

# An Unsuspecting Source: The Cause of Three Pressor Mixed Shock

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## INTRODUCTION

*Pasteurella* spp are facultative anaerobic gram-negative coccobacilli, which colonize the oral and nasopharyngeal cavities, as well as the upper respiratory tract, of various domestic and wild animal species, particularly cats and dogs. After the bite, patients can develop signs of infection within the first 24 hours of exposure. Most common infections are skin and soft tissue infections such as cellulitis. However, it is well known that these pathogens can cause, in immunocompromised subjects and/or in patients with chronic predisposing conditions, more serious infections, such as pneumonia, peritonitis, UTI, prosthetic joint infection, bacteremia, meningitis, septic shock, or even death. In patients with *Pasteurella* bacteremia, mortality rates have been documented as high as 30%.

## CASE PRESENTATION

56 y.o. M with history of HFrEF (EF 20-30%), CKD III, and antiphospholipid syndrome on warfarin transferred to the VAICU after presenting with hypotension refractory to fluid resuscitation, arriving on 0.2 mcg/min norepinephrine with a MAP of 66.

### PRIOR TO VA ADMISSION:

BP 70/40  
HR 70s  
97% RA, COVID negative  
INR >10  
Troponin 0.1 ng/L  
BNP 1015 pg/mL  
Lactate 3.0 mmol/L  
BL LE duplex negative



s/p 2L bolus, 40mg IV furosemide, norepinephrine, vancomycin, cefepime, metronidazole



Figure 1: photographic documentation of LLE wound on presentation

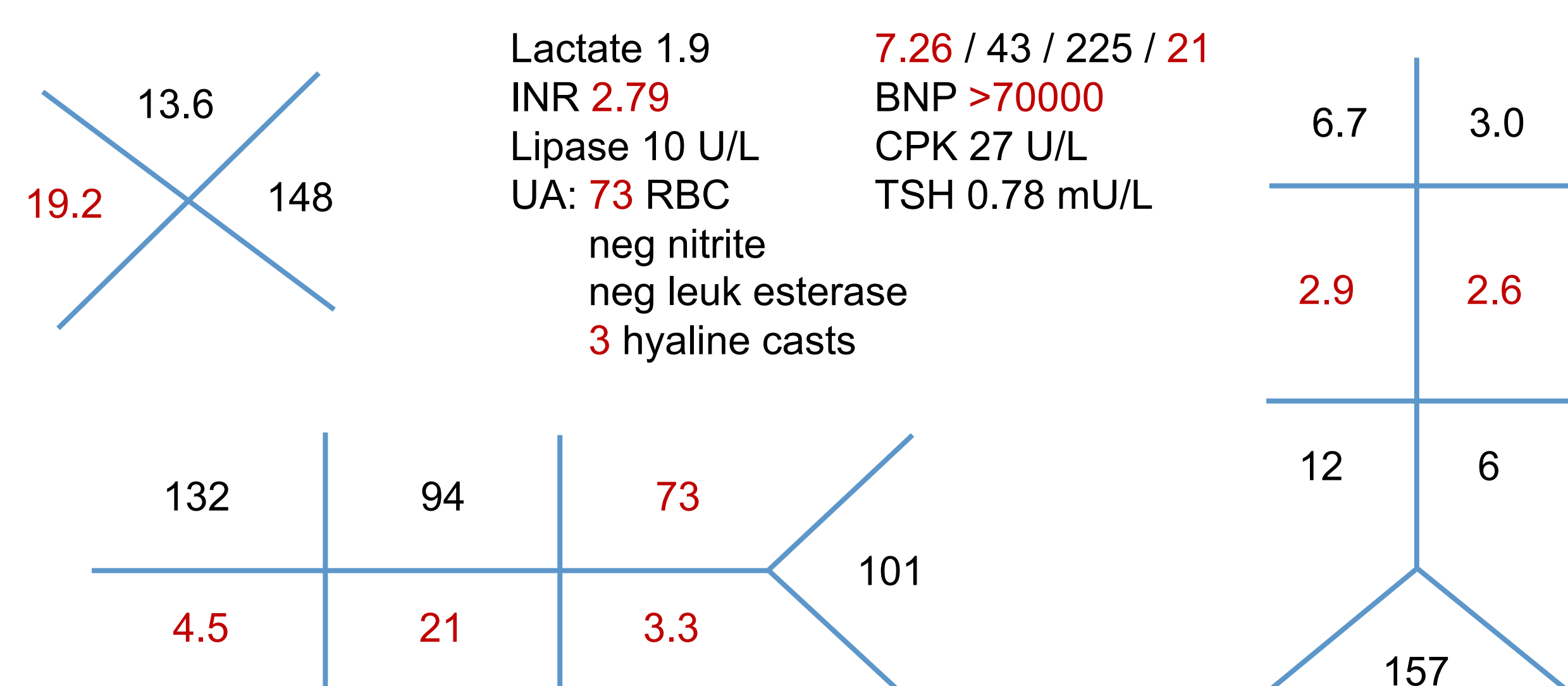
### HISTORY, PER PATIENT:

Currently on camper van trip from Arkansas to PNW  
+ fevers, chills, sweating, pain w/ urination, leg wound (fig. 1) "looks better than usual"  
No longer urinating  
+ 15 lbs  
Felt dizzy so decided to come to emergency department

Temp 98.2, HR 130, RR 23, BP 85/60 on 0.2 NE, Wt 111kg, 98% on RA  
diaphoretic, tachycardic, regular rhythm, lungs CTAB, non-tender and non-distended abdomen, bilateral LE edema, large healing wound on L leg, skin mottled on thighs

EKG: SVT with rates in 130s, LBBB

TTE (3 months prior): EF 25%, severe diffuse hypokinesis, RVSP estimated moderately to markedly high, moderate tricuspid regurgitation



## TIMELINE

Presented  
Fluid resuscitation  
Lasix  
Broad-spectrum abx  
BL LE doppler negative  
Norepinephrine  
Transferred  
Admitted to VAICU  
Vasopressin  
Intubated/Sedated  
Epinephrine  
Lasix gtt  
Epi discontinued  
Dobutamine  
Unstable tachycardia  
Adenosine  
+ clindamycin  
Lasix gtt discontinued  
Unstable tachycardia  
Adenosine  
Unstable tachycardia  
Adenosine  
GNRs growth  
L ankle aspiration  
*Pasteurella multocida* growth  
Vasopressin discontinued  
Extubated  
Norepi discontinued  
Dobutamine weaned  
Narrowed antibiotics  
Transferred to floor  
Unstable tachycardia  
Transferred to ICU  
Cardioverted  
Transferred to floor  
Discharged

## CASE CONTINUED

Persistently hypotensive → vasopressin 0.04u/min + dobutamine 5mcg/min, intubated  
With all other infectious work-up negative, turned to chronic LE wound.  
Patient awoke from sedation every time leg palpated, so concern for "pain out of proportion to exam" → LE plan film ordered (fig. 2).



Figure 2: XR of LLE, read as concerning for subQ gas

Clindamycin added for concern for NSTI, surgery team did not think intervention necessary, and patient was too clinically unstable to leave ICU.

Persistently tachycardic (hypotensive) so decision made to give adenosine → NSR

Blood cultures from outside hospital grew GNRs, which speciated to *Pasteurella multocida*. It was discovered that the patient's cat was traveling in the camper van.

After 72 hours of broad-spectrum antibiotics and triple pressor support, the patient stabilized. Pressors were discontinued follow by extubation. Aspirate of L ankle joint suggested septic arthritis which eventually grew *P. multocida*.

Unfortunately, the patient had to be transferred back for tachycardia causing hypotension. The decision was made to cardiovert the patient, which solved the unstable tachycardia.

Ultimately, a lick by his cat's tongue led to cellulitis, bacteremia, septic shock, osteomyelitis, myositis, and septic arthritis of L ankle joint requiring L BKA.

## DISCUSSION

- It was unclear whether our patient had subQ gas (surgery did not think it was NSTI), but addition of clindamycin seemed to help, though could have simply been more time on antibiotics that helped
- It was very difficult to support his blood pressure and not worsen the unstable tachycardia with pressors – severe heart disease made the treatment of septic shock more difficult
- His EKG was never clearly SVT, thought to potentially be flutter but not seen on conversion to NSR after adenosine
- Triple pressor survival was as low as 10% in an in-hospital mortality study
- Very uncommon for immunocompetent patient to develop severe shock from *Pasteurella* bacteremia
- Many cases of *P. multocida* bacteremia refractory to pressors
- Case study (8 case reports) where all patients were elderly or immunocompromised
- One case of 56 y.o. male without animal exposure who developed shock and died

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