

Capnocytophaga canimorsus septicemia

Capnocytophaga canimorsus is a commensal Gram-negative capnophilic rods of the oral cavity of dogs and cats. Severe infection such as fulminant septicemia, peripheral gangrene, endocarditis and meningitis, may occur in the human through biting or licking by a dog or cat. are most common symptoms. Splenectomy, liver cirrhosis or alcohol abuse have been identified as a predisposing factor, but half of the patients have no immunosuppression history. *C. canimorsus* resists phagocytosis by macrophages. Bacterial isolation and identification may be difficult, because of slow growth on the microbiological medium.

Ref.: Zajkowska J, et al. *Capnocytophaga canimorsus* – an underestimated danger after dog or cat bite – review of literature. Przegl Epidemiol 2016; 70(2): 289-295. PMID: 27837588.

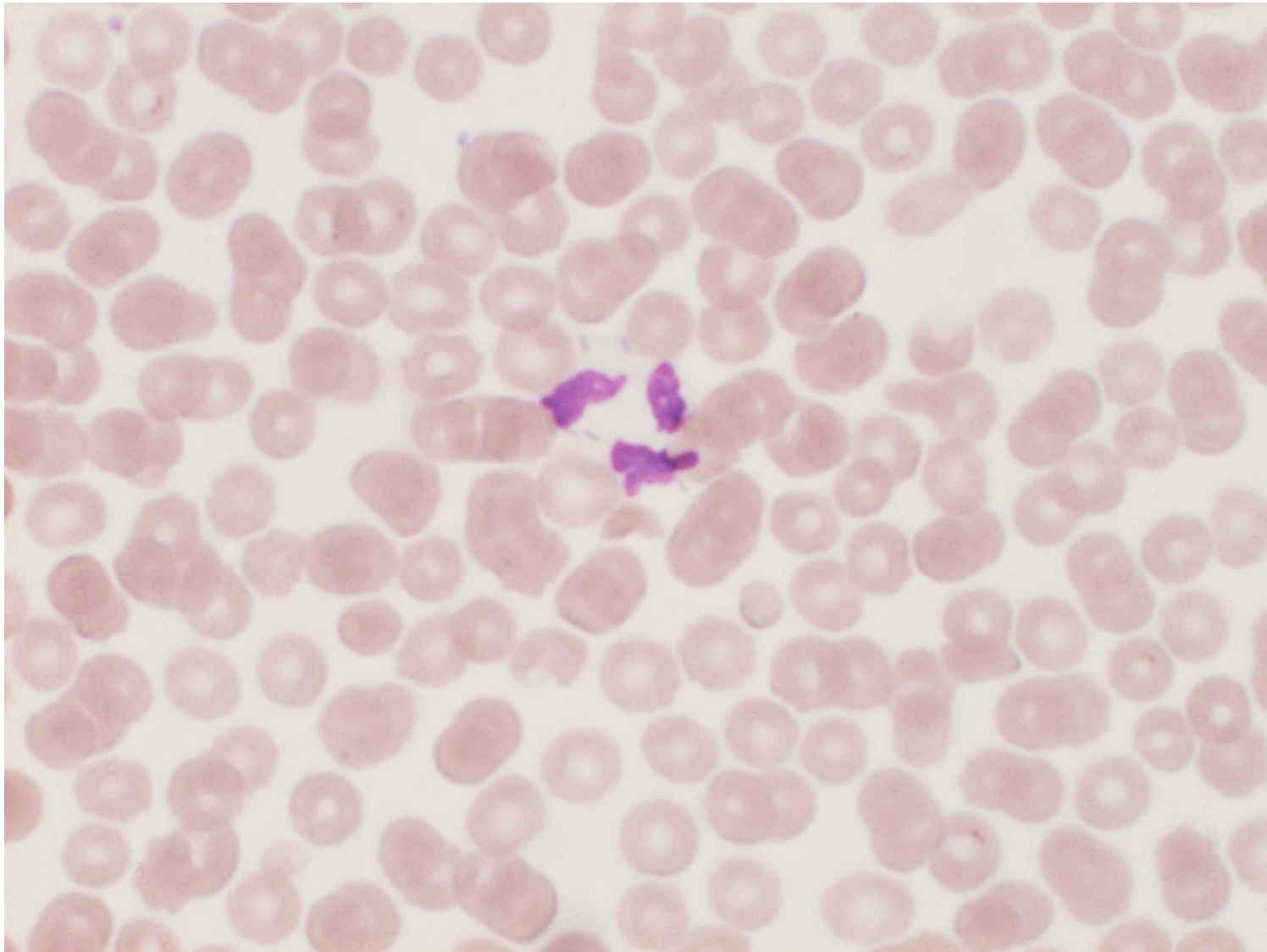
Case presentation: *Capnocytophaga canimorsus* septicemia

A 60-year-old male patient was finger-bitten by his pet dog. Five days after the bite, painful swelling of the limbs, vomiting and consciousness disturbance with mild fever appeared. Soon after the hospital admission, he expired of circulatory failure. *Capnocytophaga* species was isolated from the peripheral blood, and PCR confirmed the infection of *C. canimorsus*.

