Peculiar cold-induced leukoagglutination in *Mycoplasma pneumoniae* pneumonia

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An 18-year-old woman was diagnosed with atypical pneumonia and treated with oral levofloxacin. Skin eruptions also appeared. On Day 6 post-admission, laboratory tests revealed: RBCs, $1.76 \times 10^9$/L; hemoglobin, 128 g/L; WBCs, $7 \times 10^9$/L with 56% neutrophils, 27% lymphocytes, 6% monocytes, 10.5% eosinophils, and 1% basophils. A peripheral blood smear showed not only RBC agglutination but also neutrophil aggregates, eosinophil aggregates, as well as monocyte aggregates (Figure 1). After warming to 37°C, agglutination disappeared. The RBC and WBC counts returned to $4.44 \times 10^9$/L and $9 \times 10^9$/L with 55% neutrophils, 26% lymphocytes, 6% monocytes, 12% eosinophils, and 1% basophils. Blood chemistry analysis showed total bilirubin 0.4 mg/dL and LDH 510 U/L. Direct antiglobulin test showed 1+ anti-C3d and 1+ anti-C3b3d. A passive agglutination test in paired serum samples revealed seroconversion of *M. pneumoniae* antibodies (1:80 to 1:20,480). Cold agglutinin was detected to a titer of 1:8192.

Cold-induced erythrocyte agglutination is frequently observed in cases of *M. pneumoniae* infection, but leukoagglutination is rare [1,2]. Though the pathomechanism of leukoagglutination is still uncertain [3], it has been postulated that an IgM cold agglutinins directed against I antigens of the leukocyte membranes is responsible for the transient cold-induced leukoagglutination [4]. A previous series of four pediatric cases of *M. pneumoniae* infection, all of whom showed leukoagglutination, reported that eruption, eosinophilia, a high titer of cold agglutinin, and a high titer of *M. pneumoniae* antibodies were observed [5]. When leukocytopenia occurs in
patients with these symptoms, pseudoleukopenia induced by leukoagglutination should be recognized as one potential cause.

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References


Figure legend

Figure 1. A peripheral blood smear showed not only RBC agglutination (A)
but also neutrophil aggregates, eosinophil aggregates, as well as monocyte aggregates (A-D).