

## Pseudo Chylothorax as An Extra-Articular Manifestation in A Patient with Rheumatoid Arthritis and Lymphoma: A Case Report

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### ABSTRACT

Rheumatoid arthritis is the one of the most prevalent inflammatory chronic joint diseases. The RA is associated with other diseases and its complication can be attributed to other causes. Therefore, it is important to keep in mind all the possible manifestations of the disease to give an accurate diagnosis and treatment. This case report presents a 61-year-old man with a previous history of rheumatoid arthritis who attended the emergency department due to constitutional symptoms, dyspnea and the appearance of lymphadenopathy, and a mass in the right iliac fossa. During his hospitalization, a diagnosis of non-germinal center diffuse B-cell lymphoma was made and a thoracoabdominal computed tomography showed the presence of an extensive pleural effusion in the right hemithorax. Therapeutic thoracentesis was performed with findings of cholesterol crystals. In addition, the cytochemical study of the fluid was compatible with a pseudo chylothorax. Lately to exclude other possible causes such as neoplastic, infectious, and metabolic causes, it was determined that the pleural effusion was consequence of pleurodesis as an extrapulmonary manifestation of RA. The patient was managed with steroids with resolution of the pleural effusion and hospital discharge.

**Keywords:** Rheumatoid Arthritis, Pleural Effusion, Chylothorax, Pseudo Chylothorax, Extra-Articular Manifestations, Pleuropulmonary Manifestation

### Introduction

Rheumatoid arthritis (RA) is the inflammatory chronic joint disease most frequently in the world. Patients diagnosed with RA have a higher risk of presenting Hodgkin's lymphoma and non-Hodgkin's lymphoma than the general population. According to research it was associated with the chronic inflammatory state and even with the use of chronic immunosuppressive therapy (Smolen *et al.*, 2016).

The clinical manifestations of RA occur mainly in the synovial joints. However, it also generates extra-articular compromises in other systems such as pulmonary and pleural. The pulmonary manifestations are present in 50-70% of autopsies of patients with RA, with pleurisy associated with a

pleural effusion being the most frequent (Cojocarú *et al.*, 2010). However, pleurisy is present only to 5-10% of all patients with rheumatoid arthritis, and usually, it mild and asymptomatic (Das and Padhan, 2017). In addition, RA patients are at greater risk of developing non-Hodgkin lymphoma the longer their disease has elapsed. This means that complications of both diseases can overlap and are a diagnostic challenge. When a patient with RA presents pleural effusions, it is a diagnostic challenge to define if this effusion is associated with a hematolymphoid neoplasia or if it is a pleural extra-articular manifestation (EAM) of RA.

The objective of this case report is to present a pulmonary complication that can be attributed to lymphoma, but that with certain findings during routine examinations can be differentiated and attributable to rheumatoid arthritis.

### Case Presentation

A 61-year-old man consults due to a clinical picture of weight loss (-5Kg), diaphoresis, and subjective fever of 6 months of evolution associated with the appearance of supraclavicular, axillary, and abdominal adenopathy and the presence of a mass in the right iliac fossa. History of rheumatoid arthritis diagnosed 28 years ago. During his illness, he presented multiple joint deformities and he takes the following medications: prednisolone 5 mg/day, methotrexate 7.5 mg/weekly, and occasional naproxen.

During the examination the patient was a fair general condition, multiple painless mobile nodules of approximately 2 cm in circumference are found in the left's supraclavicular fossa and axillary fossa. And a veiled breath sound in the right hemithorax was the more important finding. Abdominal examination revealed a large mass extending from the entire right iliac fossa to about 4 cm from the midline. And finally, a significant deformational joint involvement in the extremities was find with a synovial hypertrophy of the second and third metacarpophalangeal joint, rheumatoid and Heberden's nodules, and ulnar deviation of the carpus. (Fig. 1).

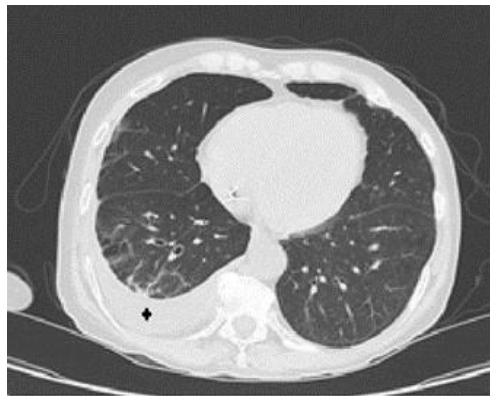


**Figure 1:** Typical clinical joint deformation with cubital metacarpophalangeal joint deviation with synovial hypertrophy, and rheumatoid nodules.

## Clinical Examination

The patient underwent extensive investigations, with an initial suspicion of a lymphoproliferative neoplasm. A thoracoabdominal tomography was performed with evidence of conglomerates of adenopathies and a large mass in the right iliac fossa, which was biopsied with a final diagnosis of diffuse large B-cell lymphoma of the non-germinal center by immunohistochemical study.

