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Fibrinolytic therapy in *Capnocytophaga canimorsus* sepsis after dog bite

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Sir: A 55-year-old white woman was transferred to the ICU of our hospital because of purpura fulminans and sepsis. Five days earlier a dog had bitten her right hand. Since the day after the dog bite she had had fever, petechiae, and blue fingertips. Her medical history was unremarkable and without alcohol abuse. On admission she was restless, oral temperature was 39°C, blood pressure 105/50 mmHg, and pulse rate of 110 beats/min. Physical examination showed widespread petechiae and ecchymoses. The hands, lower arms, feet, and lower legs were extremely cold, pale, and tender. The fingertips showed dry gangrene. Laboratory tests are shown in Table 1. The provisional diagnosis was purpura fulminans due to severe sepsis after a dog bite, probable *Capnocytophaga canimorsus* Initial treatment consisted of large volume resuscitation with crystalloid fluids, low doses of nitroglycerin intravenously (5 µg/min), and amoxicillin-clavulanic acid (3×2.2 g daily). Furthermore we added ilomedine, a prostacyclin analogue with antiplatelet, vasodilatational, and fibrinolytic properties. After 12 h there was no improvement in the severe peripheral ischemic extremities. Low-dose urokinase (50,000 IE/h) was started. This resulted in a decrease in ischemia level of the upper and lower extremities. The circulation below the wrists and ankles remained very poor, and dry gangrene developed. One month after admission she had to undergo amputation of the left and right hands, of the left forefoot, and right leg below the knee. Cultures of the patient's blood and the oral swab of the dog revealed *C. canimorsus*.

Infections with *C canimorsus*, a long, thin, Gram-negative rod, occur predominantly in adults exposed to or bitten by dogs. Infection with *C. canimorsus* can result in fulminant disease and has a mortality rate of approximately 30% [1]. Risk factors for infections include alcoholism, splenectomy, and glucocorticoid therapy. The clinical manifestations of *C. canimorsus* septicemia include rash, cellulitis, arthritis, gangrene, sepsis, meningitis, brain abscess, and endocarditis [2]. Purpura fulminans is one of the manifestations of disseminated intravascular coagulopathy, predicting multiple organ failure and death in patients with purpuric sepsis syndrome, especially in *Neisseria meningitides* infections [3]. There are no studies on treatment of purpura fulminans due to *C. canimorsus*. In contrast, purpura fulminans due to meningococcal disease is well studied and is a model for evaluating new strategies for Gram-negative sepsis. Protein C levels are decreased in disseminated intravascular coagulation, severe sepsis, and purpura fulminas. Substitution of activated protein C has been proposed. We did not treat our patient with activated protein C because of her low platelet count. A platelet count below 30×10^9/l was a contraindication in the PROWESS study [4] for administration of activated protein C. There are only few data available that support the use streptokinase or recombinant tissue plasminogen activator [5] in disseminated microvascular thrombosis due to septic shock. Because of the serious situation of the extremities and the contraindication for treatment with activated protein C we treated our patient with fibrinolytic therapy (urokinase and ilomedine). This resulted in the clinical impression of a decreased level of ischemia.

In conclusion, we report a case in which fibrinolytic therapy appeared to be an alternative treatment in *C. canimorsus* sepsis with purpura fulminans. However, the efficacy of fibrinolytic therapy has not been confirmed.

Table 1 Laboratory test on admission

	Range	Mean
Hemoglobin (mmol/l)	7.5–10.0	8.2
Leukocytes ($\times10^9$/l)	4.0–10.0	20.2
Platelets ($x10^9$/l)	150–400	23
Prothrombin time (s)	8–11	10
Activated partial thromboplastin time (s)	22–32	33
Fibrinogen (g/l)	2.0–4.0	4.0
D dimer (mg/l)	0–0.5	>4.0
Urea nitrogen (mmol/l)	2.5–7.5	13.6
Creatinine (µmol/l)	60–100	82
Potassium (mmol/l)	3.5–5.0	3.4
Lactate dehydrogenase (E/l)	100–320	914
Aspartate aminotransferase (E/l)	0–30	549
Alanine aminotransferase (E/l)	1–30	466
Creatinine phosphokinase (E/l)	60–100	8,618
Total bilirubin (E/l)	0–17	23
Alkaline phosphatase (E/l)	30–100	134

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