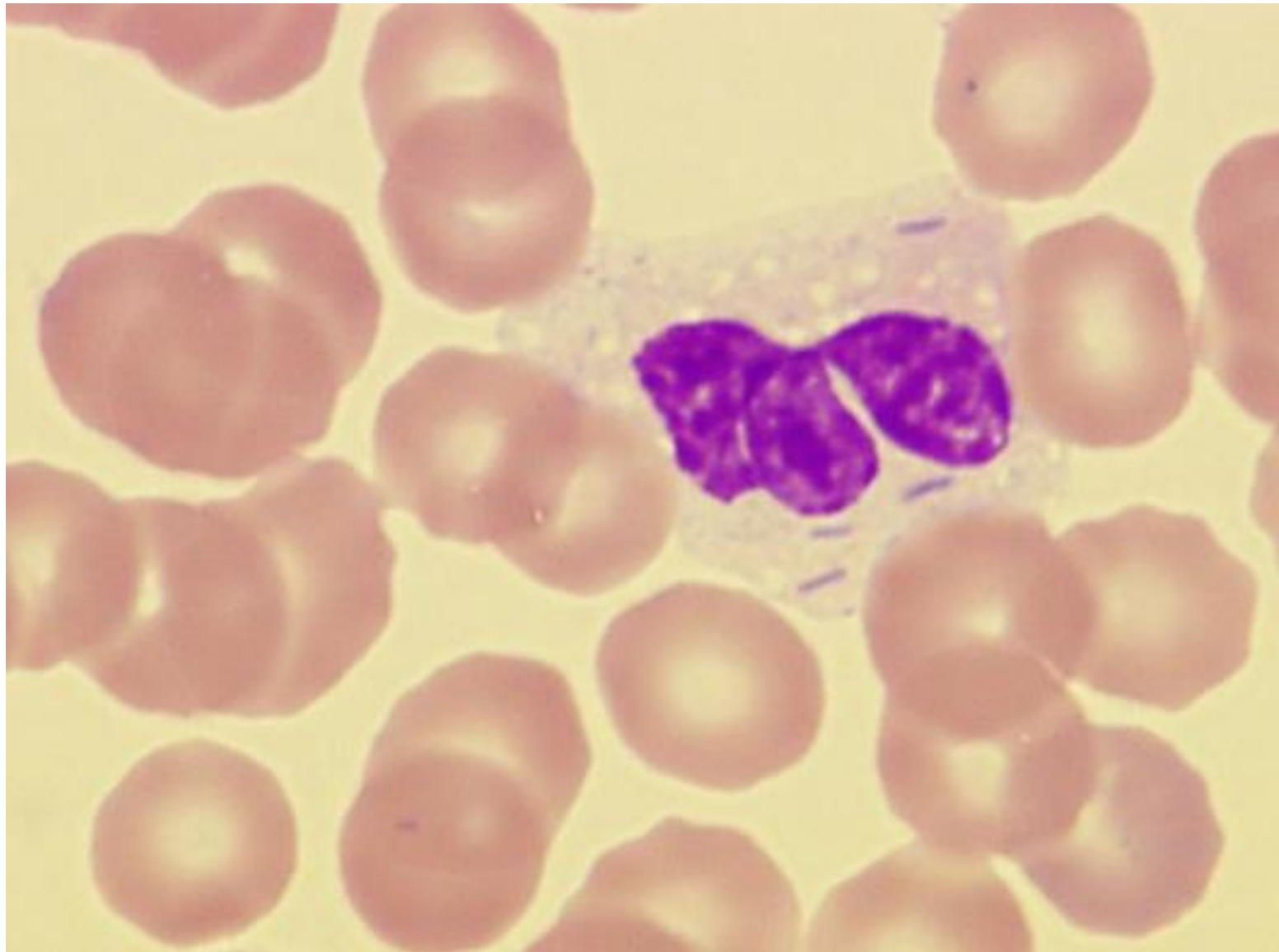
In the peripheral blood, a few rods were phagocytized by neutrophils (neutrophilia: leukocyte count: 10,200/mL, neutrophils 84%). The kidney showed bilateral cortical necrosis, and disseminated intravascular coagulopathy was associated. The adrenal glands were hemorrhagic (Waterhouse-Friderichsen syndrome). Hemophagocytosis was seen in the spleen, liver, bone marrow and lymph nodes, representing the status of hypercytokinemia.



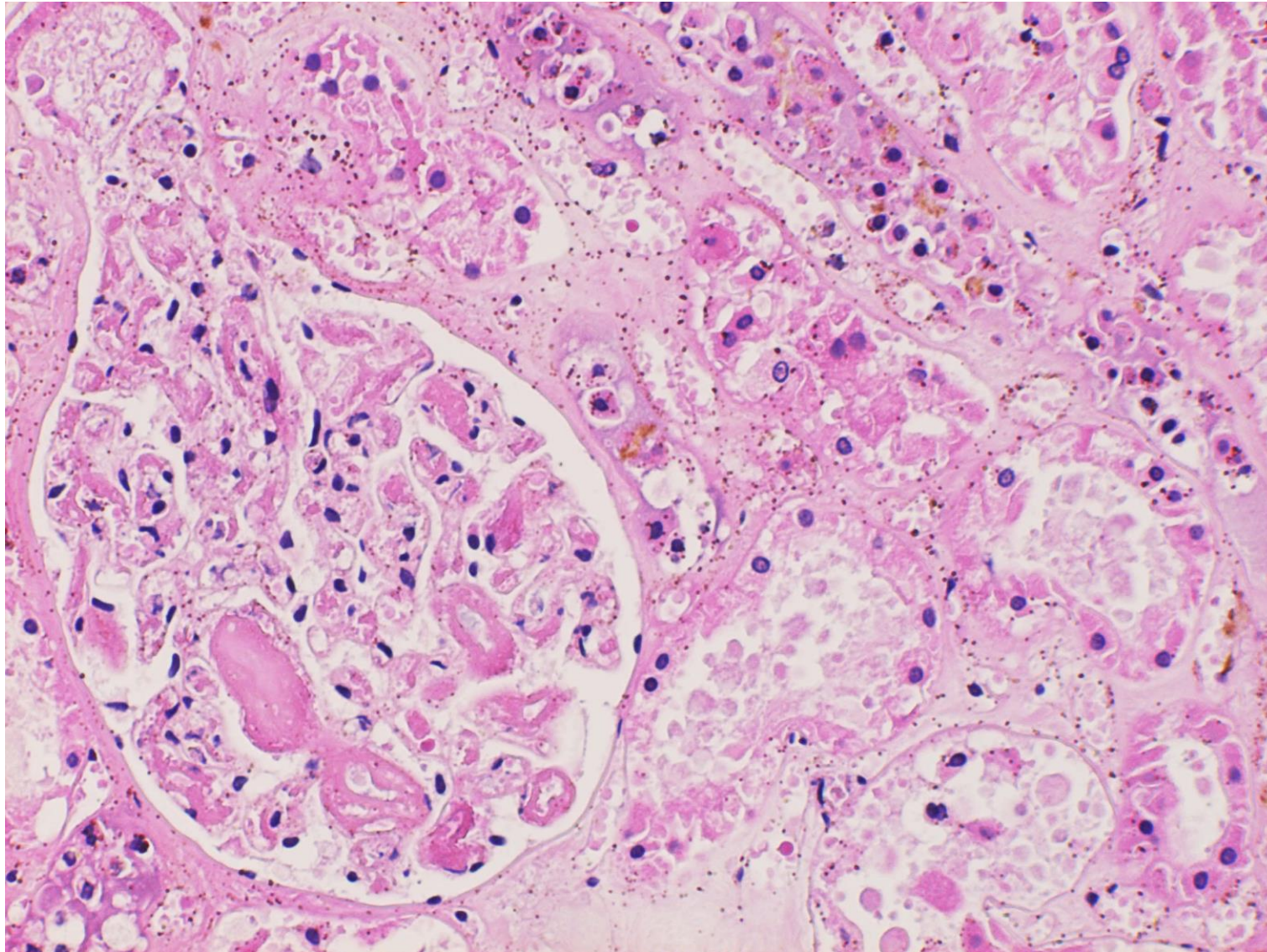
Fulminant *Capnocytophaga canimorsus* septicemia. In the peripheral blood, neutrophils phagocytize rods. May-Giemsa-1



