Cysts of the Pleura

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In contrast to the now frequently appearing and diagnosed pulmonary and bronchial carcinomata, primary tumors of the pleura are rare. Clinical differentiation of malignant tumors of the pleura from malignant tumors of the lung is essential. The most common malignant tumors of the pleura are the endotheliomata, the course of which resembles the course of an exudative tuberculous pleurisy.

Benign tumors of the pleura (fibromata, osteomata, chondromata) seldom produce clinical manifestations and, therefore, are of little clinical importance. In unilateral opacities seen in the chest film, it is often difficult to make a diagnosis of specific pleural tumors. In the differential diagnosis of primary benign and malignant tumors of pleura must be included metastatic tumors, tumor-like tuberculosis, tumors of the chest wall, pleural effusion, echinococcus cysts of the pleura and the group of congenital cysts. It is the purpose of this paper to describe an addition to the group of benign tumors of the pleura, the simple cyst, which has caused some debate in recent years regarding its true nature.

Fehr,¹ in 1936, described a case in which roentgen inspection of the thorax disclosed a thin, sharply circumscribed shadow in the left lower pulmonary field. This lesion was situated directly above the diaphragm at the ventral side of the thorax. The patient also had a rectal carcinoma. A preliminary diagnosis of "solitary pulmonary metastasis" was abandoned, and it was assumed that some benign tumor, independent of the rectal carcinoma, was present. The patient died from surgery for the carcinoma. Autopsy disclosed a serosal cyst emanating from the diaphragmatic pleura. It was considered to be a "malformation, probably of congenital origin." Freedman and Simon,² in the same year, also reported a case of a single large cyst occurring in the lower zone of the left lung field. Similar cases were later reported by Pickhardt³ and Addey.⁴ In none of these cases was there evidence of connection of the cyst to pericardium.

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Reported cases of cysts of the pericardium and mediastinum closely resembling those described by the above authors now total 18,5-12,14-17,19-25 However, the modes of genesis in the cysts arising from pleura and pericardium are essentially the same. Eliasche-witch6 was first to attempt an explanation of the genesis of these cysts:

1) The cysts may be derivatives of embryonal ducts. In the peritoneal cavity such formations are called enterocystomas.

2) These cysts may be considered as diverticuli of the serous cavities. For example, pressure by a hypertrophic heart may be responsible for such formations.

3) Lobular shapes of the cysts described in these earlier cases suggest a cystic transformation of a lipoma, although the cysts had walls lined with endothelium. A combination of a lipoma and lymphangioma could be responsible for such a formation.

4) Small cysts may be formed by a dilatation of glandular fissures developing in the wall of the serous cavity in the course of organization of a fibrinous exudate.

5) Inflammatory, papillary protrusions may undergo cystic transformation; these often follow pericarditis or pleuritis. Such an occurrence would explain the presence of fibrinous masses in the external layers, often noted.

6) The cysts are not real tumors but developmental malformations. The presence of other signs of excessive anlage in the form of a papilloma of the larynx supports this theory.

Terms given to these cysts include “simple cysts,” “simple serous cysts” (after Curreri and Gale15), “spring water cyst” of Churchill,12 “pericardiophrenic angle cyst” of Kinsella,18 the commonly used term, “pericardial coelomic cyst” of Lambert,14 and the earlier used term, “congenital diverticula.” Haas13 has set forth the theory that these “congenital diverticula” form at a point of weakness in the parietal pericardium where the fibrous layer passes out along the great vessels.

Lambert’s explanation for pericardial cysts is based on a consideration of the embryology of the pericardium, as this structure arises from a series of disconnected lacunae which appear early in the embryo. These lacunae in the mesenchyme remain for a time as individual spaces, but eventually coalesce to form the pericardium coelom. If one of these lacunar cavities failed to merge, it could persist and give rise to a cyst in the vicinity of the pericardium, a “pericardial coelomic cyst.” This view has remained unchallenged.
Case Report

N.M., male, age 42 years, entered the Veterans Administration Hospital, Fort Logan, Colorado, on January 7, 1948, after referral by the Veterans Administration Regional Office, Denver, because of routine photofluorogram finding of a small mass in the lower portion of the right lung field (Fig. 1). The veteran had reported to the Denver office for a pension examination for service-connected traumatic arthritis. He had a chest x-ray inspection one year previously and findings were negative. The patient was asymptomatic, and physical examination revealed no pathological findings. Laboratory examinations, including complete blood count, urinalysis, blood serology and erythrocyte sedimentation rate, were normal. Electrocardiogram, chest fluoroscopy, cardiac fluoroscopy, and upper gastro-intestinal series revealed nothing informative. Artificial pneumothorax and pneumoperitoneum were instituted and oblique x-ray view of the chest localized a small ill-defined shadow above the upper surface of the right leaf of the diaphragm, definitely not in the lung parenchyma.

