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Case report

Rheumatoid pleural effusion presenting as pseudochylothorax in a patient without previous diagnosis of rheumatoid arthritis

Tetsuya Yokosuka [a,*], Asako Suda [b], Midori Sugisaki [b], Manabu Suzuki [b], Ritsuko Narato [b], Hitoshi Saito [b], Tatsuji Enomoto [b], Toshiko Kobayashi [a], Koichiro Nomura [b]

[a] Department of Surgery, Tokyo Metropolitan Hiroo General Hospital, 2-34-10 Ebisu, Shibuya-ku, Tokyo 150-0013, Japan
[b] Department of Respiratory Medicine, Tokyo Metropolitan Hiroo General Hospital, Japan

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ABSTRACT

Background: Rheumatoid pleurisy rarely occurs before a diagnosis of rheumatoid arthritis (RA). It is the second leading cause of pseudochylothorax, but there are few reports of RA-associated pseudochylothorax.
Case: A 50-year-old man presented to our hospital with an undiagnosed exudative pleural effusion. In order to obtain a definitive diagnosis, we performed medical thoracoscopy under local anesthesia. The pleural effusion was turbid and was identified as a pseudochylothorax.
The parietal pleura was white and slightly thickened with numerous scattered small granules and the pleural biopsy showed an infiltration of inflammatory cells including lymphocytes and plasma cells with a lack of normal mesothelial cells, findings that were highly consistent with rheumatoid pleurisy.
Additional laboratory data revealed elevated levels of CCP antibody and rheumatoid factor.
During an outpatient visit about 30 days after discharge, the patient complained of polyarthralgia and was diagnosed with RA, resulting in a definitive diagnosis of the pleural effusion as rheumatoid pleurisy.
Conclusion: We encountered a rare case of a rheumatoid pleural effusion without other symptoms of arthritis, which was identified as a pseudochylothorax by medical thoracoscopy.

1. Introduction

Rheumatoid pleurisy is a well-known but relatively rare complication of rheumatoid arthritis (RA) that has been reported in fewer than 5% of RA patients [1,2].

It usually occurs during the course of a previously diagnosed RA but is occasionally seen contemporaneously with or preceding the onset of other arthritic signs and symptoms [2]. Consequently, a diagnosis of rheumatoid pleurisy may be delayed or even missed. We report a case involving a 50-year-old man without other arthritic symptoms whose RA-related pseudochylothorax was diagnosed by medical thoracoscopy.

2. Case presentation

A 50-year-old man, a truck driver and current smoker, was first found to have an asymptomatic right pleural effusion on chest radiography at a medical examination in September 2011. There had been no abnormal signs at the previous year's exam. His past medical history and family history were non-contributory.

Two rounds of thoracocentesis were performed without definitive diagnosis (September and November 2011). The patient remained asymptomatic and was followed with no treatment, but the pleural effusion gradually increased and he was referred to our hospital in October 2012. The chest radiograph on admission confirmed a moderate right-sided pleural effusion (Fig. 1). Blood tests revealed slight abnormalities of C-reactive protein (CRP) level (0.4 mg/dl), erythrocyte sedimentation rate (ESR) (39 mm/h), and triglyceride and total cholesterol levels (244 mg/dl, 238 mg/dl, respectively). There was a slight pleural thickening on the CT scan with pleural phase contrast enhancement, but there was no evidence of pulmonary tuberculosis, interstitial pneumonia, or other disease in the lung field (Fig. 2).

* Corresponding author. Tel.: +81 3 3444 1181; fax: +81 3 3444 3196.
E-mail address: tetsuya_yokosuka@tmhp.jp (T. Yokosuka).

