Pseudochylous Pleural Effusion in Rheumatoid Arthritis: A Case Study

ROMATOİD ARTRİTTE PSÖDOŞİLÖZ PLEVRAL EFFÜZYON: OLGU SUNUMU

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Summary

Rheumatoid arthritis (RA) is heterogenous disorder with a spectrum of clinical severity ranging from mild arthritis to a crippling joint disease with involvement of internal organs. RA may be accompanied by pleural effusion. Pseudochylous or chyliform; or previously called, cholesterol pleural effusion, has been known since the last century, but not many cases have been described in the world literature. The most common cause of this pleural reaction is pneumothorax treatment or tuberculous pleurisy, but it has also been described in RA. In the present report, we describe a case of RA complicated by thick and fibrotic pleura and associated with pseudochylous effusion. Biochemical and cytological findings of pleural effusion involving cholesterol crystals were highly specific in pointing towards the determined diagnosis rheumatoid pleurisy. The existence of cholesterol crystals in pleural effusion(PE) eliminates the need of pleural biopsy in our case in which rheumatoid arthritis pleural effusion (RPE) diagnosed by means of anamnesis and physical examination the diagnosis was confirmed.

Key Words: Rheumatoid arthritis, Pseudochylous pleural effusion, Cholesterol crystals

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Özet

Romatoid artrit , klinik ciddiyeti orta düzeyde artritten, iç organların tutulumu ile sakat bırakabilen bir eklem hastalığına kadar varabilen bir yelpazeye sahip heterojen bir hastalıktır. Romatoid artrite plevral effüzyon eşlik edebilir. Psödoşilöz veya şiliform, ya da eski ismi ile kolesterol plevral effüzyon geçen yüzyıldan beri bilinmektedir, fakat dünya literatüründe çok az vaka tanımlanmıştır. Bu plevral reaksiyonun en yaygın nedeni pnömötoraks tedavisi ve tüberküloz plevrezidir, fakat aynı zamanda romatoid artritte de tanımlanmıştır. Bu bildiride kalın ve fibrotik plevra ve beraberinde psödoşilöz effüzyonla komplike olmuş bir olguyu tanımlayacağız. Kolesterol kristalleri içeren plevral effüzyonun biyokimyasal ve sitolojik bulguları, saptanan romatoid plevrezi teşhisine yöneltmede oldukça spesifiktir. Plevral effüzyonda kolesterol kristallerinin varlığı, anamnez ve fizik muayene yoluyla romatoid plevral effüzyon tanısı konmuş olgumuzda plevral biyopsi gereksinimini ortadan kaldırarak, tanıyı doğrulamıştır.

Anahtar Kelimeler: Romatoid artit, Psödöşilöz plevral effüzyon, Kolesterol kristalleri

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Rheumatoid arthritis (RA) is a common inflammatory disease of joints, occasionally remitting but usually chronic and progressing to joint destruction and deformity. But it is a multisystem disease, with constitutional symptoms of anemia, fever, weakness, aching and generalized stiffness. Extraarticular organ involvement includes scleritis, xerophtalmia, subcutaneous rheumatoid nodules, pulmonary fibrosis, pericarditis, myocarditis, and pleuritis (1). 5% of RA patients have pleural effusion (PE), 20 % have pleuritic chest pain. While RA has higher prevalance, RPE is seen more extensively in male (10%) than female (2%) patients. In RA, PE pathogenesis is not explicit. Typically the effusion occurs within about five years of the start of the disease in patients with severe arthritis and subcutaneous rheumatoid nodules. In autopsy studies in 38-73% of RA cases pleural abnormalities are found in addition with histologically thick visceral surface, nonspecific inflammation. RPE patients are older than 35 years of age and symptomatically complain about dispnea depending on the existence