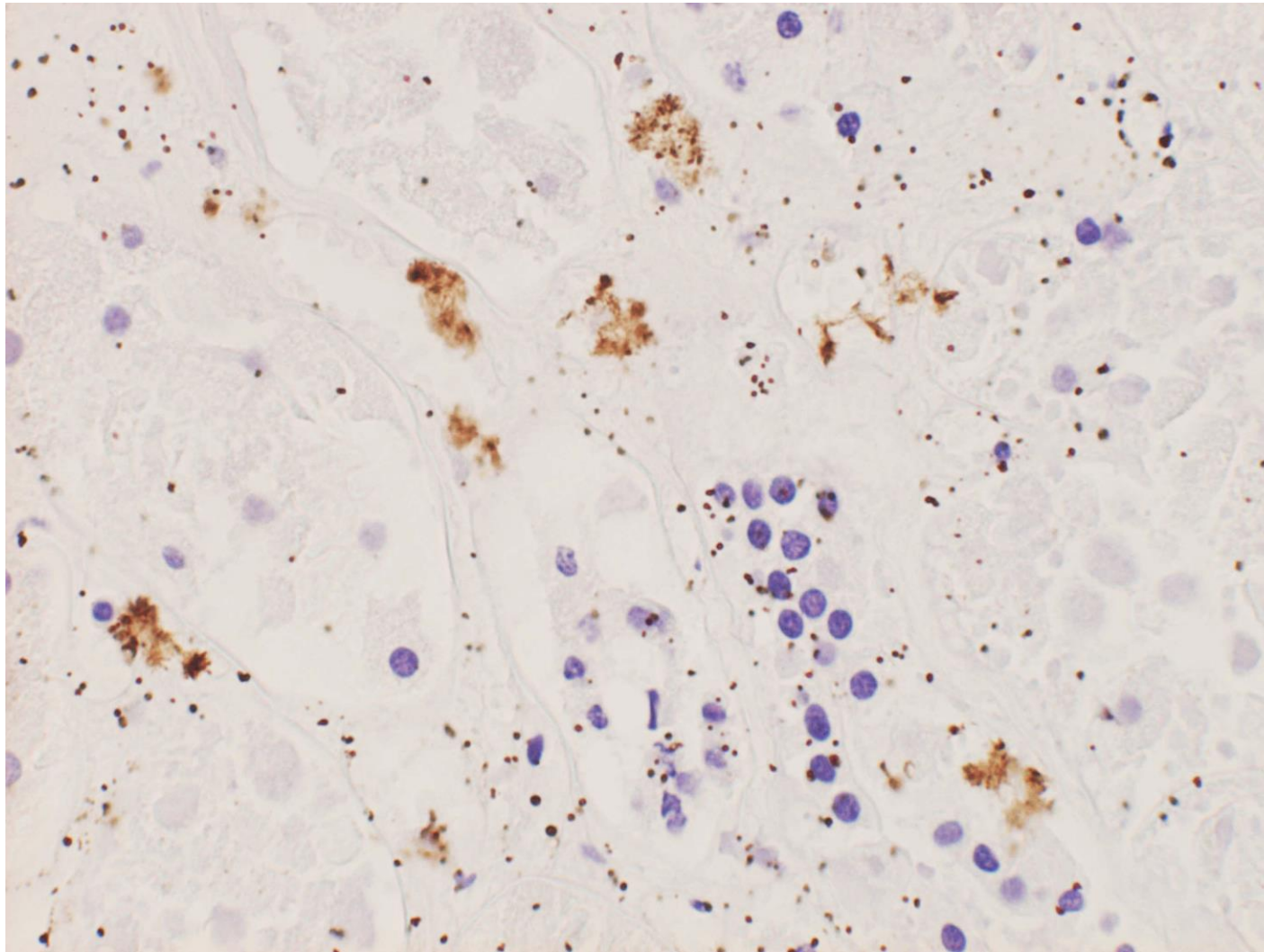
Fulminant *Capnocytophaga canimorsus* septicemia. In the peripheral blood, a neutrophil phagocytizes rods. May-Giemsa-2



