

## Introduction

Patients with a history of splenectomy have a higher prevalence of infections with encapsulated organisms due to decreased phagocytic activity and humoral response. One such rare organism is *Raoultella ornithinolytica*, a Gram-negative bacillus commonly found in the aquatic environment. Here we present a rare case of this bacterium causing liver abscess.

## Clinical Case

72-year-old female with a history of hypertension, hyperlipidemia, and splenectomy (secondary to abdominal trauma) presented after being found down. She complained of a history of diarrhea 2 days ago.

### Past Medical History:

Hypertension, Hyperlipidemia

### Medications:

Enalapril, Simvastatin

### Family History:

No significant family history

### Social History:

No alcohol, smoking or recreational drug use

### Review of systems:

Positive for confusion, loss of consciousness, fever, diarrhea, vomiting

Negative for cough, dysuria, bleeding, weight loss

### Physical Exam:

Vital signs: BP 86/46 mm Hg, PR107 bpm, RR 15, Temp 101.8F, O2 93% on room air

General: Alert & oriented, malnourished

HENT: Normocephalic, mucosa, no JVD

Cardiac: Elevated rate, normal rhythm. No added sounds  
 Pulmonary: Lungs clear to auscultation bilaterally

MSK: No edema or tenderness in any extremity

Abdomen: No organomegaly or shifting dullness

Skin: No hyperpigmentation, LE ulcers or wounds

Neuro: Asterixis (-)