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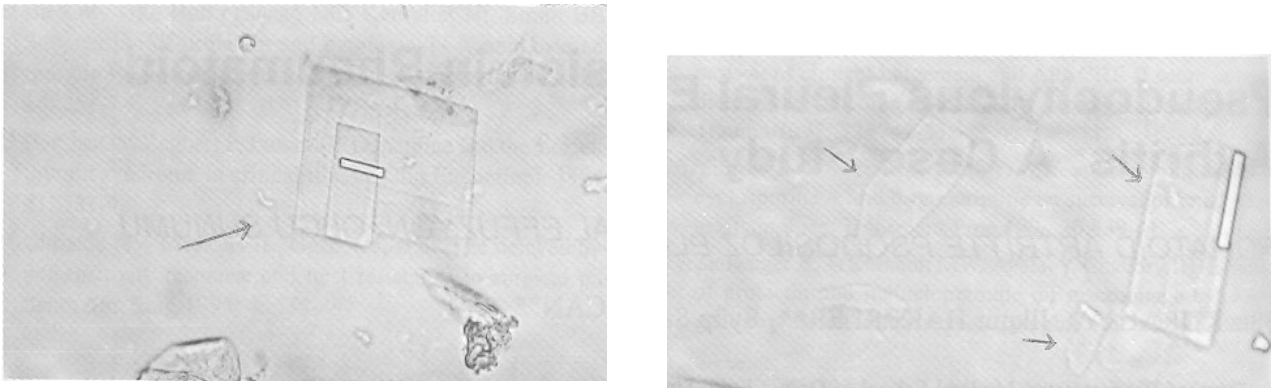

Figure 1-2. Typical microscopic features of cholesterol crystals in pseudochylous pleural effusion.

of fever, pleuritic chest pain and PE. RPE is bilateral in 25 % of patients. Pleural fluid (PF) may seem serous, opaque, yellowish green or milk like appearance, PF leukocyte number may account as many as 15.000 cells/mm³. Predominant cell is neutrophile or lymphocyte in a few cases. A mixture of the two cell types may be met (2,3). In the fluid of RPE a very low level of glucose, acidic pH, high lactate dehydrogenase activity (LDH), low complement level and (+) RF existence are characteristic but do not yield to RPE diagnosis. The same findings may also be seen in septic pleural effusions. High rheumatoid factor levels in tuberculosis and malignities are reported as well. Biopsies of pleura may show typical rheumatoid histology. Cytological finding in RPE: epitheloid cells, cholesterol crystals, giant cells and amorph granulated materials. This cytological pattern is reported in 3-4% of RPE patients (4).

Case

77 years-old male patient came to chest clinic on 20th February 1997 having coughs, chest pain and short breathing. He was hospitalized because of the right side PE diagnosis after his physical examination and chest X-ray. On the physical examination there were matity and thin respiratory rales at the bilateral lower lung fields, and with percussion. There were pain and swelling at metacarpophalangeal joints and temperature increase at the interphalangeal joints. Diagnosing RA; treatment of 10 mg/G prednizolon, Indocid R, Salazopyrine 500 mg tablets was started. The patient was not complaining about breathing when the came to the clinic for a check on the 16th April 1998. On the chest X-ray, right PE was perseverant.

Laboratory findings of blood:

Glucose	97 mg/dl
Triglyceride	84 mg/dl
Cholesterol	166 mg/dl
T.Bilirubin	0.3 mg/dl
T.Protein	7.0 g/dl
Albumin	3.9 g/dl
ESR	129 mm/h
Hb	9.6 g/dl
Hct	28%
Platelet	142.103/mm³
WBC	9.10³/mm³ (PNL= 82%, monocyte= 14%, lymphocyte=4%, erythrocytes were normochromic and normocytic).

In serum protein electrophoresis, the fraction of albumin was decreased (35%) while gammaglobulin was increased (30%). Pleural puncture was applied through right hemithorax. pH= 7.0 in pleural fluid, ample cholesterol crystals, scarce calcium phosphate and triple phosphate crystals and additionally, 6-7 leukocyte and 2-3 erythrocyte were detected in every misroscopic field (Fig.1-2).