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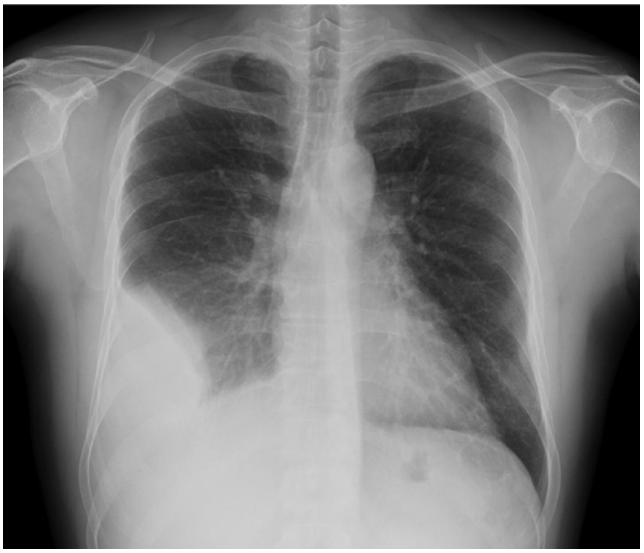

Fig. 1. Chest radiograph showing right pleural effusion.

We performed medical thoracoscopy under local anesthesia for definitive diagnosis. The pleural fluid was turbid and the pleura was slightly thickened with a scattered granular appearance. A soft yellow material was found on the visceral and parietal pleura and fibrin deposition was recognized in the thoracic cavity (Fig. 3).

The pleural fluid was confirmed as pseudochylothorax because it had high cholesterol and low triglyceride concentrations (248 mg/dL and 12 mg/dL, respectively). And low glucose (6.0 mg/dl), high lactate dehydrogenase (LDH) (2438U/l), a slight elevation in adenosine deaminase (ADA) (57.7 μg/ml), and low complement C3 and C4 levels (13 mg/dl, 2.9 mg/dl, respectively) were noted. No malignant cells were found in the cytologic examination of the pleural fluid. There were sparse macrophages and neutrophils dispersed in the granular materials and no mesothelial cells were found. Microbiologic smears and cultures of pleural fluid showed no growth. Biopsy of the parietal pleura showed infiltration with inflammatory cells including lymphocytes and plasma cells and a lack of normal mesothelial cells, which was highly suspicious for rheumatoid pleurisy, although an obvious rheumatoid nodule was not observed.

The slight elevation in the ADA level of the pleural fluid may have also been consistent with tuberculous pleurisy, but this was ruled out by culture and biopsy findings. Additional laboratory data showed elevated levels of rheumatoid factor (RF) (72 units/mL, normal <15) and anti-cyclic citrullinated peptide (anti-CCP) antibody (6.8 units/mL, normal <4.4).

The discharge diagnosis of highly suspected rheumatoid pleurisy was based on the clinical features and the results of the above-stated studies, although the high pH and absence of RF in the pleural effusion were atypical. The patient's right lung was well expanded and decortication was not necessary.

At about 30 days after discharge, the patient presented with polyarthralgia and we were able to confirm the diagnosis of RA according to the 2010 RA classification criteria [3].

3. Discussion

We believe this case is novel based on the following three points:

1. Rheumatoid pleurisy preceded other signs or symptoms of RA and was the presenting finding in this case.
2. Rheumatoid pleurisy presented as pseudochylothorax.
3. Rheumatoid pleurisy was diagnosed by medical thoracoscopy under local anesthesia.

We suspected the possibility of rheumatoid pleurisy based on the finding of pseudochylothorax and the additional blood tests, which were positive for RF and anti-CCP antibody. Anti-CCP antibody is now regarded as the most reliable serologic marker of RA and has been detected in pre-disease blood samples from 34% of individuals who have subsequently developed RA [4].

The characteristic accumulation of turbid or milky white pleural fluid associated with pseudochylothorax is due to a high lipid content, similar to true chylothorax. True chylothorax occurs due to leakage of chyle into the pleural space, while pseudochylothorax is due to the accumulation of cholesterol or lecithin-globulin complexes. Typically, the pleural fluid cholesterol level will be $\geq$ 200 mg/dL with a triglyceride level of $<$110 mg/dL. In some cases of pseudochylothorax, cholesterol crystals are seen. Pseudochylothorax can occur in relation to tuberculous pleurisy (54%), rheumatoid pleurisy (9%), and rarely in association with paragonimiasis and trauma, including thoracic surgery [5]. Pseudochylothorax is commonly described in major medical textbooks, but to our knowledge, there are only a few reports of arthritis-associated pseudochylothorax in the literature [6].

