

From lick to rods: Identifying *Capnocytophaga canimorsus* on blood film

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BACKGROUND

Septicaemia necessitates rapid diagnosis and intervention due to its critical nature. While Gram-stain culture remains the gold standard in the identification of organisms, the culture results may take a few days to become available. Occasionally, peripheral blood film assessment can help to expedite the identification of causative intracellular or extracellular pathogens. Here we report a case of *Capnocytophaga canimorsus* septicaemia and highlight the utility of peripheral blood smear in the rapid identification of the organism.

DISCUSSIONS

Capnocytophaga canimorsus is a Gram-negative commensal in the oral cavity of dogs and cats, which causes rare but severe infections in humans^{1,2,3}. The pathognomonic findings of intracellular and extracellular long, thin, fusiform rods in the peripheral blood smear, while uncommon, can help to expedite the diagnosis in these often very unwell patients with fulminant septicaemia, allowing treating clinicians to promptly choose a more targeted therapy¹.

CONCLUSIONS

- Peripheral blood smear remains a valuable tool for the rapid identification of causative organism in bacteraemia, enabling prompt diagnosis and management in critically ill patients.

REFERENCES

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CASE

A 63-year-old male presented with non-neutropenic septic shock, which rapidly progressed to severe coagulopathy, multi-organ failure and bilateral lower limb ischaemia. Apart from a distant history of treatment with PD-1 inhibitor for colorectal cancer over 6 months prior, there were no other identifiable risk factors for immunosuppression. Initial investigations demonstrated a high anion gap metabolic acidosis (HAGMA), multi-organ failure and disseminated intravascular coagulation. A CT chest/abdomen/pelvis demonstrated renal cortical necrosis but no obvious foci of infection.

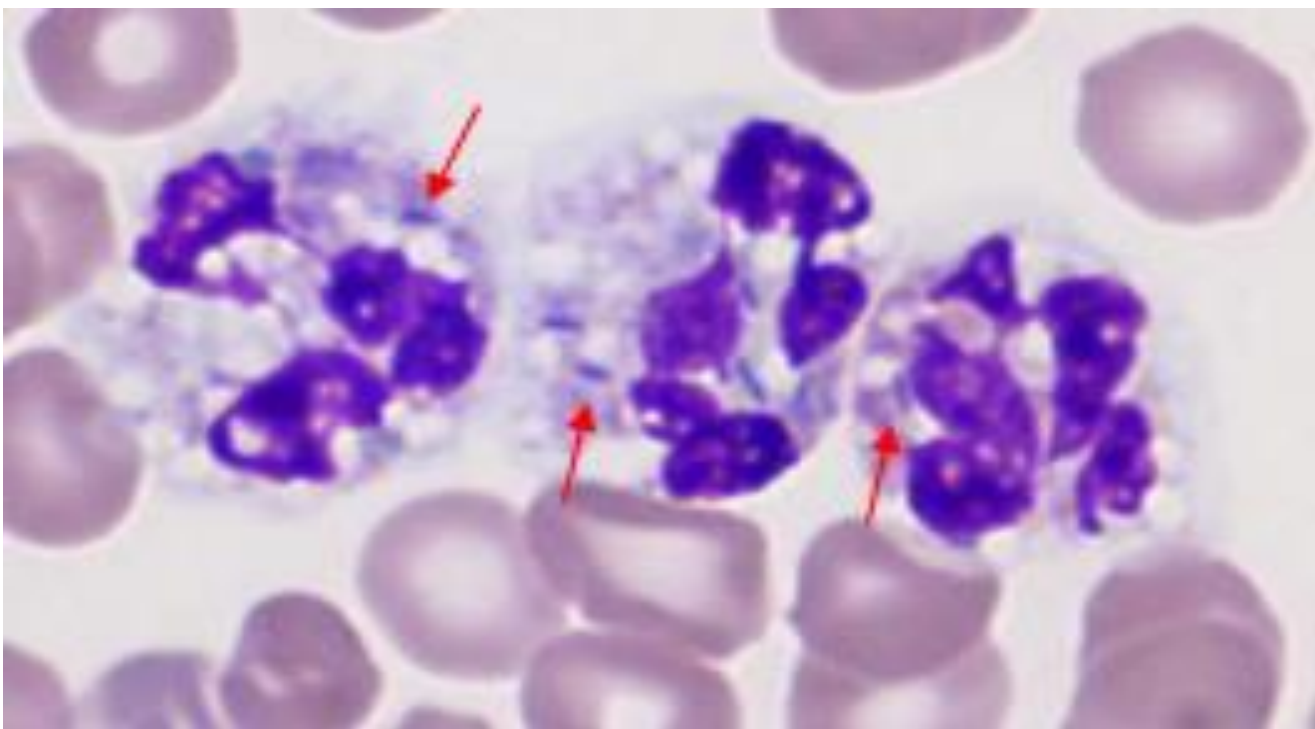


Figure 1: Peripheral blood showing intracellular fusiform rods in neutrophils

Investigations	On admission	9 hours later	Reference range
Hb (g/L)	130	136	128-175
WBC (x10 ⁹ /L)	3.1	10.2	4.5-11.0
Platelets (10 ⁹ /L)			150-400
CRP (mg/L)	106	86	<6
Creatinine (umol/L)	176	314	60-110
eGFR (mL/min/1.73m ²)	35	17	>89
ALT (U/L)	175	1012	5-40
AST (U/L)	332	2057	5-35
APTT (seconds)	102.0	94.0	25.0-38.0
PT (seconds)	44.0	45.0	11.0-17.0
Fibrinogen (g/L)	1.6	2.0	2.0-4.0
Lactate (mmol/L)	5.5	8.4	<2.0

Table 1: Initial investigations

Peripheral blood smear (Giemsa staining) showed neutrophils with toxic changes and there was abundance of both intracellular and extracellular fusiform bacteria, suspicious for *Capnocytophaga sp.* Further questioning revealed a history of dog scratch on his lower limb with frequent licking from the family pet.

Gram stain culture of aerobic and anaerobic bottles subsequently confirmed *Capnocytophaga canimorsus* on Day 2 of admission. The patient was initially treated with meropenem, and switched to piperacillin-tazobactam for a total course of two weeks. The patient required mechanical ventilation, vasopressor and inotropic support, and renal replacement therapy in intensive care unit for two weeks. He subsequently underwent bilateral below knee amputations and remains dialysis-dependent.