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CASE REPORT

# Pericardial diverticulum with unusual symptomatology

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*Pericardial diverticulum with unusual symptomatology. T.W. Waterbolk, C.A.M. Henkens, D.G. Remmert, E.J. Van der Jagt, P.E. Postmus.*
**ABSTRACT: A healthy 37 yr old female presented with recurrent right-sided chest pain which spontaneously disappeared. On a chest roentgenogram a lesion in the right cardiophrenic angle was found. Magnetic resonance imaging suggested a cystic structure. During thoracotomy a pericardial diverticulum was found. The pain was probably caused by intermittent volvulus of the diverticulum.**
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## Case history

A healthy 37 yr old female complained of pain of sudden onset in the ventral part of the right hemithorax, radiating to the right shoulder. Breathing resulted in more pain. Physical examination was normal.

A chest roentgenogram (fig. 1) showed a lesion in the right cardiophrenic angle. Blood gas analysis was normal. The patient received intravenous heparin until a normal perfusion scintigram excluded pulmonary embolism. The pain disappeared spontaneously after about 24 h and the patient was discharged. During the

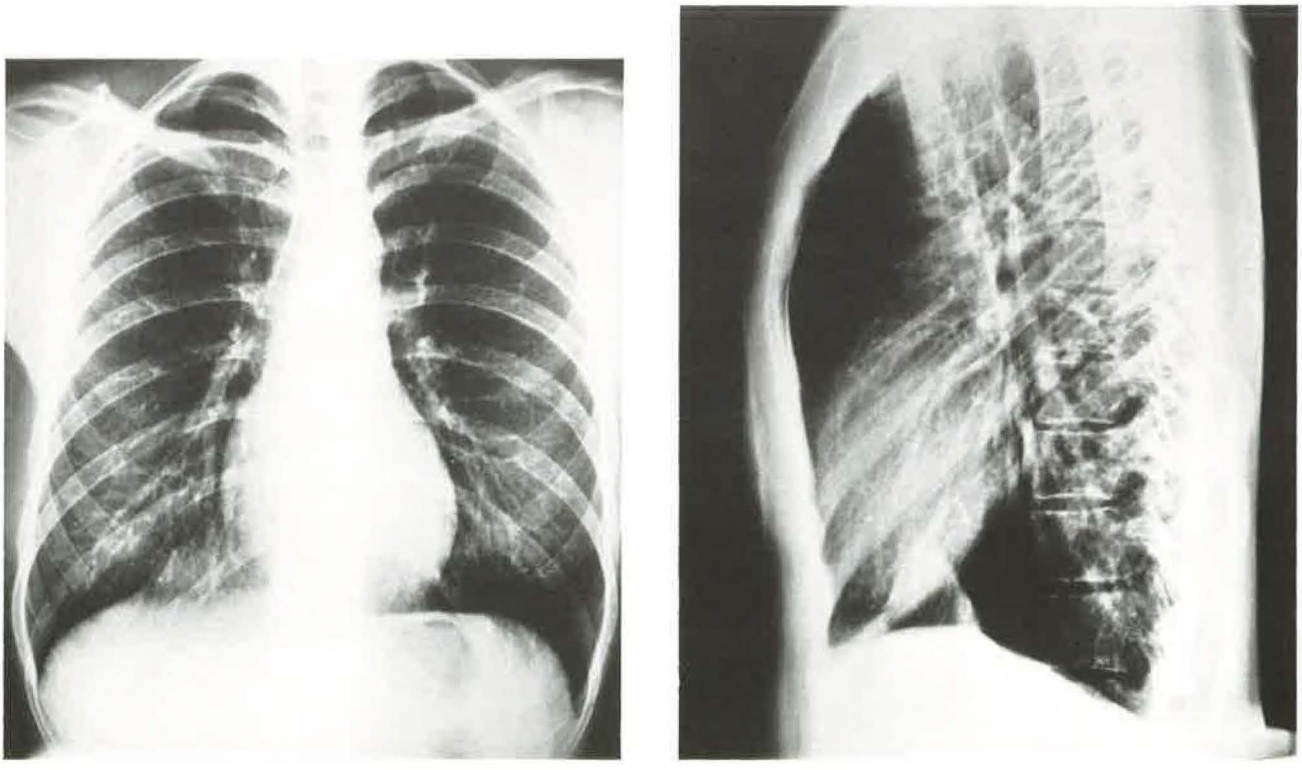

Fig. 1. – PA and lateral chest roentgenogram: mass in the right cardiophrenic angle. PA: Posteroanterior.

next three months the patient experienced five similar but shorter attacks of pain. Therefore, additional investigations were performed. Echocardiography was normal, but tomography showed an almost round lesion, possibly in contact with the pericardium. Computerized tomography (CT) showed a sharply demarcated lesion. Density measurements excluded fat but were not diagnostic for clear fluid (fig. 2). Magnetic resonance imaging (MRI) suggested a cystic structure containing protein-rich fluid.