Psychiatric: Congruent mood and affect

## Hospital Course

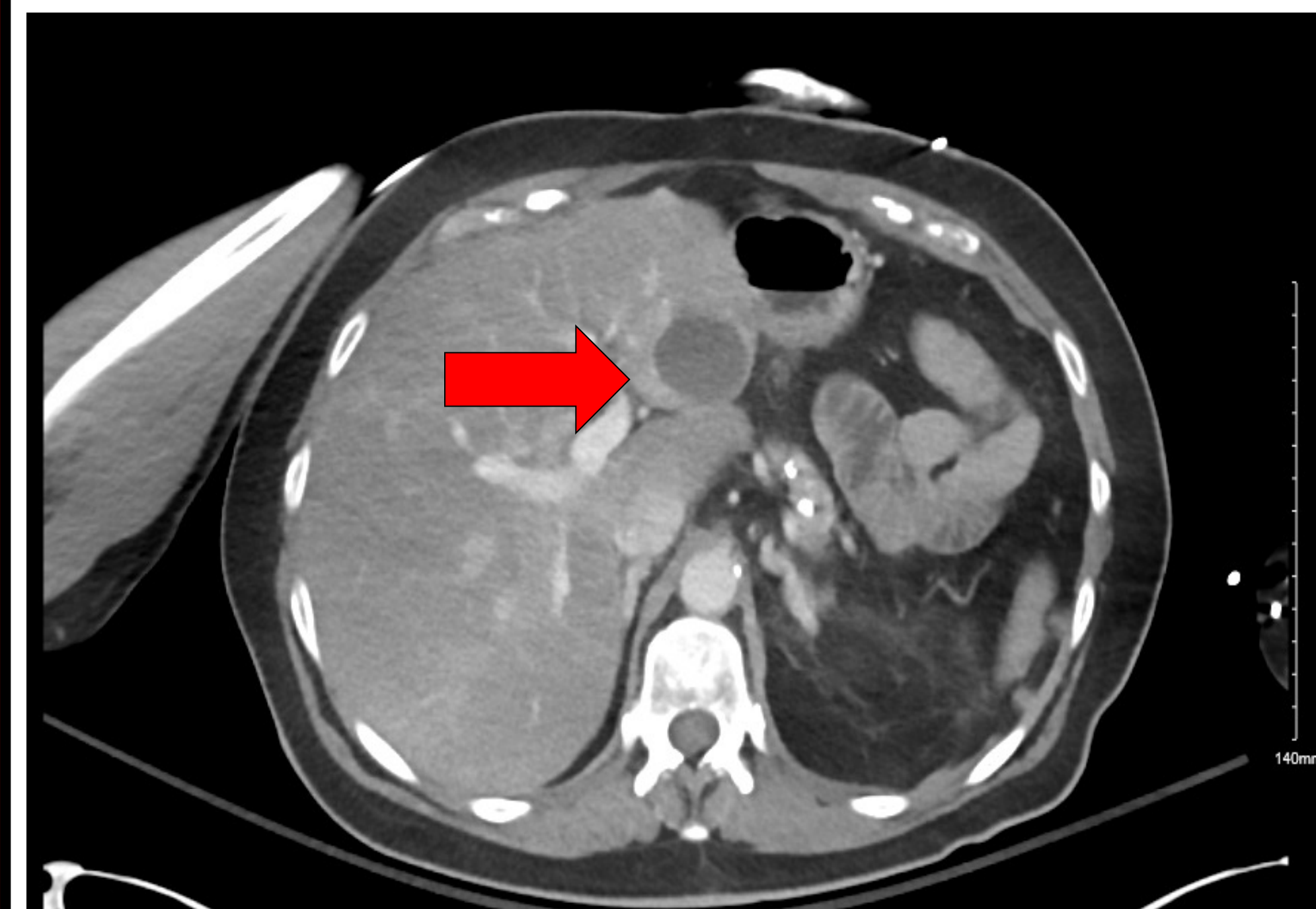
### Initial work-up

- Hemoglobin 10.4 g/dL; Leukocytes 14,600/uL; and Platelets 165,000/uL
- Na: 132, K: 3.6, Cl: 100, HCO3: 32, BUN: 38, Cr: 1.8
- Bilirubin 1.4, AST 111, ALT 87, Alk Phos 148, Albumin: 2.9 g/dL
- Lactic Acid 4.8
- **Blood culture: *Klebsiella oxytoca* (2/2)** – on Verigene multiplex PCR testing
- CT Head: No acute intracranial abnormality
- 2D echo: LV ejection fraction 60%, grade 2 diastolic dysfunction

- CT abdomen/pelvis with contrast: Hepatic steatosis, hypodense lesion in the left lobe of the liver measuring 3.2 x 2.8 x 5.4 cm
- US abdomen: A large hypoechoic ovoid lesion containing subtle internal echoes noted within the left hepatic lobe measuring 4.4 cm x 6.9 cm x 3.3 cm and surrounding edematous changes of the liver seen. Likely **hepatic abscess**

35 cc dark brown fluid aspirated: Yielded *Raoultella ornithinolytica*

On high specificity microbiological testing using matrix assisted desorption-time of flight (MALDI-Tof) technology, the organism recovered from the blood was confirmed to be *Raoultella ornithinolytica*



CT abdomen showing the hepatic abscess (red arrows)



## Discussion

- Incidence of *Raoultella ornithinolytica* infection has been on the rise in the past decade, and our patient is the second reported case of *Raoultella ornithinolytica* liver abscess
- In humans, this organism usually causes skin flushing, vomiting, diarrhea, and headache
- In our patient, the infection was thought to be related to recent diarrhea (of unknown etiology) resulting in intestinal mucosal damage leading to translocation of the bacterium across the intestinal wall into the liver
- While the first case, as reported by Surani et al in 2020, had a long-standing liver cyst that was thought to be infected with *Raoultella ornithinolytica*, our patient did not have any nidus in the liver that could harbor this bacterium
- However, she had a history of splenectomy, possibly putting her at higher risk of infection with encapsulated bacteria
- In addition, *Raoultella ornithinolytica* is closely related to *Klebsiella oxytoca*, but is not recognized in the multiplex PCR database which accounts for the discrepancy in initial identification as seen in our case
- Our case adds to the growing literature regarding *Raoultella ornithinolytica* as an increasingly virulent pathogen in humans

## References

1. Surani A, Slama EM, Thomas S, Ross RW, Cunningham SC. *Raoultella ornithinolytica* and *Klebsiella oxytoca* pyogenic liver abscess presenting as chronic cough. *IDCases*. 2020 Feb 28;20:e00736. doi: 10.1016/j.idcr.2020.e00736
2. Seng P, Boushab BM, Romain F, et al. Emerging role of *Raoultella ornithinolytica* in human infections: a series of cases and review of the literature. *Int J Infect Dis*. 2016;45:65-71
3. Meddings L, Myers RP, Hubbard J, et al. A population-based study of pyogenic liver abscesses in the United States: incidence, mortality, and temporal trends. *Am J Gastroenterol*. 2010;105(1):117-124

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