Another finding on CT was the presence of a large loculated pleural effusion in the right hemithorax with pleural thickening (Fig. 2). This led to a thoracentesis with cytochemical, and microbiological studies being performed. The extracted pleural fluid had a yellow color and a viscous characteristic (Fig. 3).

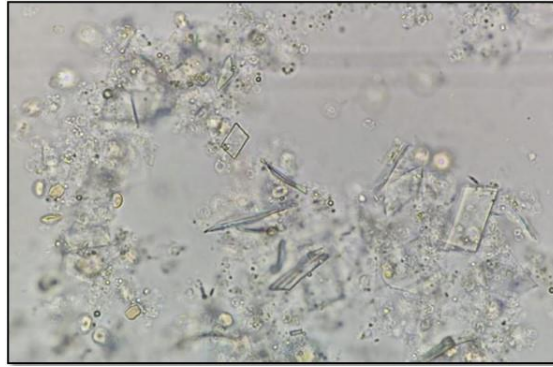


**Figure 2:** Axial view of chest tomography with moderate loculated right pleural effusion.

The cytochemical study of the pleural fluid was compatible with a neutrophilic exudate, and the biochemical characteristics of the pleural and serum fluid are summarized in Table 1. An unexpected finding during the study of was the presence of cholesterol crystals in the pleural fluid in microscopy (Fig. 4).



**Figure 3:** Fluid obtained after thoracentesis. Pleural fluid with milky appearance.



**Figure 4:** The long arrows show a cholesterol crystal in pleural fluid, in the shape of a parallelogram.

Microbiological studies that included gram, culture for pyogenic, culture for mycobacteria, smear microscopy, and PCR for *M. tuberculosis* were negative. Moreover, a lipid profile was performed on the patient with total cholesterol of 146 mg/dl, LDL: 79 mg/dl, HDL: 34.2 mg/dl, and triglycerides: 163 mg/dl.

## Discussion

In the initial approach to a patient with a significant pleural effusion, diagnostic thoracentesis takes a fundamental role by allowing microscopic examination of the fluid and analysis of its chemical, microbiological, and cellular content. Light's criteria allow differentiating pleural fluid into two large categories: exudate and transudate (Porcel Pérez, 2010). In this case, the effusion was compatible with a neutrophilic exudate associated with consumed glucose (Table 1). The possible etiologies could be grouped into infectious, neoplastic, and autoimmune diseases, among others (Jany and Welte, 2019).

Due to the macroscopic characteristics of the fluid, it was thought to correspond to a non-traumatic chylothorax (Fig. 3) whose main cause is lymphoma, a recent diagnosis of the patient. However, according to research a triglyceride levels below 50 mg/dL ruled out a chylothorax (Maldonado *et al.*, 2009), and it was more likely that it corresponds a non-chyle fluid. In the case of the patient, the level of triglyceride was 41 mg/dL and it was associated with a high level of cholesterol (282.2 mg/dL). Moreover, during the microscopy cholesterol crystals were observed (Vincent *et al.*, 2010).

**Table 1:** Biochemical characteristics of the pleural and serum fluid.

	Pleural fluid	Serum fluid	Ratio P/S
<b>LDH</b>	990	415	2,38
<b>Protein</b>	4.6 g/dL	5,6 g/dL	0,82
<b>Cholesterol</b>	282.2 mg/dL	146 mg/dl	-
<b>Glucose</b>	12 mg/dL	130 mg/dL	-
<b>Triglycerides</b>	41 mg/dL	163mg/dL	

In this context, the possible causes were limited to tuberculosis infection, metabolic disturbances, and chronic rheumatoid pleurisy. The possibility of pleural tuberculosis was excluded since the bacilloscopic, cultures and the molecular test for the detection of the microorganism were negative. In addition, the metabolic profile did not have any alteration. Considering the history of long-standing RA and the diagnosis of a pseudo chylothorax associated with low glucose levels (12 mg/dL) and high levels of adenosine deaminase (51.97 U/L), a diagnosis of effusion secondary to pleurisy was made, a rare symptomatic extra-articular manifestation of RA. The patient received a management with steroids with adequate evolution.

## Conclusions

The extra-articular manifestation (EAM) of the AR is unusually, in many times it can go unnoticed without receiving appropriate management. In the literature, the EAM has a prevalence of 50%, however in the most cases have an asymptomatic course. In this case report, it was present the natural history of a symptomatic pleurisy with a pleural effusion and the association with a recently diagnosed lymphoma. The valuation with a chest imaging is important during the identification and exclusion of other possible causes, and the diagnosis of the pseudo chylothorax only require a microscopic and biochemical study of the pleural fluid. After a correct diagnosis, the patient can receive an adequate management with steroids.

There are few cases of unilateral pseudo chylothorax associated with RA reported in the literature. And there are even fewer reports associated with newly diagnosed lymphoma where the most common cause of pleural effusion is attributed to malignancy. In this case report, a malignant pleural effusion was ruled out and routine studies were performed to determine that the true cause of the effusion was RA.

**Informed Consent:** The patient signed informed consent for the report of this case.

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