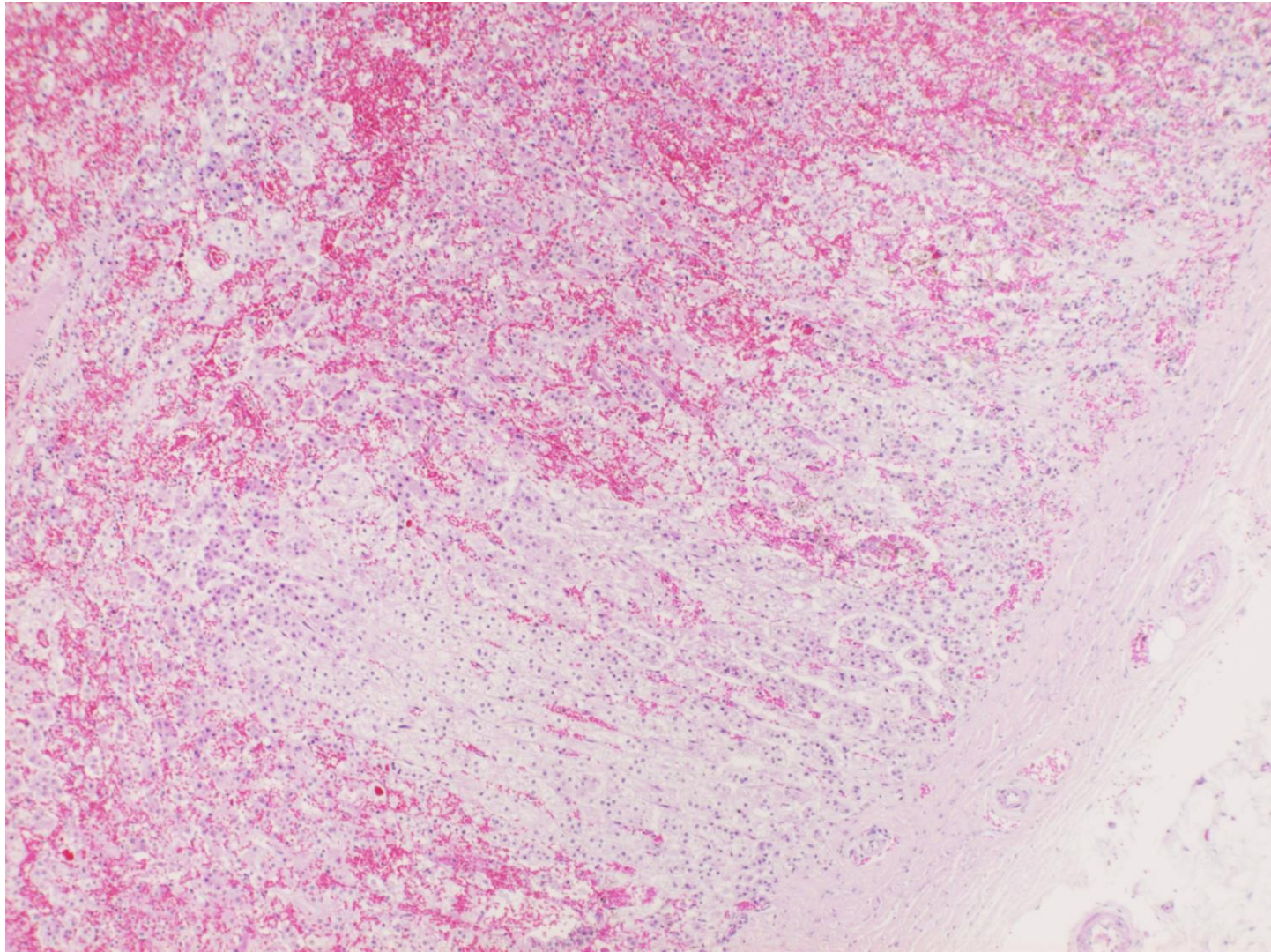
Fulminant *Capnocytophaga canimorsus* septicemia. In the peripheral blood, a neutrophil phagocytizes rods. May-Giemsa-3



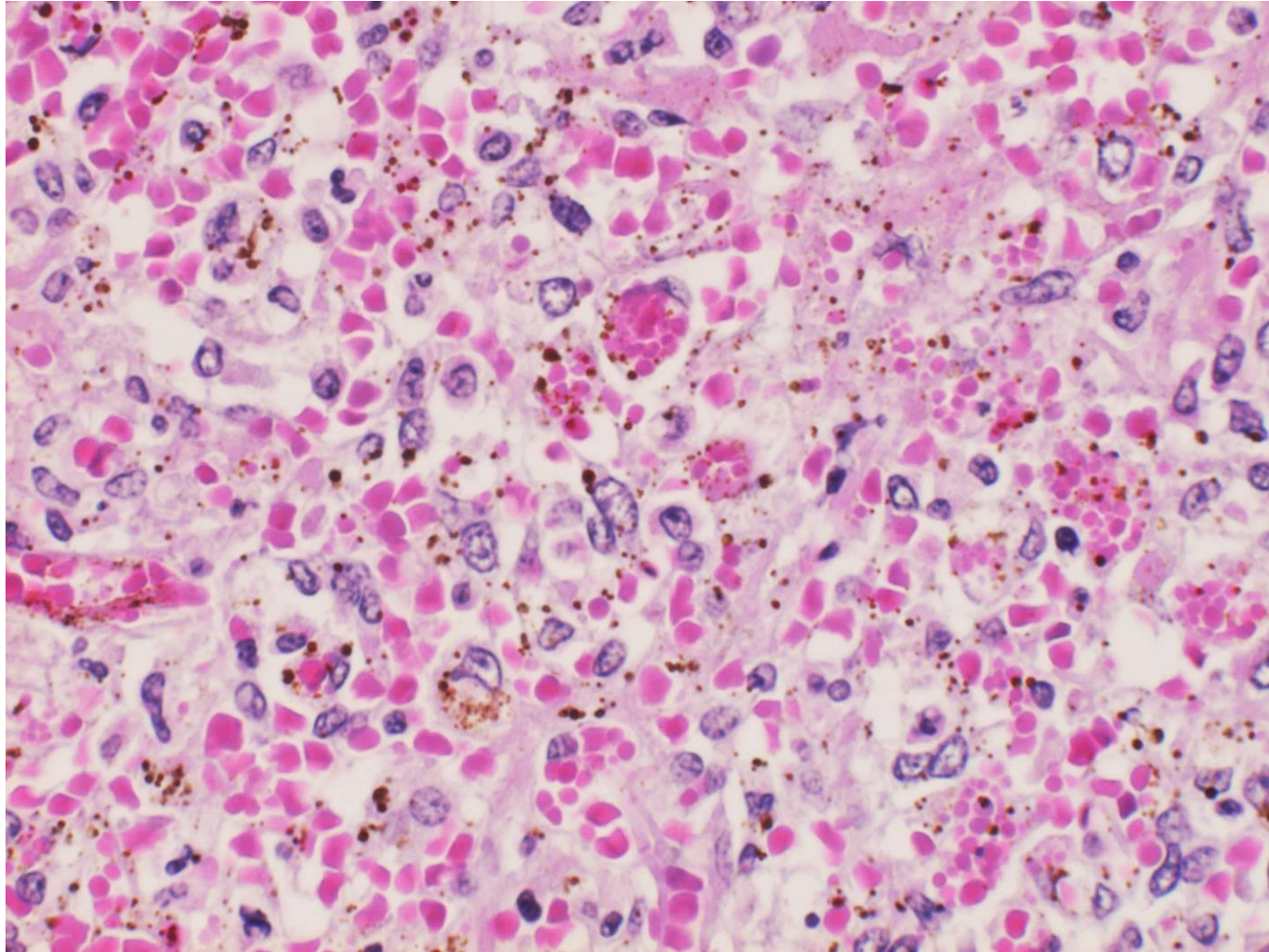
Fulminant *Capnocytophaga canimorsus* septicemia. The kidney shows features of bilateral cortical necrosis with fibrin thrombi in the glomerulus. This is a lethal phenomenon related to Schwartzman phenomenon. H&E-1