Rheumatoid pleurisy usually develops after the onset of joint manifestations, although effusions preceding or concurrent with arthritis do occur [2]. Generally, rheumatoid pleurisy is described as an exudate with low glucose levels and pH, high LDH activity, and low levels of complement activity [7]. However, this biochemical constellation is only suggestive of and not specific to rheumatoid pleurisy.

Chou et al. have reported distinctive cytologic features of rheumatoid pleurisy including the presence of elongated

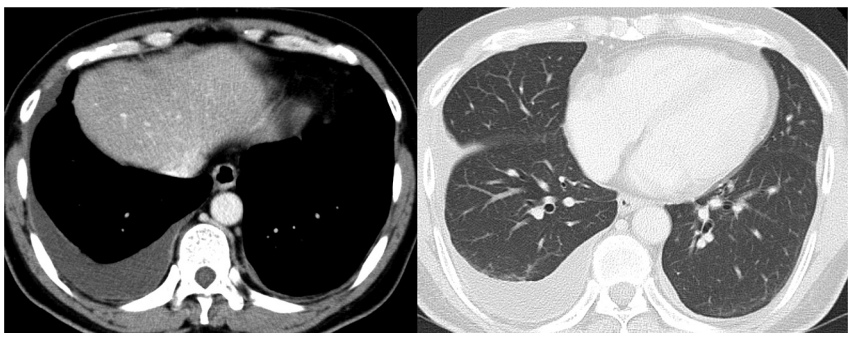

Fig. 2. Chest CT scan showing right pleural effusion and a slight pleural thickening. There was no obvious abnormality in the lung field.

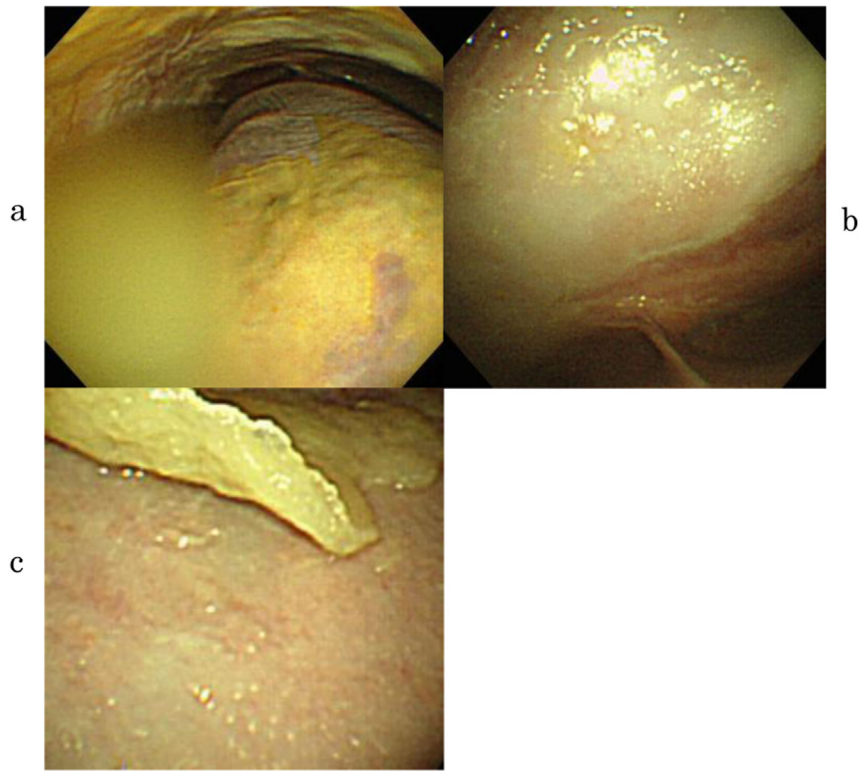

Fig. 3. Thoracoscopic findings. a. The pleural fluid was turbid. Soft yellow deposits were seen on the parietal and visceral pleura. b. The parietal pleura was white and slightly thickened. c. A gritty scattered granular change was seen on closer view of the parietal pleura and fibrin deposition was also recognized.

macrophages, giant multinucleated macrophages and granular materials, and the absence of mesothelial cells. However, these authors pointed out that this entire cytologic profile may not be present in every case [8]. Faurschou et al. have described the thoracoscopic granular appearance of the parietal pleura and the characteristic histopathological changes of parietal pleura, but they also note that only non-specific inflammatory changes could be recognized in 4 of 9 patients [9]. In the present case, we were unable to confirm the presence of a typical rheumatoid nodule on the pleura. An instrument such as an insulated-tip diathermic knife (IT knife) may have been helpful for biopsy of the thickened parietal pleura [10].