Biochemical findings in pleural fluid:

Glucose	4 mg/dl
Triglyceride	30 mg/dl
Cholesterol	90 mg/dl
Total protein	4.8 g/dl
Albumin	2.9 g/dl
LDH	3620 U/L
T.Bilirubin	2.3 mg/dl
Lactate	2.8 mmol/L

Chylomicrons were negative in PF lipoprotein electrophoresis. PF-Bacterial culture was (-), PF-ARB was (-) also. In PF cytological examination, degenerated cells on proteinous zone, scarce mezothelial and polimorphonuclear cells.

Fresh PE observation under light microscope was executed by means of examining remaining part in the bottom at 40 x magnifying after throwing away the supernatant with 1500 rpm (80 G), 5[1] centrifugation. At first observation cholesterol crystals could not be identified because of turbidity and intensive crystals. After dilution of 1:10 with sulphosalicylic acid (SSA 3%) seeing cholesterol crystals in the form of transparent, colorless flat plates with broken corners, pseudochylous RPE was identified. Cholesterol crystals remained stable 1 week without adding any protective and 10 days long with adding SSA-3 % at +2 - +8 °C. The existence of cholesterol crystals which are characteristic finding of pseudochylous PE, eliminating pleural biopsy in our case, the diagnosis was confirmed.

Discussion

Pseudochylous or chyliform or cholesterol pleural effusion as formerly called is an exudation that does not contain the diagnostic criteria of the chylous effusion and very few cases were described in the literature. Formation basis of pseudochylous pleural effusion is chronic pleural effusion surrounded by thick and fibrotic pleura. The common causes of this pleural reaction are though pneumothorax treatment or tuberculous pleurisy(5), it has also been described in some patients with RA (6-11). Its discrimination from chylothorax is done with anamnesis and better with higher levels of triglyceride. Low glucose content of RPE depends on a relative block in the transport of glucose to pleura from blood rather than using increased glucose. Chylous is lymphoid fluid rich in triglyceride, milk like, white. Accumulation of chylous fluid frequently occurs in the pleura in all transcellular cavities. Low glucose content of RPE depends on a relative block in the transport of glucose to pleura from blood rather than using increased glucose. Chylomicrons are guiding lipoproteins in chylous fluid. If pleural fluid triglyceride level is over 110 mg/dl, it is chylous fluid, whereas amount of cholesterol does not differ in chyliform fluids.

In the study of Engel et al finding of cholesterol crystals in RPE besides lack of mezothelial cells was evaluated as a finding of increasing specificity (10). Simultaneous histological evaluation of RPE and articular fluid in a study by Lee et al has risen positive predictivity in discriminating underlying pathology (9). On the other hand Hillerdal reported fluid aspiration and decortication were useful in pseudochylous PE cases(5). In our case, finding opaqueness (4+), PE protein quantity: 4.2 g/dl. (Normally 1-2g/dl) and PE glucose / serum glucose: 4/97<0.5 with eye observation supports exudate. The values of lactate: 2.8 mmol/L and pH:7.0 are supporting RA. 60 mg % was accepted as a limit in discriminating exudate and transudate for cholesterol level (10). PE cholesterol level of the case is 90 mg %. In chyliform effusions triglyceride level is below 50 mg %. PE - triglyceride level of the case is 30 mg %. Lack of chylomicrons in the PE - Lipoprotein elechrophoresis supports chyliform effusion. However a large chylomicron band is seen in the chylous fluids and they are dyed with Sudan III.

The pleura is usually biopsied as aclosed procedure. Less frequently biopsy may be carried out under direct vision at thoracoscopy or as an open procedure at thoracotomy. The pleural biopsy in rheumatoid disease may show characteristic changes but more often than not the findings are nonspecific. Pleural biopsy is easy to withdraw the needle slightly with firm pressure on the side of the open biopsy notch, so that a pleural sample can be enshared and removed. But this procedure is usually yielding neoplastic tissue, moreover its sharptip is more likely to puncture underlying lung. Pleural puncture has less complications and it is easy to withdraw a sample of pleural effusion and it relieves the patient in less time.

In conclusion, the existence of cholesterol crystals obtained by pleural puncture which are characteristic finding of pseudochylous PE, eliminating pleural biopsy in our case in which RPE diagnosed by means of anamnesis and physical examination the diagnosis was confirmed.

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