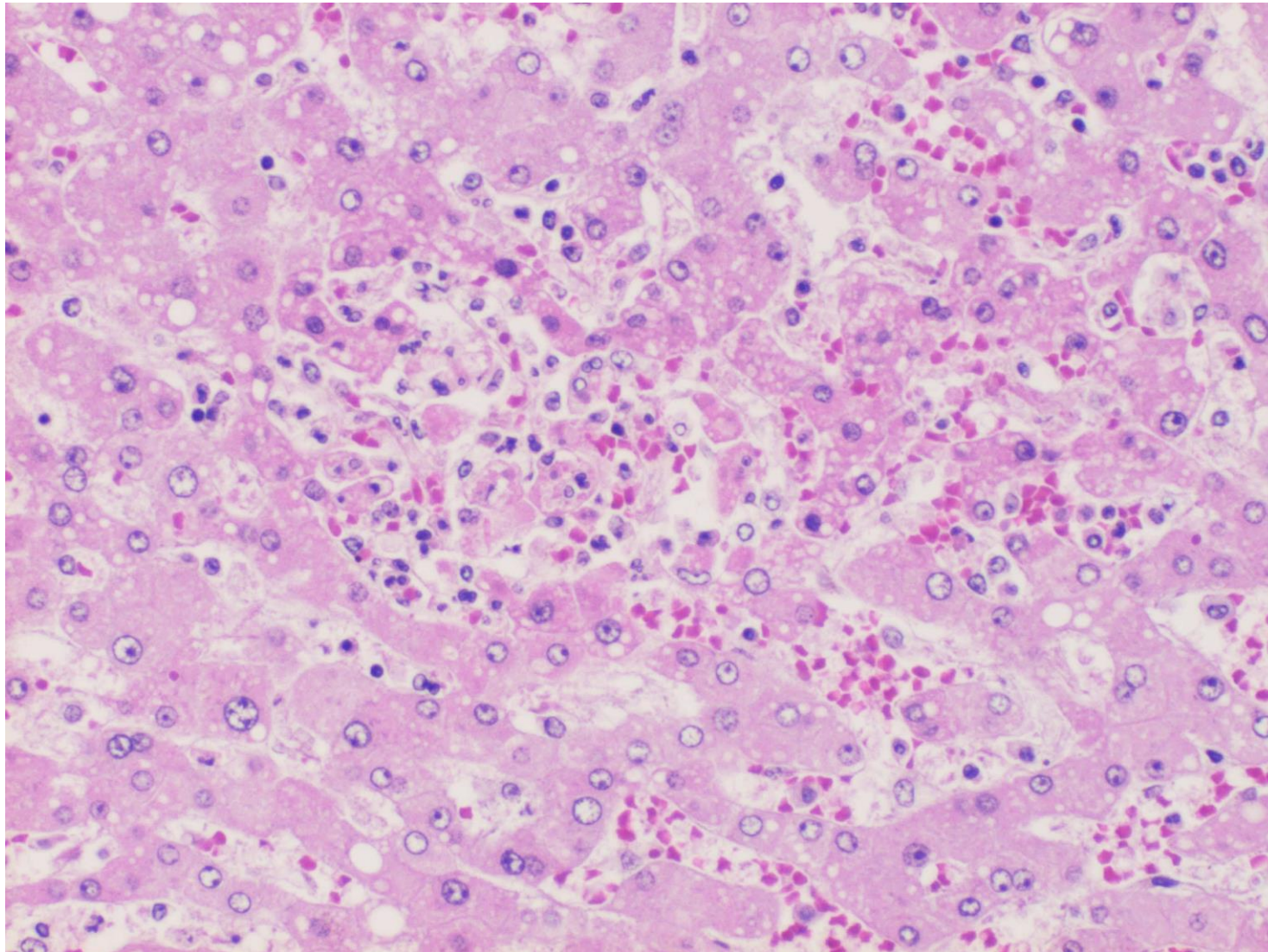
Fulminant *Capnocytophaga canimorsus* septicemia. The kidney shows infection of rods with immunoreactivity of cross-reactive *E. coli* Ag in the renal tubular epithelial cells. Immunostaining using antiserum against *E. coli*