An exploratory thoracotomy was performed on March 5, 1948, through the ninth intercostal space. A translucent cystic mass, measuring 2.0 x 1.0 x 1.0 centimeters, was removed intact by sharp and blunt dissection from the right diaphragmatic pleura. Following surgery, recovery was without complication.

Pathological Findings: The specimen appeared loculated, containing fluid and having a smooth wall. Microscopic sections showed a multilocular cystic structure composed of strands of elastic connective tissue fibers lined on the free surface by a single layer of endothelial cells. The structure was attached on one surface to bundles of striated muscle.
fibers; there was no histological evidence of inflammation or malignancy. Follow-up chest x-ray inspection at regular intervals, including a chest x-ray film taken March 21, 1950, have been negative. The patient has remained asymptomatic.

Discussion

Since thoracotomy has become an innocuous procedure, the true nature of circumscribed or "coin" lesions of the thoracic cavity can be determined after bronchoscopy, tomography and diagnostic pneumothorax and pneumoperitoneum have failed to give the diagnosis. The case described above illustrates this point.

It is obvious that cysts of the pleura and pericardium are accidentally found during the routine examination of the chest for some other suspected condition. These cystic lesions are of little consequence except in the differential diagnosis of space-occupying lesions of the thorax. Schein24 asserts that, if the diagnosis can be positively made by thoracoscopy, operation is not indicated.

A brief differential diagnosis of cystic lesions which are found in the thorax would include:

1) Echinococcus cysts, which exhibit a characteristic lining membrane.
2) Embryonal cell-rest cysts from the respiratory and alimentary tracts, which show a cellular structure that readily identifies them.
3) Dermoid cysts and teratomas, which likewise have a distinctive composition.
4) Lymphangiomas, which represent a type of cystic growth resulting from malformation of a group of lymph vessels.
5) So-called "pericardial coelomic cysts," which arise from one of the primitive pericardial lacunae.

It would be well to review the types of congenital cysts found in the mediastinum. Laipply17 has listed eight kinds: epidermoid, dermoid, teratoid, bronchial, esophageal, gastroenteric, "pericardial coelomic cysts" and cystic lymphangiomas. It is important that the last two be considered, since they are of mesodermal origin. These differ considerably in gross and microscopic structure:

"Pericardial coelomic cyst"

1) Simple in structure; usually unilocular.
2) Walls are thin layer of mesothelium, peeling readily from surrounding structures (well circumscribed).
3) Blood supply derived from pericardium.
Cystic lymphangioma

1) Complicated in structure; multilocular.
2) Walls of varying thicknesses; attempts at removal often associated with severe hemorrhages.
3) Blood supply derived from several sources.

SUMMARY

The differential points and diagnostic procedures to be evaluated in a case presenting a circumscribed or "coin" lesion of the chest have been given. The literature concerning the subject of cystic formations of the chest, including the so-called "pericardial coelomic cysts," has been reviewed. The literature has been extensively reviewed in the preparation of this paper. An interesting case of cyst of the pleura, operated, with follow-up, has been presented. This is the fifth such case which has been reported.

RESUMEN

Se presentan los elementos para el diagnóstico diferencial en un caso de lesión circunscrita en el tórax en forma de "moneda." Se revisa la literatura respecto de las formaciones quísticas del tórax, incluyendo los llamados "quistes celómicos pericárdicos." Se relata un caso de quiste de la pleura operado y observado después. Este es el quinto caso que se ha descrito.

RESUME

L’auteur donne les éléments d’un diagnostic différentiel dans un cas de lésion circonscrite ou lésion en forme de “pièce de monnaie” dans le thorax. Il donne un aperçu de la littérature qui traite le sujet de la formation des kystes dans le thorax, y compris les kystes dits “coelomiques péricardiques.” Il présente un cas intéressant de kyste de la plèvre, opéré, et suivi de guérison. C’est le 5ème de cette nature qui ait été rapporté.

REFERENCES

10 Skinner, G. F. and Hobbs, M. E.: "Intrathoracic Cystic Lymphangio-