AN UNUSUAL CAUSE OF BACTEREMIA IN AN IMMUNOCOMPETENT CHILD

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BACKGROUND

- In hospitalized children with community acquired pneumonia, 2-7% have a positive blood culture.
- Majority are Gram positive organisms

Psychrobacter phenylpyruvicus (formerly known as Moraxella phenylpyruvica) is a Gram negative, aerobic, non-motile, psychrotropic (cold-loving) coccii or cocacobacilli bacterium in the Moraxellaceae family.

Psychrobacter species are widely found in the environment and rarely cause disease in humans; typically opportunistic infections

CASE PRESENTATION

- 8-year-old previously healthy boy with 6 days of non-radiating left rib pain and 1 day of fever
- Associated symptoms: decreased energy and appetite
- ROS otherwise negative
- No recent trauma, travel, sick contacts, animal exposures, history of unusual or frequent infections
- Exam in the ED: 102.7°F, 138 bpm, RR 17, 98% RA
  - Decreased breath sounds on the left side and left rib tenderness

DIAGNOSTIC TESTING

- CBC: WBC of 28.3, 81% neutrophils, Hb/Hct of 31.7, 31.8 plateslets 445
- CRP: 17.7 (ref range <= 1.0 mg/dL)
- BMP: Na 130 mmol/L (remainder normal)
- SARS-CoV-2/Influenza/RSV PCR negative, Group A Strep PCR negative
- Blood cultures X 2: pending

PATIENT’S COURSE

- In the ED concern for sepsis secondary to a community acquired pneumonia
  - Received anti-pyretics, a normal saline bolus, and ampicillin
  - Admitted to the general pediatrics floor and continued on ampicillin 50mg/kg iv Q6hrs
  - Following morning: afibrile, no pain, improved appetite and energy
  - Repeat labs: WBC 16.3 (71% neutrophils), Hb/Hct 11.7/35.7 and CRP 16.3
  - First blood culture turned positive at 22 hours with Gram positive cocci in clusters and Gram negative bacilli. Second blood culture from the day of presentation turned positive after 1 day 4 hours with Gram negative bacilli. BioFire® Blood Culture Identification panel did not identify any Gram negative organisms.
  - Antibiotics were broadened to ceftazolin, pending speciation of the Gram negative bacilli. Repeat blood cultures drawn
  - Both blood cultures grew Psychrobacter phenylpyruvicus. In addition, the first blood culture grew Staphylococcus epidermidis and Acinetobacter species.
  - Repeat blood culture after being on ampicillin for 24 hours was negative
  - He was discharged home on amoxicillin-clavulanate to complete a 7-day total course of antibiotics for community acquired pneumonia and bacteremia

DISCUSSION & CONCLUSION

- In children presenting with CAP, blood cultures are only recommended for severe or complicated illness. Patient was meeting ≥2 SIRS criteria in the ED which was why they were likely obtained in this case.
- Given Psychrobacter phenylpyruvica was identified on two separate blood cultures it was felt to represent a true pathogen and not a contaminant.
- To the best of our knowledge this is the first reported case of this organism causing bacteremia and likely pneumonia, in an otherwise healthy pediatric patient.
  - In neonates there are case reports of other Psychrobacter species causing meningitis, an oculus infection and a shunt infection
  - In adults all case reports of P. phenylpyruvica causing disease were opportunistic infections.
- Most Psychrobacter species are susceptible to a broad range of antibiotics, though some strains are beta-lactamase producing
  - Susceptibility to ampicillin may have accounted for the patient’s rapid clinical improvement, though it is also possible that the patient’s immune system simply cleared the organism from his blood stream.
- Limitations:
  - Presumption that P. phenylpyruvica was the etiology of the patient’s fever and culture not performed.
  - Beta-lactamase activity was not reported, thus it unknown whether it was necessary to broaden the patient’s antibiotics.
- Although the patient recovered quickly, the presence of P. phenylpyruvica bacteremia contributed to the patient being exposed to broader spectrum antibiotics and having a longer length of stay while awaiting speciation
- This case reinforces the need to consider rare causes of bacteremia in the setting of community acquired pneumonia when Gram stain is positive for Gram negative organisms but nothing is detected on rapid molecular identification panel

REFERENCES