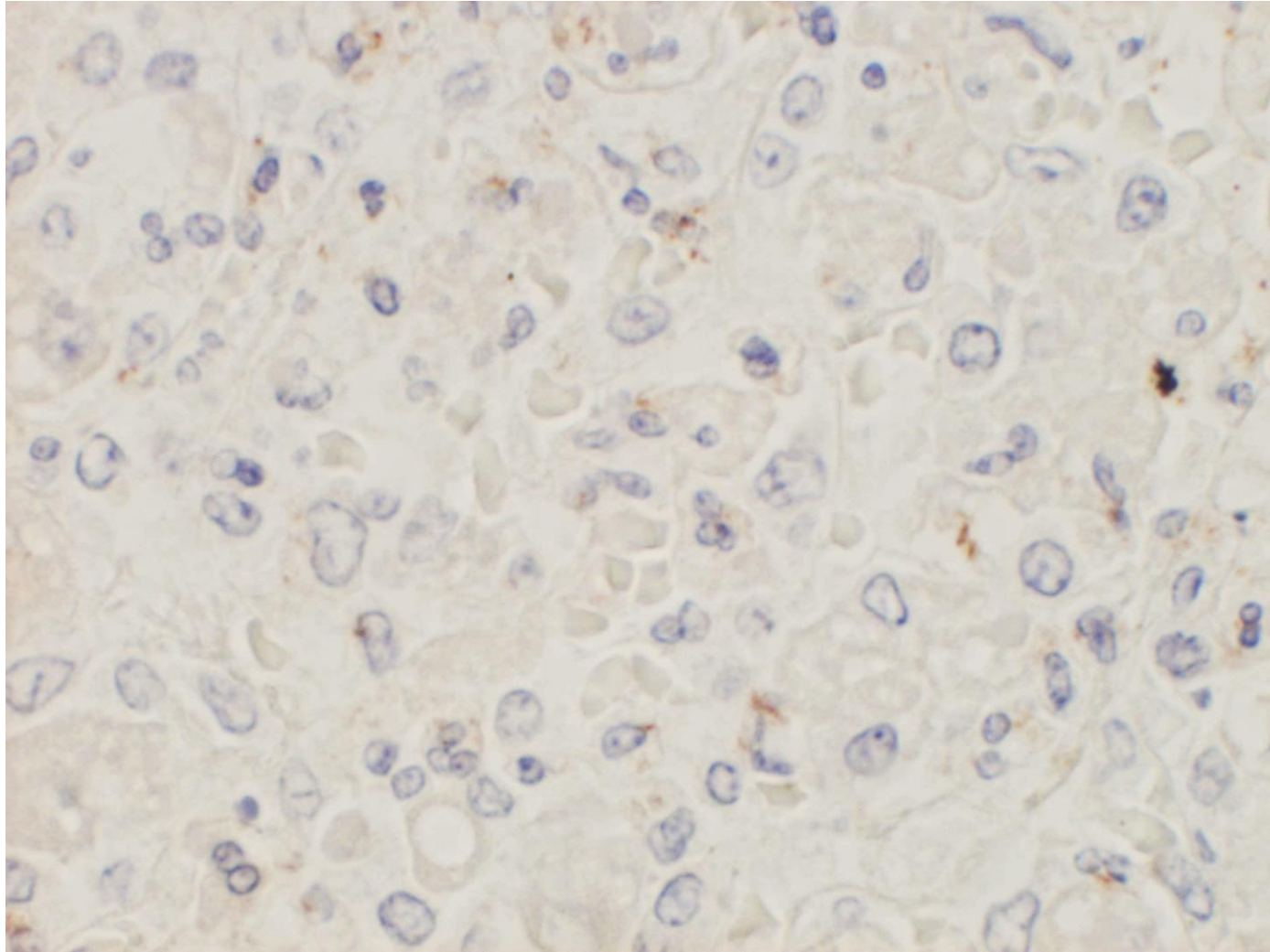
Fulminant *Capnocytophaga canimorsus* septicemia. The adrenal gland shows acute hemorrhage, indicating the association with Waterhouse-Friderichsen syndrome. H&E-2



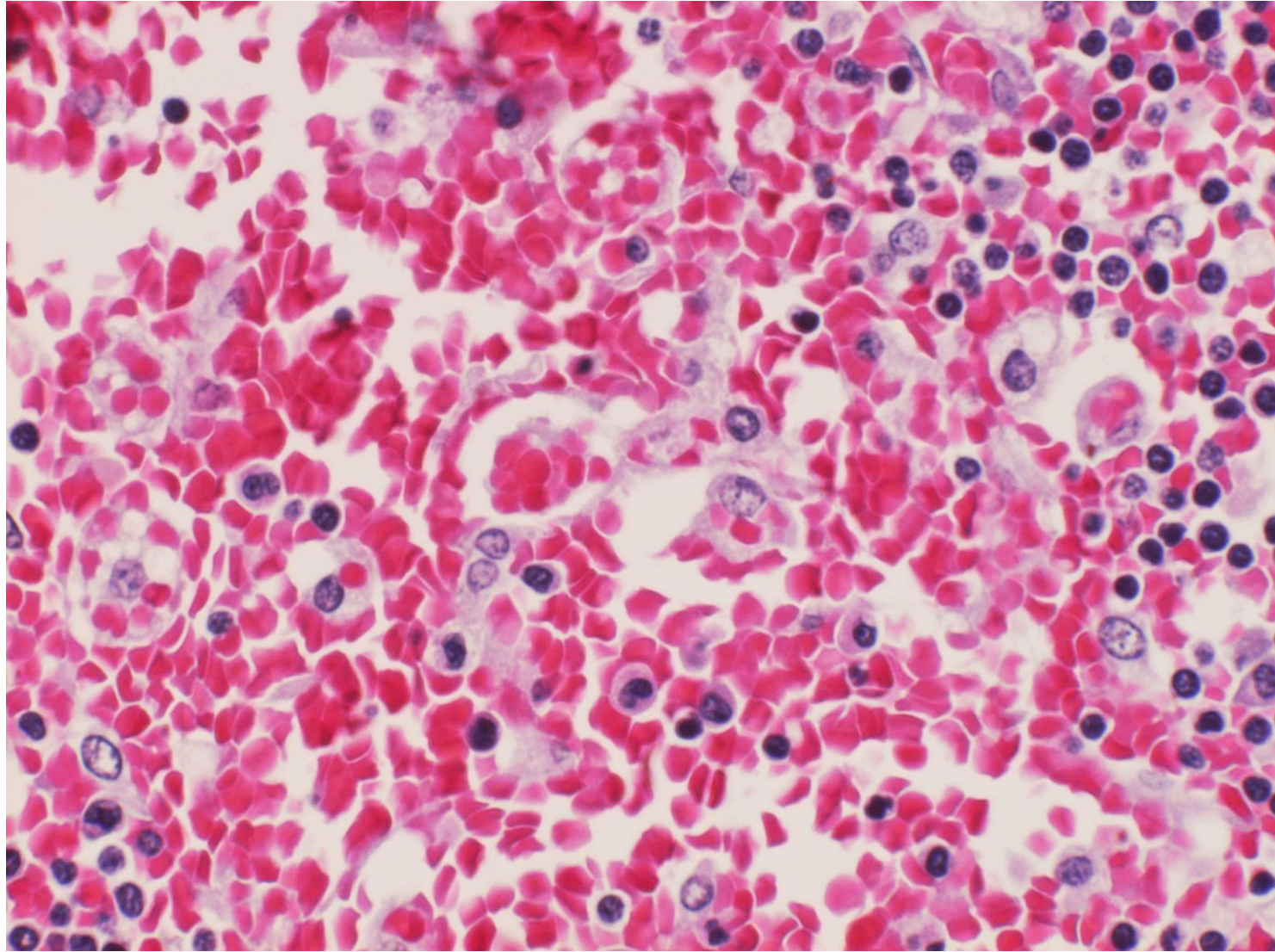
Fulminant *Capnocytophaga canimorsus* septicemia. The splenic red pulp shows active erythrophagocytosis by activated macrophages. Hypercytokinemia is indicated. H&E-3



