

The Detection of *Streptococcus pneumoniae* in Peripheral Blood Smears from a Patient with Acute Promyelocytic Leukemia

Yu Z. and Chen X.: *Streptococcus pneumoniae* in Peripheral Blood Smears

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A 31-year-old male patient presented with fever and gingival bleeding. Laboratory tests revealed a hemoglobin concentration of 105 g/L, a white blood cell count of $2.4 \times 10^9/L$, and a platelet count of $10 \times 10^9 /L$. The coagulation profile revealed a PT of 22.1s and an APTT of 43.9 s, with a fibrinogen level of 0.42 g/L, D-dimer of 15.3 $\mu\text{g/mL}$, and FDPs of 56.9 $\mu\text{g/mL}$, indicative of disseminated intravascular coagulation. The *PML::RARA* fusion gene was detected using peripheral blood samples. Abnormal promyelocytes (Figure 1 A) and a large number of bacteria, both within abnormal promyelocytes (Figure 1 B-C-D), were observed in the blood smear, and in the surrounding extracellular environment (Figure 1 D), accompanied by erythrocyte lysis. Subsequent bacterial identification confirmed the presence of *Streptococcus pneumoniae* bacteremia. Although the patient was treated with intravenous fluids, antibiotics, and blood products, he suffered a cardiac arrest and passed away four hours after his initial presentation.

When bacteremia is suspected, a peripheral blood smear might be useful for rapid identification of microorganisms and take action while waiting for blood culture results. The presence of bacteria on a peripheral blood smear is a rare finding; however, when detected, it usually suggests massive bacteremia. Most cases follow a fulminant course of sepsis [1, 2, 3]. Mortality typically occurs within hours or during the first 24 hours.

Keywords: *Streptococcus pneumoniae*, peripheral blood smears, acute promyelocytic leukemia

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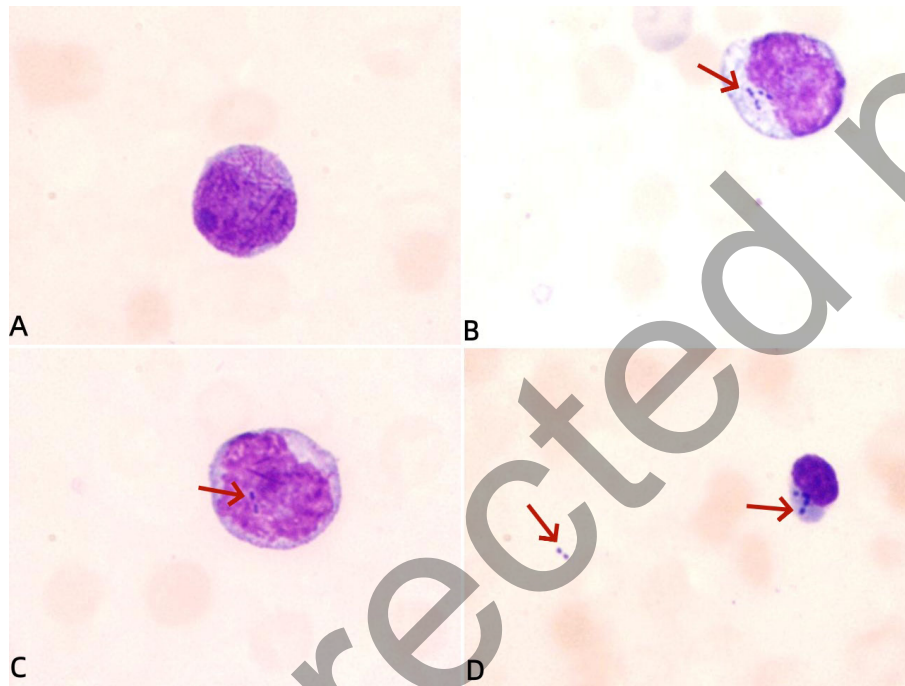


Figure 1. Figure 1-A reveals the presence of an abnormal promyelocyte and erythrocyte lysis in the blood smear; Figure 1-B, C, and D show both extracellular and intracellular bacteria in the blood smear (marked by red arrows).