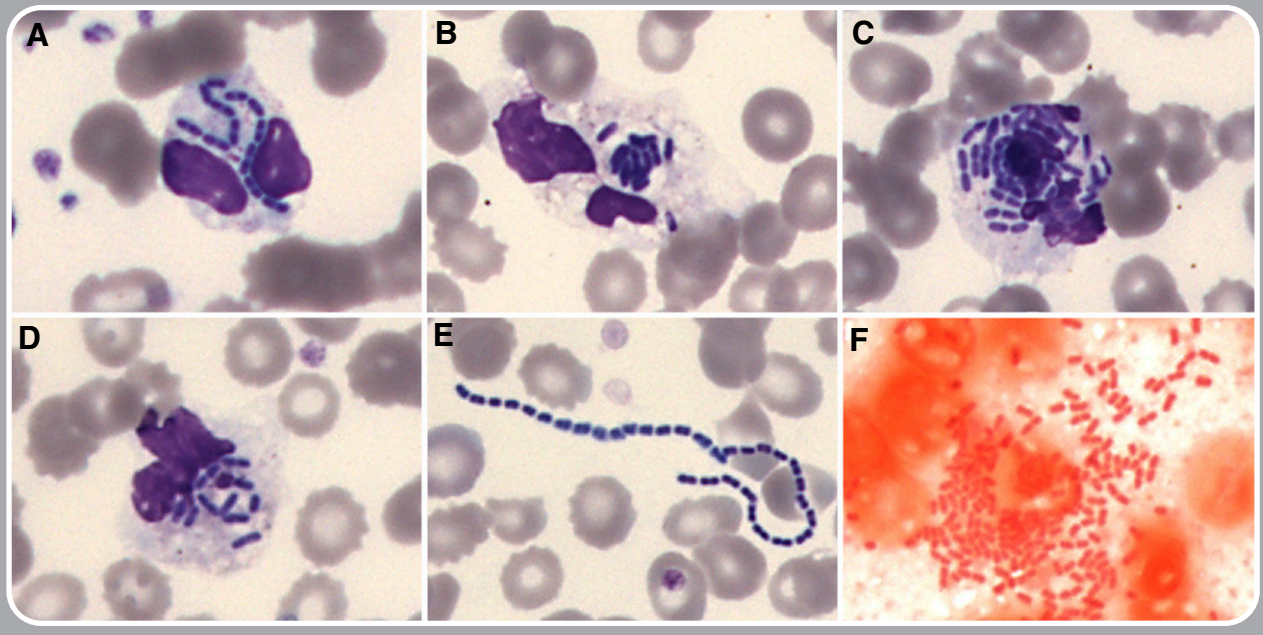
bloodwork
IMAGES IN HEMATOLOGY

Diagnosis of bacteremia on a blood smear



Delphine Manzoni and Pierre Sujobert, Hospices Civils de Lyon

A 38-year-old woman was admitted as an outpatient for arsenic trioxide consolidation for acute promyelocytic leukemia. Findings of the clinical examination were normal, except for a brief episode of fever 2 days before. The C-reactive protein level was elevated (60 mg/L). May-Grünwald-Giemsa–stained blood smear analysis showed small dark purple rods in ~15% of the neutrophil granulocytes (panels A-D) as well as extracellular bacteria forming chains (panel E). Gram staining confirmed the presence of Gram-negative bacteria (panel F). Because of this observation, blood cultures were performed, which confirmed a diagnosis of catheter-related bacteremia due to *Enterobacter aerogenes*. As Gram-negative bacteria rarely form chains, we hypothesized that the bacteria initially observed on the blood smear might be an EDTA contaminant. However, the same *E aerogenes* grew in blood cultures from the EDTA tube, which ruled out this hypothesis. The evolution was favorable after removal of the catheter and antibiotic therapy with piperacillin-tazobactam.

In contrast to other fluids like pleural effusion or cerebrospinal fluid, the observation of bacterial phagocytosis by neutrophils on a blood smear is very unusual. In this particular case, it led to adequate bacteriologic investigation and successful treatment.