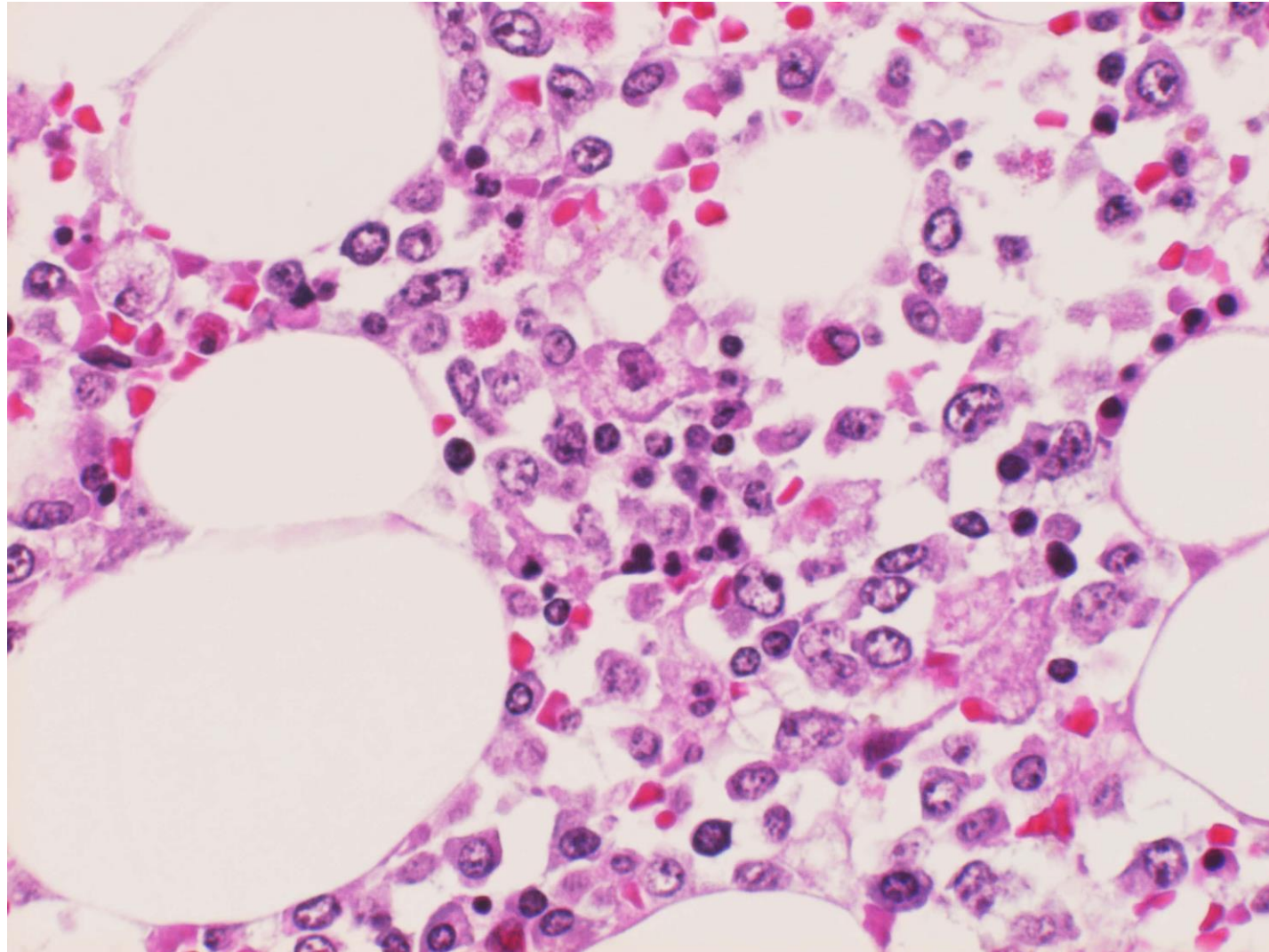
Fulminant *Capnocytophaga canimorsus* septicemia. The liver shows activation of Kupffer cells with hypercytokinemia-related active hemophagocytosis. H&E-4



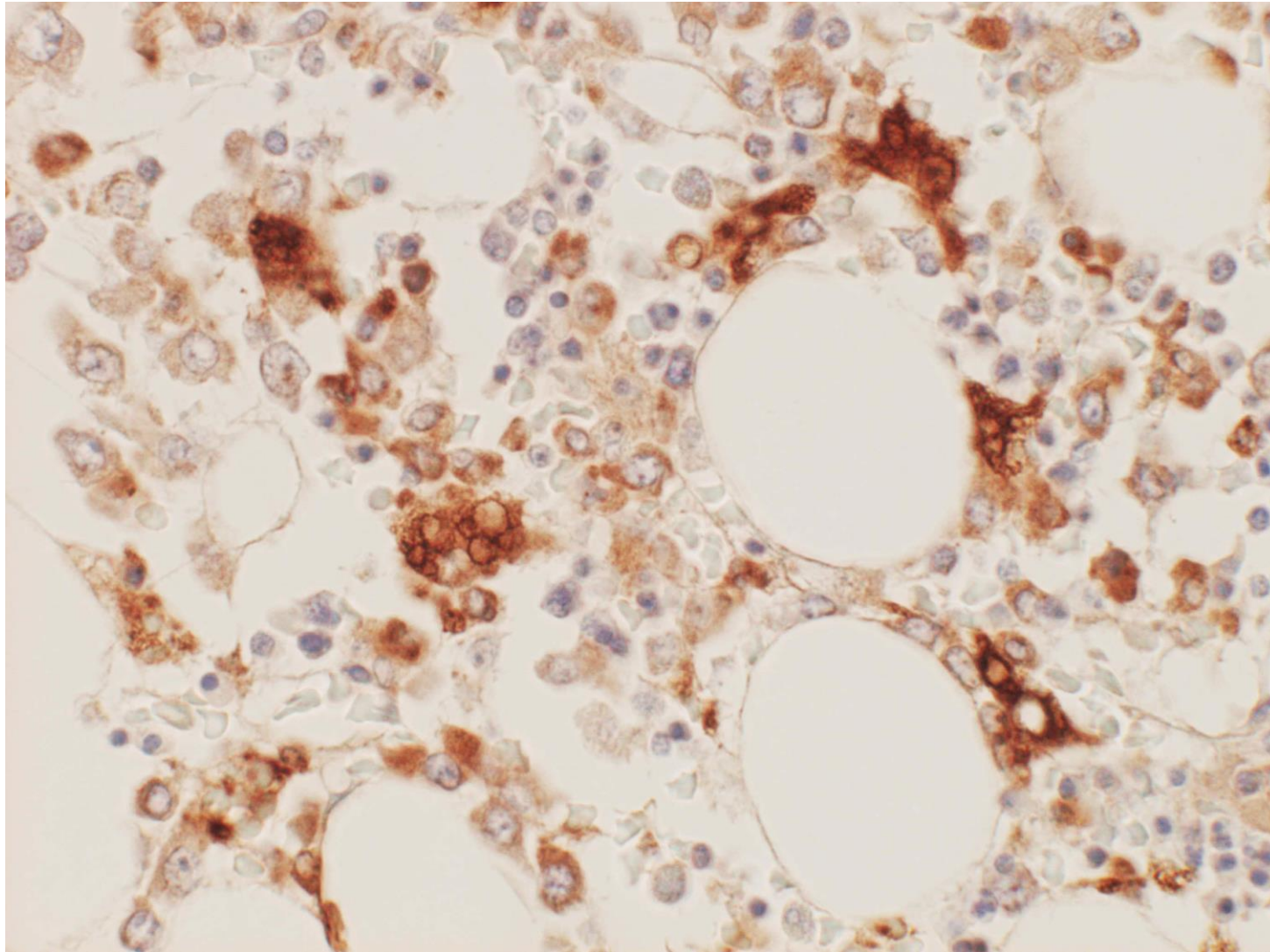
Fulminant *Capnocytophaga canimorsus* septicemia. The liver shows activation of Kupffer cells with infection of rods with cross-immunoreactivity with antiserum against *Treponema pallidum*. Immunostaining using antiserum against *T. pallidum*



