



Recurrent Pleural Effusion of Undetermined Etiology: A Case Report with Focus Diagnosis and Prognosis

Recurrent Pleural Effusion of Undetermined Etiology: Case Report with Diagnosis and Prognostic Focus

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Summary

Pleural effusion is a common clinical manifestation and may be the first sign of benign or malignant disease. Differentiating between transudate and exudate, according to Light's criteria, is an essential step in the initial evaluation.

We present a case of massive and recurrent pleural effusion in a male patient, with insidious progression, progressive respiratory symptoms, and imaging consistent with pleural neoplasia. The lack of a definitive diagnosis even after extensive investigation demonstrates the clinical challenges in elucidating the etiology of these conditions. The discussion includes relevant diagnostic hypotheses, with an emphasis on malignant mesothelioma and pleural carcinomatosis, as well as as clinical-laboratory criteria that guide differential reasoning.

Keywords: Pleural effusion, Malignant mesothelioma, Pleural cytology, Differential diagnosis, Pleural carcinomatosis.

Abstract

Pleural effusion is a common manifestation in clinical practice and may be the first indication of benign or malignant diseases. The differentiation between transudate and exudate, according to Light's criteria, is an essential step in the initial evaluation. We present a case of massive and recurrent pleural effusion in a male patient, with insidious evolution, progressive respiratory symptoms and images compatible with pleural neoplasia. The absence of a definitive diagnosis even after extensive investigation demonstrates the clinical challenges in the etiological elucidation of these conditions. The discussion includes relevant diagnostic hypotheses, with emphasis on malignant mesothelioma and pleural carcinomatosis, as well as clinical-laboratory criteria that guide differential reasoning.

Keywords: Pleural effusion, Malignant mesothelioma, Pleural cytology, Differential diagnosis, Pleural carcinomatosis.

Introduction

Pleural effusion, characterized by the accumulation of fluid in the pleural space, can result from various clinical conditions. The first essential clinical distinction is between transudate and exudate, with Light's criteria showing sensitivity greater than 98% for identifying exudates, despite their lower specificity. Exudates are generally related to local inflammatory processes, such as infections, neoplasms or autoimmune diseases.

Neoplasia is the main cause of non-infectious pleural exudate in patients with over 60 years. Malignant mesothelioma and pleural carcinomatosis represent less common causes frequent, but clinically relevant due to the severity and diagnostic complexity involved.

The initial evaluation of pleural effusion should consider epidemiological factors, such as age, sex, comorbidities, and occupational history. Patients with advanced age and symptoms insidious, as in this case, have a higher probability of malignant diseases. Data from Porcel et al. (2021) point out that up to 25% of cancer patients will have pleural effusion in some point in the progression of the disease.

Studies show that malignant pleural mesothelioma represents less than 1% of all neoplasms, but with an increased incidence in regions with a history of activity industrial and mining. The average latency time between asbestos exposure and manifestation clinical is 30 to 40 years, which is in line with the history of the patient in question.

In this context, we report a clinical case of lymphocytic pleural effusion, large and of repetition, in an elderly, previously healthy patient, whose investigation remains inconclusive, although clinical and radiological data strongly point to an etiology malignant.

1. Case Report

Male patient, 69 years old, controlled hypertension, with an occupational history of long time in civil construction and mining without the use of PPE, was admitted with a condition progressive dyspnea with minimal exertion for 8 months. He reported ventilatory chest pain dependent and unintentional weight loss of 5 kg during the period.

He was treated multiple times in emergency units, with chest drainage repeated on the left, without etiological diagnosis. CT-guided pleural biopsy was performed on an outpatient basis, with no report yet available at the time of hospital admission.

Physical examination revealed hypophonesis and abolition of vesicular murmur in the hemithorax. left. Chest CT showed a large effusion with lower lobe atelectasis left, alveolar opacities in the upper lobe and multiple pleural nodular formations. The Abdominal CT showed hypodense lesions in the spleen and liver, with peripheral enhancement, suggesting possible metastases.

Analysis of pleural fluid revealed lymphocytic exudate (81% lymphocytes), pH 7.0, total protein of 3.08 g/dL and LDH of 222 U/L. ADA was not measured. Blood count

demonstrated leukocytosis with neutrophilia and normocytic anemia. Slightly elevated CRP and renal function with elevated creatinine (1.14 \pm 1.4 mg/dL). Tumor markers and tuberculosis tests were not performed until the time of discharge.

2. Discussion

The laboratory profile of the pleural fluid—lymphocytic exudate with low pH—suggests three main etiologies: pleural neoplasia (primary or secondary), pleural tuberculosis and autoimmune diseases, with the first two being more likely in this case.

Pleural tuberculosis, despite presenting with lymphocytosis and absence of fever in phases chronic, is considered less likely, given the absence of systemic symptoms, unfavorable epidemiology and slow evolution. ADA (adenosine deaminase) is useful marker in this context, but it was not measured.

Pleural carcinomatosis, usually associated with lung, breast, and ovarian neoplasms and gastrointestinal tract, may present with large and recurrent effusions. The cytopathological examination of pleural fluid has a sensitivity of 60-70%, and can reach 90% in lung adenocarcinomas.

Malignant mesothelioma — particularly the epithelioid type — must be considered highly suspicious in this case, due to the association with previous exposure to asbestos (work in construction and mining) and the presence of pleural nodules, thickening pleural fluid and large unilateral effusion. Cytology of the fluid is usually negative, requiring pleural biopsy or pleuroscopy for confirmation.

The absence of neoplastic cells in the pleural fluid does not exclude malignancy. sensitivity of pleural cytology for the diagnosis of mesothelioma is less than 30%, according to data from ERS/ESTS (2010), with pleural biopsy being essential for diagnostic confirmation. The use of medical thoracoscopy allows targeted biopsy under direct vision and is accurate. diagnostic rate of over 90% in cases of suspected pleural malignancy.

The presence of concomitant hepatosplenic lesions, evidenced in examinations of image, may indicate hematogenous spread or represent granulomatous diseases or infectious diseases, such as histoplasmosis or leishmaniasis, making it necessary to differentiate these entities with appropriate laboratory and histopathological examinations.

Regarding the therapeutic approach, the treatment of mesothelioma is limited. combination of chemotherapy based on pemetrexed and cisplatin, in addition to surgery and radiotherapy in selected cases, makes up the therapeutic tripod. Still, the answer is



limited and palliative, focusing on improving quality of life and symptomatic relief.

Definitive diagnosis requires histopathology of pleural biopsy, ideally with immunohistochemistry to differentiate between mesothelioma and metastases. If confirmed, diagnosis of malignancy, PET-CT is indicated for staging and site investigation primary in cases of pleural carcinomatosis.

The prognosis depends on the final diagnosis. Malignant pleural mesothelioma has median survival of 6 to 24 months, depending on the histological subtype and clinical stage. The pleural carcinomatosis usually indicates stage IV primary disease, with survival also limited.

3. Conclusion

This case highlights the clinical and diagnostic challenges faced in approach to patients with recurrent pleural effusion and initially etiological indeterminate. The suspicion of malignancy should be raised in the face of rapid recurrence, lack of therapeutic response and presence of pleural nodules. The history Occupational should always be investigated, especially regarding exposure to asbestos.

Appropriate management requires integration between clinicians, pulmonologists, radiologists and pathologists. Early identification of the etiology can modify the clinical course and enable adequate palliative treatment, with a significant impact on the patient's quality of life.

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