

Cholesterol Pleural Effusion - “Pseudochylothorax” in a Smoker

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Dear Sir,

Pseudochylothorax is termed as the presence of high amounts of cholesterol in a pleural effusion. The exact incidence is unknown, with less than 200 cases reported in the literature. The most common aetiology of pseudochylothorax are tuberculosis and rheumatoid arthritis among many other causes.¹

We present the case of a 37 year old croatian lady, with rheumatoid arthritis, who was referred to hospital by her GP with a 2 day history of pleuritic chest pain and exertional shortness of breath. She denies any arthralgia and was on no medication. She had a history of right sided pleural effusion which required drainage twice in Croatia. She has no significant family history and has no known drug allergy. She is a current smoker of 15 pack year history, rarely drinks alcohol and is independent in her daily activities. On clinical exam, her vitals were normal. She had no arthropathy, no rheumatoid nodules, no ocular symptoms and no muscle weakness. Her heart sounds were normal with no additional sound or murmur. She had decrease air entry on at her right lung base. Her Chest X-ray showed a loculated right sided effusion that was confirmed on thoracic ultrasound. A computed tomography scan of the chest showed the right sided loculated pleural effusion with underlying pleural thickening, likely reactive. There was no evidence of consolidation, nodules or enlarged mediastinal lymph nodes. Her renal profile, liver profile and full blood count and inflammatory markers were normal. Her anti-citrullinated peptide antibodies was elevated consistent with her diagnosis of rheumatoid arthritis. She underwent an ultrasound guided chest tube drain insertion which drained in total 700ml of cloudy fluid. Biochemical pleural fluid analysis revealed an exudate, with fluid cholesterol of 5.8 mmol/L, Triglycerides of 0.73 mmol/L and pH 7.68. Pleural fluid for cytology and microbiology came back negative. A diagnosis of pseudochylothorax was made.

Pseudochylothorax is a rare cause of pleural effusion. The pleural fluid in a pseudochylothorax is a typically milky white exudate, with a high cholesterol content (cholesterol >5.18mmol/L), triglyceride concentration below 1.24mmol/L, and a cholesterol/triglyceride ratio >1.¹

The exact pathogenesis of cholesterol effusions is uncertain, but it is likely that different mechanisms exist in different clinical settings.²

Smoking can increase the oxidative stress in the body. Pryor and Stone reported that there are two phases of cigarette smoke: as a particulate (tar) phase and a gaseous (vapour) phase, both of which contain very high concentrations of free radicals. Cigarette smoke is also known to activate endogenous sources of free radicals. It has been reported that oxidative stress increases in rheumatoid inflammation due to impaired antioxidant systems caused by free radicals, which have a role in the etiology of rheumatoid arthritis.^{3,4}

Management of pseudochylothorax includes treatment of the underlying cause.

Reflecting on this case, although the patient had no musculoskeletal symptoms, her smoking history was the only exacerbating factor that we could identified. Patient was therefore referred to smoke cessation service and follow up in the respiratory clinic and by her GP.

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References:

1. Lama A, Ferreiro L, Toubes ME, Golpe A, Gude F, Álvarez-Dobaño JM, González-Barcala FJ, San José E, Rodríguez-Núñez N, Rábade C, Rodríguez-García C, Valdés L. Characteristics of patients with pseudochylothorax-a systematic review. *J Thorac Dis* 2016; 8:2093
2. Huggins JT. Chylothorax and cholesterol pleural effusion. *Semin Respir Crit Care Med* 2010; 31:743.
3. Pryor WA., Stone K. Oxidants in cigarette smoke. Radicals, hydrogen peroxide, peroxy-nitrate, and peroxy-nitrite. *Ann. N. Y. Acad. Sci.* 1993;686:12–28.
4. Kalpakcioglu B., Senel K. The interrelation of glutathione reductase, catalase, glutathione peroxidase, superoxide dismutase, and glucose-6-phosphate in the pathogenesis of rheumatoid arthritis. *Clin. Rheumatol.* 2007;27:141–145.