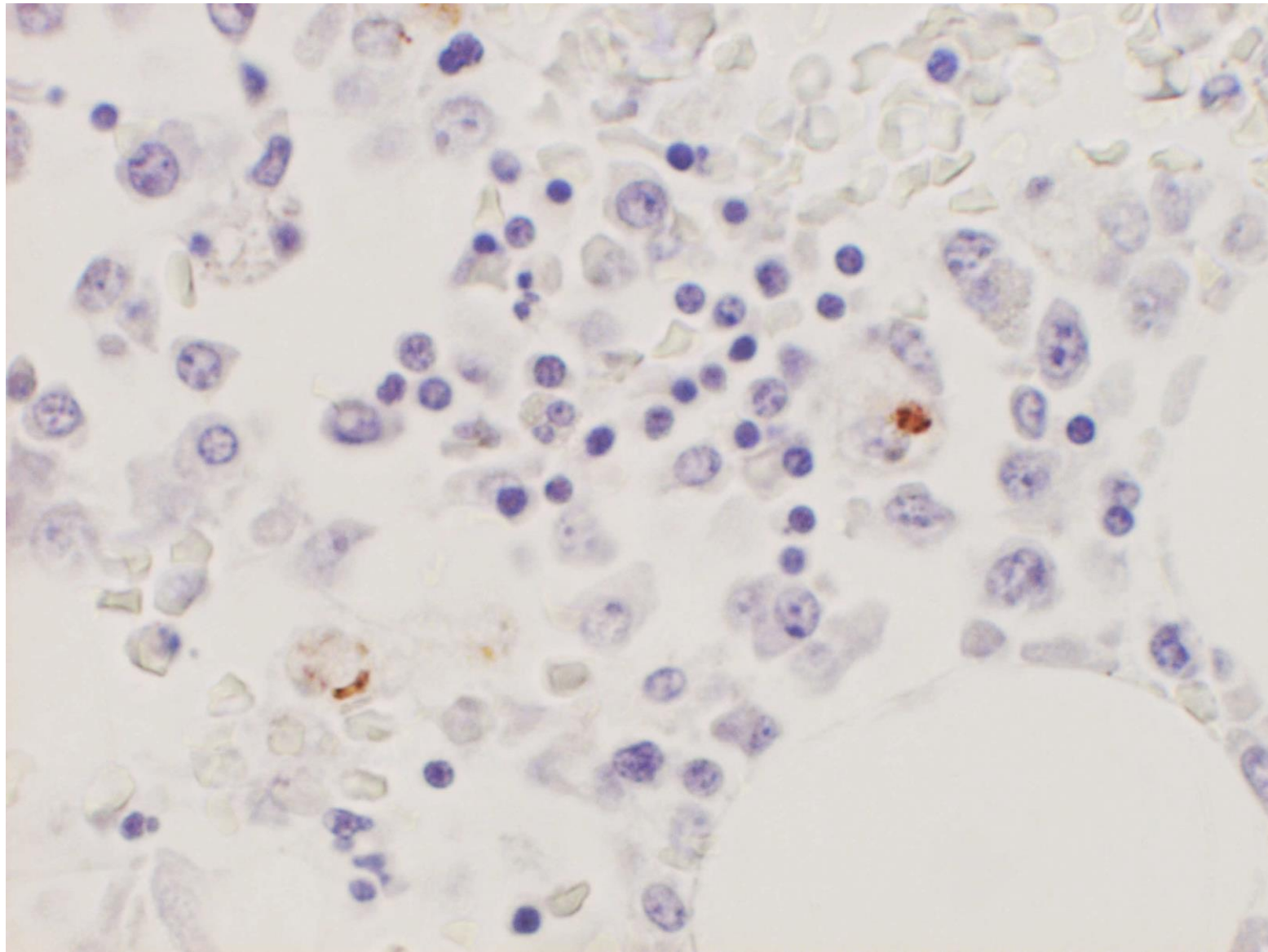
Fulminant *Capnocytophaga canimorsus* septicemia. The lymph node shows parenchymal hemorrhage with activation of macrophages with hypercytokinemia-related hemophagocytosis. H&E-5



Fulminant *Capnocytophaga canimorsus* septicemia. The bone marrow shows activation of macrophages with erythrophagocytosis. H&E-6



Fulminant *Capnocytophaga canimorsus* septicemia. The bone marrow shows activation of CD68-immunoreactive macrophages with erythrophagocytosis. Immunostaining for CD68



Fulminant *Capnocytophaga canimorsus* septicemia. The bone marrow shows activation of macrophages phagocytizing *E. coli* Ag-positive rods. Immunostaining using antiserum against *E. coli*