

# Capnocytophaga Canimorsus Infection in a Hispanic Male After a Dog Bite

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## Introduction

- *Capnocytophaga canimorsus* is a rare but deadly zoonoses from contact with a dog [1-7]
- In the Netherlands, there were .67 million cases reported per year. Approximately 50% of *Capnocytophaga canimorsus* cases reported were associated with dog bites. [3]
- Symptoms include disseminated purpura, DIC, septic shock, bacteremia, multiorgan failure, altered mental status and meningitis. [1-3]
- People at risk are immunocompromised individuals, especially those with asplenia, cirrhosis and heavy alcohol use. [6]
- *Capnocytophaga* should be on the differential with dog-bite associated sepsis, as mortality rate is high, even in immunocompetent patients. [1,4,5,8]

## Case Description



Figure 1: Patient presented with cyanosis and livedo racemosa. A) Purpuric lesions on the patient's legs. B) Distal necrosis of the patient's toes.

## Case Presentation

- 38-year-old Hispanic male presented to hospital with rapid onset acute hypoxic respiratory failure; intubation required
- PMHx: hemorrhoids, risky sexual activity, depression and alcohol abuse
- Symptoms: N&V; multiple episodes of diarrhea; cyanosis and livedo racemosa (Fig. 1)

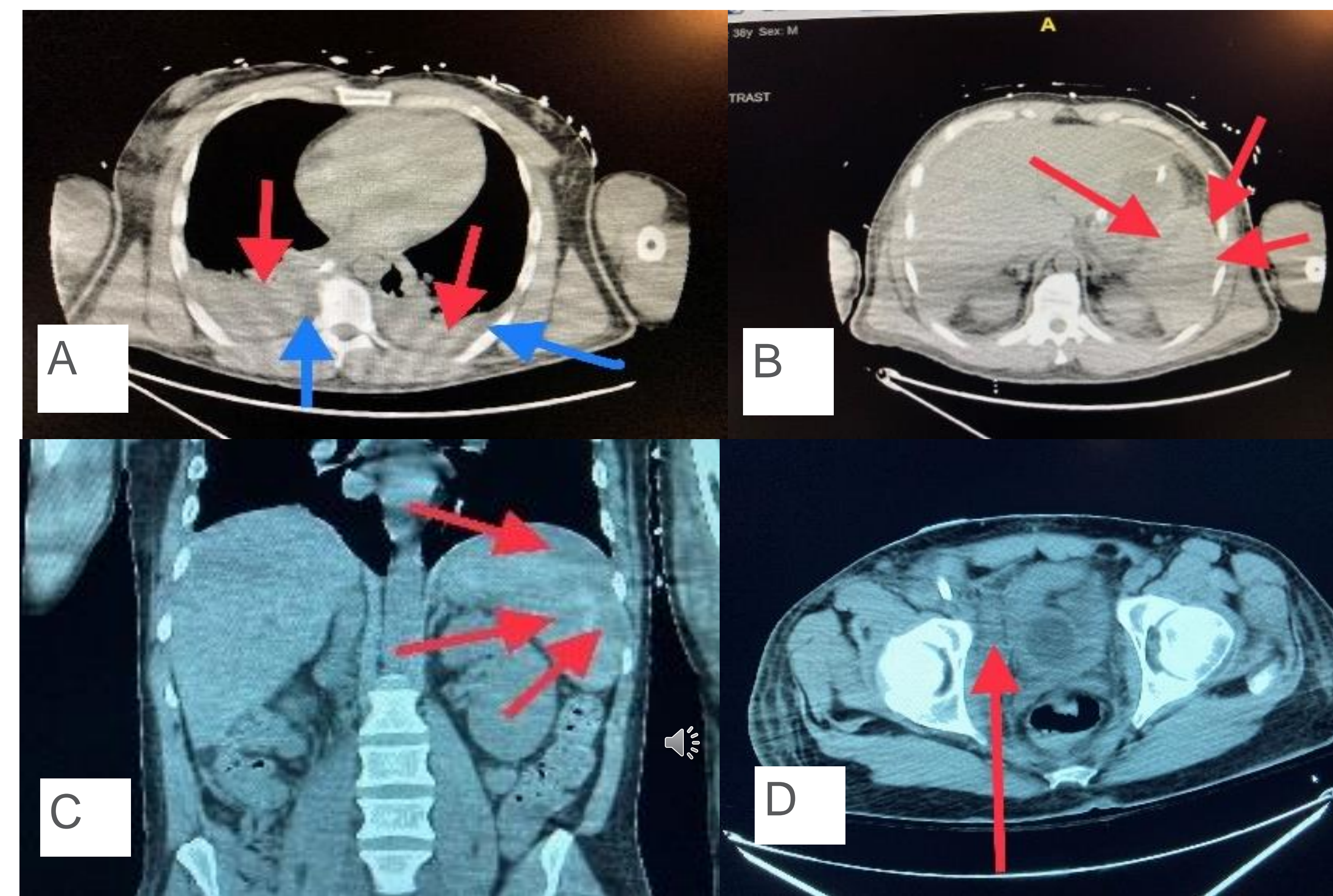


Figure 2: Computerized tomography (CT) chest, abdomen, and pelvis. A) The red lines are pointing toward bilateral pleural effusions. The blue lines are pointing towards hypointense densities, which indicate bilateral atelectasis. B) A subcapsular hematoma is present on the anterolateral aspects of the spleen. C) The hypointense lesions show multiple splenic infarcts. D) Right extraperitoneal hematoma.