Medical thoracoscopy is not routinely recommended for typical RA patients with pleural effusion. However, in atypical cases, i.e., with high ADA levels, pseudochylothorax, and suspicion of malignancy, medical thoracoscopy is useful because it allows a comprehensive diagnostic work-up including pleural fluid analysis, cytology, evaluation of the appearance of the thoracic cavity, and biopsy of pleural specimens.

Most effusions associated with RA pleurisy are asymptomatic and do not require specific treatment. Initial treatment of pleuritis with nonsteroidal anti-inflammatory agents may suffice. Some patients respond to corticosteroids, but others do not, and the role of corticosteroid injections into the pleural space is questionable [11]. Occasionally, persistent symptomatic effusions or pleural thickening necessitate decortication, but this therapy is quite invasive [12]. Wrightson et al. reported 6 patients who developed arthritis-associated pseudochylothorax that occurred without pleural thickening and had only a short duration of symptoms [6], which suggests that early detection of RA pleurisy may be possible and could be valuable for prevention of restrictive changes of the pleura.

Conflict of interest

The authors have no conflicts of interest, financial or otherwise.

References

[1] Dodson WH, Hollingsworth JW. Pleural effusion in rheumatoid arthritis. Impaired transport of glucose. N Engl J Med 1966;275:1337–42.
[2] Walker WC, Wright V. Pulmonary lesions and rheumatoid arthritis. Medicine (Baltimore) 1968;47:501–20.
[3] Aletaha D, Neogi T, Silman AJ, Funovits J, Felson DT, Bingham 3rd CO, et al. 2010 rheumatoid arthritis classification criteria: an American college of rheumatology/European league against rheumatism collaborative initiative. Arthritis Rheum 2010;62:2569–81.
[4] Rantapää-Dahlqvist S, de Jong BA, Berglin E, Hallmans G, Wadell G, Stenlund H, et al. Antibodies against cyclic citrullinated peptide and IgA rheumatoid factor predict the development of rheumatoid arthritis. Arthritis Rheum 2003;48:2741–9.
[5] Garcia-Zamalloa A, Ruiz-Irastorza G, Aguayo FJ, Gurrutxaga N. Pseudochylothorax. Report of 2 cases and review of the literature. Medicine (Baltimore) 1999;78:200–7.
[6] Wrightson JM, Stanton AE, Maskell NA, Davies RJ, Lee YC. Pseudochylothorax without pleural thickening: time to reconsider pathogenesis? Chest 2009;136:1144–7.
[7] Halla JT, Schrohenloher RE, Volanakis JE. Immune complexes and other laboratory features of pleural effusions: a comparison of rheumatoid arthritis, systemic lupus erythematosus, and other diseases. Ann Intern Med 1980;92:748–52.
[8] Chou CW, Chang SC. Pleuritis as a presenting manifestation of rheumatoid arthritis: diagnostic clues in pleural fluid cytology. Am J Med Sci 2002;323:158–61.
[9] Faurschou P, Francis D, Faarup P. Thoracoscopic, histological, and clinical findings in nine case of rheumatoid pleural effusion. Thorax 1985;40:371–5.
[10] Sasada S, Kawahara K, Kusunoki Y, Okamoto N, Iwasaki T, Suzuki H, et al. A new electrocautery pleural biopsy technique using an insulated-tip diathermic knife during semirigid pleuroscopy. Surg Endosc 2009;23:1901–7.
[11] Bouros D, Pneumatikos I, Tzouvelekis A. pleural involvement in systemic autoimmune disorders. Respiration 2008;75:361–71.
[12] Yarbrough JW, Sealy WC, Miller JA. Thoracic surgical problems associated with rheumatoid arthritis. J Thorac Cardiovasc Surg 1975;69:347–54.