Eosinophilic Pleural Effusion due to *Mycoplasma pneumoniae* Infection

Sharon Shklarsky MD, Dan Miron MD and Yoseph Horowitz MD

Department of Pediatrics A, HaEmek Medical Center, Afula, Israel

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Eosinophilic pleural effusion is a rare condition that has been associated with pulmonary infections such as tuberculous or fungal pneumonia, chest trauma, hypersensitivity reactions, and malignancies of the lungs [1,2]. We describe a child who presented with a large eosinophilic pleural effusion caused by *Mycoplasma pneumoniae* infection.

Case Description

A 4½-year-old girl presented in the emergency room with a dry cough that had begun 7 days previously. She had no fever or dyspnea. Her past medical history was unremarkable and no member of her immediate family had a recent respiratory infection. The patient had been treated with 40 mg/kg/day of oral amoxicillin-clavulanic acid for 3 days before for presumed bacterial pneumonia. The physical examination revealed a healthy-looking child with no respiratory distress; body temperature was 37°C, blood pressure 110/70 mmHg and respiratory rate 24 breaths/min. Oxygen saturation in room air was 95%. Neither lymphadenopathy nor hepatosplenomegaly was found. Dullness on percussion and diminished breath sounds with no rales or crepitations were noted on the base of the right lung. The rest of the physical examination was unremarkable. The sedimentation rate was 22 mm/h, hemoglobin 10.5 g/dl, hematocrit 30% and platelet count 395,000/mm^3. The white blood cell count was 9,360/mm^3 with a differential of 56% neutrophils, 38% lymphocytes, 5.6% monocytes and 0.4% eosinophils. A chest X-ray revealed a right lower lobe consolidation with a moderate pleural effusion. Intravenous therapy with cefuroxime 75 mg/kg/day and oral azithromycin 10 mg/kg/day was started.

On day 4 of therapy no change was noted in the physical examination or on chest X-ray. On the same day a computerized tomography scan of the chest showed infiltrates and collapse of the middle and lower lobes of the right lung, and a large pleural effusion. No hillar adenopathy was noted. A diagnostic thoracocentesis was performed and 20 ml of serous fluid with a pH of 7.42 was obtained. Examination of the fluid showed 4.1 g/dl protein and 102 mg/dl glucose. The white blood count was 4,480/mm^3 with a differential of 41% neutrophils, 23% eosinophils, 14% lymphocytes and 7% monocytes. No malignant cells were seen. Gram and Zhiel-Neelsen staining was negative, and aerobic, anaerobic and *Mycobacterium tuberculosis* cultures were sterile. A bronchoscopy on day 6 showed no obstruction, mass or pus within the bronchi of the middle and lower lobes of the right lung. No malignant cells were found in the sputum. Subsequent sputum aerobic, anaerobic, viral, fungal and *M. tuberculosis* cultures were sterile. On day seven serum anti-*Mycoplasma pneumoniae* IgM was found by enzyme-linked immuno-absorbent assay. The patient was discharged home after completing 3 days of azithromycin and 10 days of cefuroxime. A chest X-ray 2 weeks after the discharge was normal.

Comment

Our case is unique in that the patient presented with a massive lobar pneumonia and a large eosinophilic pleural effusion that was due to *M. pneumoniae* infection. *M. pneumoniae* is most commonly associated with mild to moderate respiratory disease, and its common radiographic appearance has a diffuse bilateral interstitial pattern (either reticular or moduloreticular) [3]. Although lobar pneumonia has been described and pleural effusions are fairly common, there are only a few reports of the combination of massive pneumonia (with involvement of two lobes) and a large pleural effusion in otherwise healthy children [3–5].

Eosinophilic pleural effusion is delineated by a cellular content of more than 10% eosinophils, excluding erythrocytes. The mechanism by which the pleura react with eosinophilic effusion has yet to be explained. Such a condition has not been described in children; but, based on studies in adults, the most important diagnoses that one should consider in a child with eosinophilic pleural effusion are tuberculosis, fungal pneumonia, Hodgkin's lymphoma, and connective tissue disease such as rheumatoid arthritis. In our patient these diagnoses were ruled out by the history and clinical presentation as well as by radiology and laboratory studies. It is noteworthy that 28% of all cases with eosinophilic pleural effusion are idiopathic and that blood eosinophilia is uncommon [1,2].

To our knowledge this is the first report of eosinophilic pleural effusion associated with *Mycoplasma pneumoniae* infection. We performed an ELISA test for *Mycoplasma* because the disease was mild and there was no response to therapy aimed at common respiratory pathogens in young children, such as *Streptococcus pneumoniae* and *Haemophilus influenzae* type B. In conclusion, when confronting a

child with pneumonia and eosinophilic pleural effusion, the physician should consider *Mycoplasma pneumoniae* infection after excluding other more serious diagnoses.

References

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Correspondence: Dr. D. Miron, Dept. of Pediatrics A, HaEmek Medical Center, Afula 18101, Israel. Tel: (972-6) 652 4325; Fax: (972-6) 652 5525; email: eitanm@kinneret.co.il