## Discussion

### History and Diagnosis

- History of animal contact when obtaining history about a patient with sepsis is essential [1-7]
- *Capnocytophaga canimorsus* should be high on the differential when severe sepsis with multiorgan dysfunction is present as well as DIC after a dog bite, especially if patient is immunocompromised. [1-8]
- If the patient has a rash appearing like livedo racemosa, *Capnocytophaga* must be ruled out [9].
- Nanopore sequencing and PCR can expedite diagnosis, as blood cultures take time to grow. [11-13]
- Slow-growing gram-negative rods in the peripheral blood smear is a clue to *capnocytophaga canimorsus*. [14]

### Antibiotics and Treatment

- ABX should include either meropenem or piperacillin/tazobactam [10]
- ABX should be administered immediately to decrease chances of mortality. [1,10]
- Investigation regarding prophylactic antibiotics are needed.
- Studies on administering IVIG to patients with *Capnocytophaga* bacteremia should be done to observe their effects on morbidity and mortality.

## References

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## Timeline of Events

38-year old Hispanic male presents to hospital with rapid onset acute hypoxic respiratory failure; intubation required, had dog bite week prior

PMHx: hemorrhoids, risky sexual activity, depression and alcohol abuse

Symptoms: N&V; multiple episodes of diarrhea; cyanosis and livedo reticularis (Fig. 1)

Vitals indicated septic and cardiogenic shock

Workup indicated acute liver failure, acute tubular necrosis requiring continuous renal replacement therapy (CRRT), DIC, elevated troponins and blood loss anemia. [Table 1]

Table 1: Patients Lab Values

Lab (Reference)	Patient's Values
PT (11 to 13.5)	39.4
PTT (25-35)	286
Fibrinogen (200-400)	80
D-dimer (220-500)	>128,000
C-reactive protein (<.29)	20.10
White Blood cell (4.5-11)	11.9
Platelet (150-450)	17
Bicarbonate (22-29)	15
Chloride (96-106)	93
Phosphorus (2.8-4.5)	10.7
Creatinine (.74-1.35)	4.9
AST (8 to 33)	14,206
ALT (4 to 36)	4029
Total bilirubin (.1 to 1.2)	8.2
Direct bilirubin (<.3)	4.6
Troponin (<.78)	4167
Lactic acid (<2)	20.5
Arterial blood gas pH (7.35-7.45)	7.085
ABG CO2 (35-45)	63.8
ABG O2 (75-100)	54

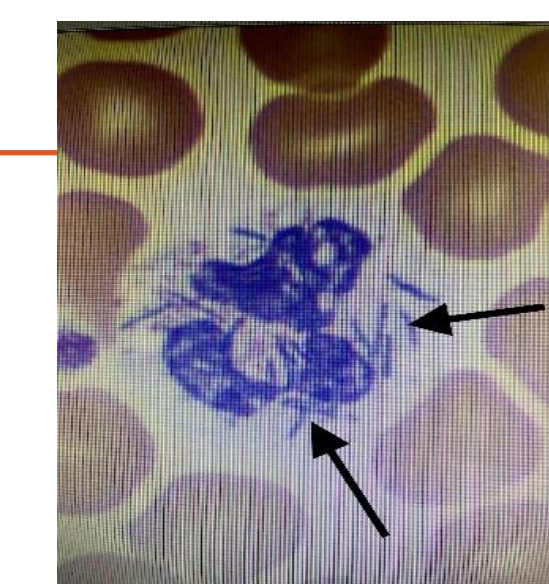
Pressor requirements decreased with fluid resuscitation.

Liver transaminases, cardiac ejection fraction, troponins, and urine output improved with antibiotics and CRRT.

Abdominal ultrasound showed increased liver echogenicity with hepatomegaly

Echocardiogram showed an ejection fraction of 35 to 40%.

Peripheral blood smear showed slow-growing gram-negative bacilli



Sepsis and lactic acidosis continued to worsen despite treatment

Blood cultures grew *Capnocytophaga canimorsus*.

Patient weaned off vasopressors and taken out of ICU

Patient hemodynamically stable

Discharge to long-term acute care facility for antibiotics and wound care.

Maximum doses of dopamine, norepinephrine, vasopressin, and phenylephrine for sepsis

On admission, antibiotics, with their respective coverages in parentheses, included vancomycin (*Streptococcus pneumonia meningitis*), meropenem (*Neisseria meningitidis, Capnocytophaga, Shigella, Salmonella*), ampicillin-sulbactam (*Listeria monocytogenes meningitis and Pasteurella*), and doxycycline (*Vibrio*)

Transfused with cryoprecipitate, fresh frozen plasma, and packed red blood cells

IVIG was administered

Micafungin started

Fevers resume

Vancomycin restarted for MRSA coverage, Repeat cultures negative, discontinued

Meropenem continued; Clindamycin added

Other antibiotics and micafungin removed

Transitioned from CRRT to hemodialysis

Received tetanus, meningococcal conjugate, pneumococcal conjugate, serogroup B meningococcal, and Hemophilus influenzae type B vaccines

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