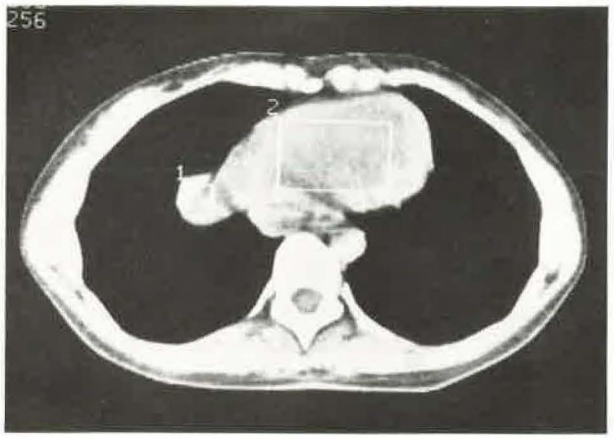


Fig. 2. – CT image. Density in the lesion (area 1) is 16 HU, while the heart (area 2) shows a density of 45 HU. CT computerized tomography.


Fig. 3. – The pericardial diverticulum after resection, filled with water. The orifice to the pericardium can be seen.

Because of the recurrent complaints a right posterolateral thoracotomy was performed.

A fluid-filled cyst with a diameter of 3 cm, attached to the pericardium by a small pedicle was located about 4 cm anterior to the phrenic nerve in the angle between pericardium and diaphragm. On incising the pericardium the "cyst" emptied itself into the pericardium. The cyst was removed en bloc with a small ring of pericardium. Macroscopic examination showed a small communication with the pericardial cavity (fig. 3). The pericardium was closed by direct suturing. Postoperative recovery was unremarkable. One year after the operation the patient is free of complaints. Pathological investigation confirmed the diagnosis of a pericardial diverticulum.

## Discussion

Lesions in the right cardiophrenic angle are frequently found on chest roentgenograms. Usually these lesions do not cause complaints. In most cases fat pads or pleuropericardial adhesions are responsible for the abnormal roentgenogram. Occasionally herniation of subdiaphragmatic structures through the foramen of Morgagni is found, although this is normally very close to the anterior chest wall. Also pericardiac cysts may be located here. Additionally different types of malignant tumours have been found on this side [1–5].

Differentiation between these abnormalities on a plain posterolateral (PA) and lateral chest roentgenogram is difficult. Introduction of CT and, more recently, of MRI has considerably improved the diagnostic possibilities for these abnormalities. Using both imaging techniques it is possible to determine the density within the lesion [6] and to differentiate between fat, water and solid tissue.

The pain pattern in the case presented suggested diaphragmatic involvement, while the localization of the lesion and the CT and MRI suggested a cystic structure, most probably a pericardial cyst. The findings of a diverticulum was a surprise. In only 10% of pericardial cysts is a communication with the pericardium found [7]. This may also explain the pain of the patient as one might speculate that intermittent volvulus of the diverticulum occurred and caused the pain. It is generally accepted that masses, found in the mediastinum, that are proven to be solid by CT or MRI, should be resected. Resection is also recommended in cases of symptomatic cystic masses, despite their usual benign character.

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*Diverticule péricardique à symptomatologie inhabituelle. T.W. Waterbolk, C.A.M. Henkens, D.G. Remmert, E.J. van der Jagt, P.E. Postmus.*

RÉSUMÉ: Une femme de 37 ans bien portante par ailleurs, se plaint de douleurs thoraciques droites récidivantes avec disparition spontanée. On trouve une opacité dans l'angle cardiophrénique droit sur le cliché thoracique. L'examen par résonnance magnétique suggère sa nature cystique. Au cours de la thoracotomie, on met en évidence un diverticule péricardique. La douleur était probablement provoquée par un volvulus intermittent du diverticule.

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