# Case report

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# Childhood pneumonia: read the smear and clinch the diagnosis

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### **ABSTRACT**

Childhood pneumonia has a myriad of disease causing organisms. Identifying the etiology often helps us predict the natural course of the illness. We would like to share an interesting child with pneumonia by the hematological manifestation of the disease. Case report of this study is a 8 year old boy who presented with high grade fever for eleven days associated with cough. History of skin rashes which worsened following therapy with penicillin. On Examination child had maculopapular rashes predominantly over the trunk with decreased air entry in the left hemithorax. Chest x-ray done showed left lower lobe consolidation hence treated with cephalosporins and macrolide. Counts revealed falling trend in haemoglobin with high MCV count. Peripheral smear done showed agglutinated RBC'S and occasional nucleated RBC's. Direct Coombs test was positive. With these haematological manifestations child was diagnosed to have Mycoplasma pneumonia which was proven by positive antibodies against Mycoplasma. Child recovered completely and haematological manifestations became passive after four weeks.

Cold agglutinin disease is poorly understood affecting 15% of patients with Autoimmune hemolytic anemia. Respiratory tract involvement and extrapulmonary complications manifest in 3-10% and 25% respectively. Antibodies (IgM) against the I antigen on human erythrocyte membranes appear during the course of *M. pneumoniae* infection and produce a cold agglutinin response. AIHA typically occurs during 2-3<sup>rd</sup> week after febrile illness with sudden onset of hemolysis which is self-remitting within 4-6 weeks. The conclusion of this study is extra-pulmonary manifestations in a child with pneumonia help in diagnosing the etiology. This in turn helps us like provide rationale management and Predict the natural course of the illness.

**Keywords:** Autoimmune, Cold agglutinin disease, Direct coombs test, Haemolytic anemia, Mycoplasma pneumoniae, Pneumonia.

## INTRODUCTION

Pneumonia in childhood has a myriad of disease causing organism and identifying the etiology often helps us predict the natural course of the illness. Studies have shown that a wide variety of viral and bacterial pathogens can cause community acquired pneumonia.<sup>1</sup> During the past years, reports from Europe and Asia have shown significant increases in the frequency of M. pneumoniae infections.<sup>2</sup> M. pneumoniae accounts for 33% of hospitalizations among

adults and children with bacterial pneumonia.<sup>3</sup> We would like to share an interesting child with pneumonia by the hematological manifestation of the disease.

### CASE REPORT

A 8 year old developmentally normal male child presented with complaints of fever for 11 days, cold and cough for 5 days and skin rashes for 4 days. He was treated with Amoxycillin Clavulanic acid prior to admission after which he developed rashes. On

examination child had maculo popular rash over the trunk, forehead, bilateral upper and lower limb associated with itching. He had decreased air entry in the left Hemithorax, vitals were stable. Diagnosis of viral exanthematous fever and drug induced rashes was made and was treated for the same.

Chest X ray showed left lower lobe consolidation. He was started on Ceftriaxone and Azithromycin with pending culture reports. Peripheral smear showed normocytic normochromic anemia with agglutinated RBC's and occasional nucleated RBC's. Serial counts done revealed falling trend in Hemoglobin with a high Mean Corpuscular Volume. Direct Coombs test was positive.

Haemato-oncologist opinion was obtained and advised to maintain Hemoglobin and Mean Corpuscular Volume. With the background of pneumonia and hematological manifestation, clinical suspicion of infection induced hemolytic anemia was thought probably due to Mycoplasma, which was further proven by positive antibodies against Mycoplasma. He recovered clinically and was followed up with no recurrence of anemia after 3 weeks.

### **DISCUSSION**

Mycoplasma Pneumonia is one of the well-known cause of respiratory tract infection. It is known to cause extrapulmonary manifestations (3-10%) and cold agglutinin disease 25% of patients respectively.4 Extrapulmonary manifestations are Hematological, Musculoskeletal, Renal, Cardiac, Dermatological, Gastrointestinal, Neurological disorders. Of all the features Hemolytic anemia is the commonest hematological manifestation and other complication are thrombocytopenic purpura, hemaphagocytosis hypercoagulability.5 Extrapulmonary complications may present before, during, after or in the absence of pulmonary signs. An increase in cold agglutinin titers is frequently observed during M. pneumoniae infection. It has been reported that 50%-60% of these patients had cold agglutinins, which appear one week after the onset of the illness and decline toward undetectable levels after two to six weeks.6

The extrapulmonary manifestations of Mycoplasma pneumonia and their possible mechanism was the established biological activity of *M. Pneumoniae*. It has a direct type where the bacterium is present at the site of inflammatory cytokine induced by the bacterium play an important role . indirect effect is by bacterium not present at the site of inflammation and immune modulations like autoimmunity or immune complexes. Avascular occlusion also occurs by the obstruction in the blood flow.<sup>7</sup>

Cold agglutinins appear to be more specific for I antigen of the red blood cell surface and often result in mild, subclinical hemolysis and mild reticulocytosis. Severe hemolytic anemia is rare and is usually associated with marked pulmonary involvement. Our patient developed hemolytic anemia which was treated conservatively and did not require transfusion. Antibodies IgM against the I antigen on human erythrocyte membrane appear during the course of mycoplasma Pneumoniae infection and produce a cold agglutinin response.<sup>2</sup> The efficacy of cold agglutinin test to detect Mycoplasma pneumonia infection is not known because the specificity and sensitivity is low.<sup>8</sup>

In our patient, Direct coomb's test was done which was positive. A cardinal diagnostic feature of Cold agglutinin disease is a positive DAT with C3d monospecificity.9 Hemolytic anemia due to Mycoplasma pneumonia usually resolves and is self-limited but in few severe cases they may require blood transfusion. The risk of transfusion related hemolysis may be reduced by using in-line-blood warmer 37F.10 The management of the underlying M.Pneumoniae infection will eventually improve haemolytic anemia.11 Our patient improved clinically after treatment with Azithromycin and anemia became passive within 4 weeks. Diagnosis of cold agglutinin disease should be suspected in case of haemolytic anemia and management of Cold agglutinin disease can be treated depending on the severity of the symptoms.

### **CONCLUSION**

Suspicion of cold agglutinin disease should be considered in children with autoimmune haemolytic anemia and prompt care should be given to avoid cardiac compromise. Extra-pulmonary manifestations in a child with pneumonia help in diagnosing the etiology. This in turn helps us provide to rational management and to predict the natural course of the illness.

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