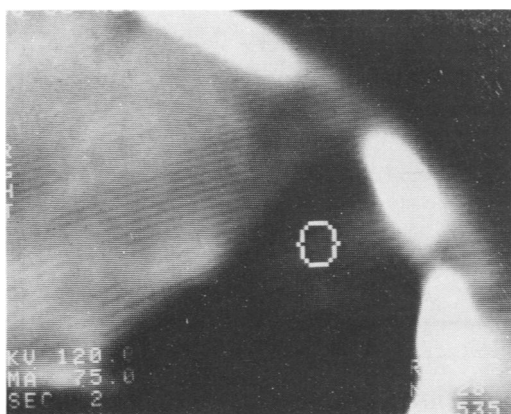


Fig. 3 Computed tomography scan (enlargement) after intravenous contrast, showing no enhancement of the lesion.

changing the diagnostic and therapeutic approach, because it is generally recognized that the routine removal of a benign mediastinal cyst in the asymptomatic patient is not indicated. For instance, in the present case, a ventricular aneurysm or diverticulum was considered in the differential diagnosis, but the lack of contrast enhancement excluded this possibility and, in conjunction with the typical location, led to the specific diagnosis of a pericardial cyst. In addition to offering a specific diagnosis, CT can also be used to accurately assess progressive changes in cystic size as they resolve or increase, while avoiding potential complications from invasive techniques.

Ultrasound (B scan) can be equally useful,⁶ although this technique is limited by air block produced by the lungs. Therefore, unless the mass contacts the chest wall, ultrasound will be unsatisfactory.

It should be emphasized that cystic lesions are sometimes difficult to identify with certainty.⁷ Furthermore, there may be doubt as to whether or not a cystic lesion is benign, although CT has been shown to be reliable in distinguishing benign cysts from malignant cystic masses (such as cystic teratoma or cystic lymphoma).⁹ Thus, if uncertainty about the nature of the lesion occurs, needle aspiration should be performed for further confirmation.

We believe that computed tomography of the thorax can provide for the specific diagnosis of pericardial cysts in children, and it can change the diagnostic and therapeutic approach by obviating invasive evaluation or surgery.

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