THE UNIVERSITY OF KANSAS HEALTH SYSTEM

When Blood Bank and Micro Collide

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Objectives

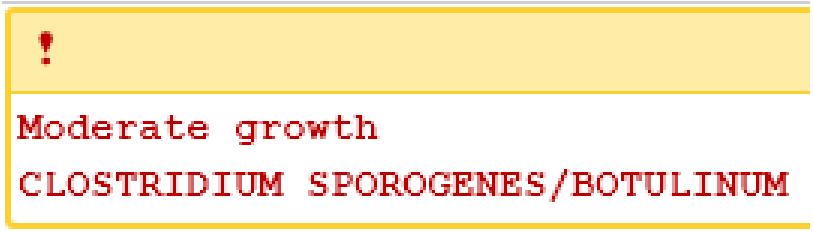
- Discuss methods taken to ensure staff safety when dealing with potentially highly infectious material.
- Observe interprofessional relationships between clinical departments

Patient History

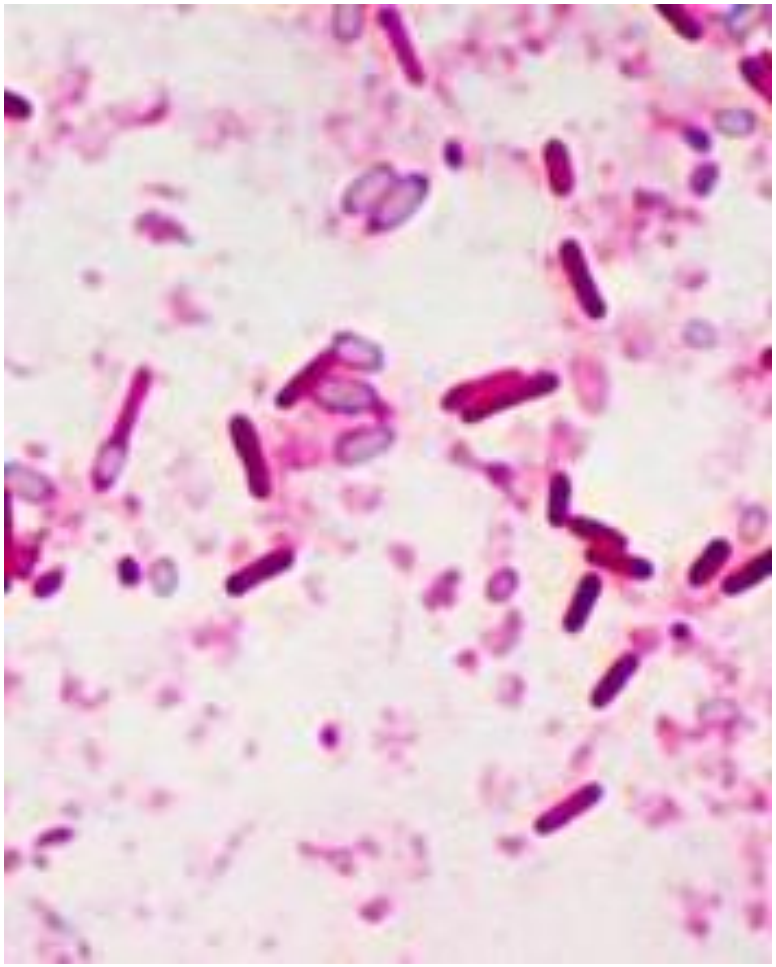
- Patient arrived to ED via EMS due to shortness of breath
  - Patient had been living in car. Complained to EMS of pain in left toe and glute pain due wounds
  - Patient found to have necrotizing infection
  - Emergent intubation and debridement
- Blood Bank received sample for Type & Cross
  - ABO/RH: B Pos
  - Aby Screen: Negative

Patient History

- Patient moved to ICU
- One day later – patient moved to OR for additional debridement
- Second day – Additional debridement required, transferred to ICU
- Third day – Micro alerted Blood Bank…



C. sporogenes/botulinum



- Gram Positive Rod with spores (easily decolorizes)
- Commonly found in the environment, notably in soil and aquatic habitats
- Spores provide a protective layer and can survive harsh conditions for long periods of times
- Botulism toxins is the reason why honey should be avoided for babies <12 months old

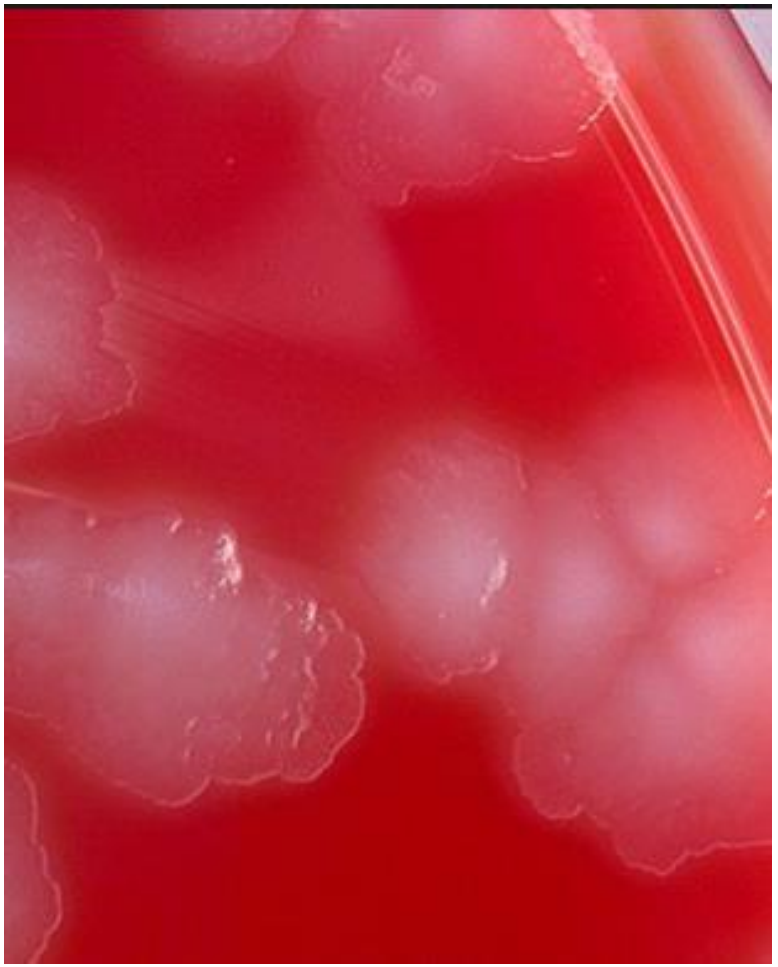
Erasmus MC Microbe Canvus.

Clostridium botulinum Accessed 4/3/2025

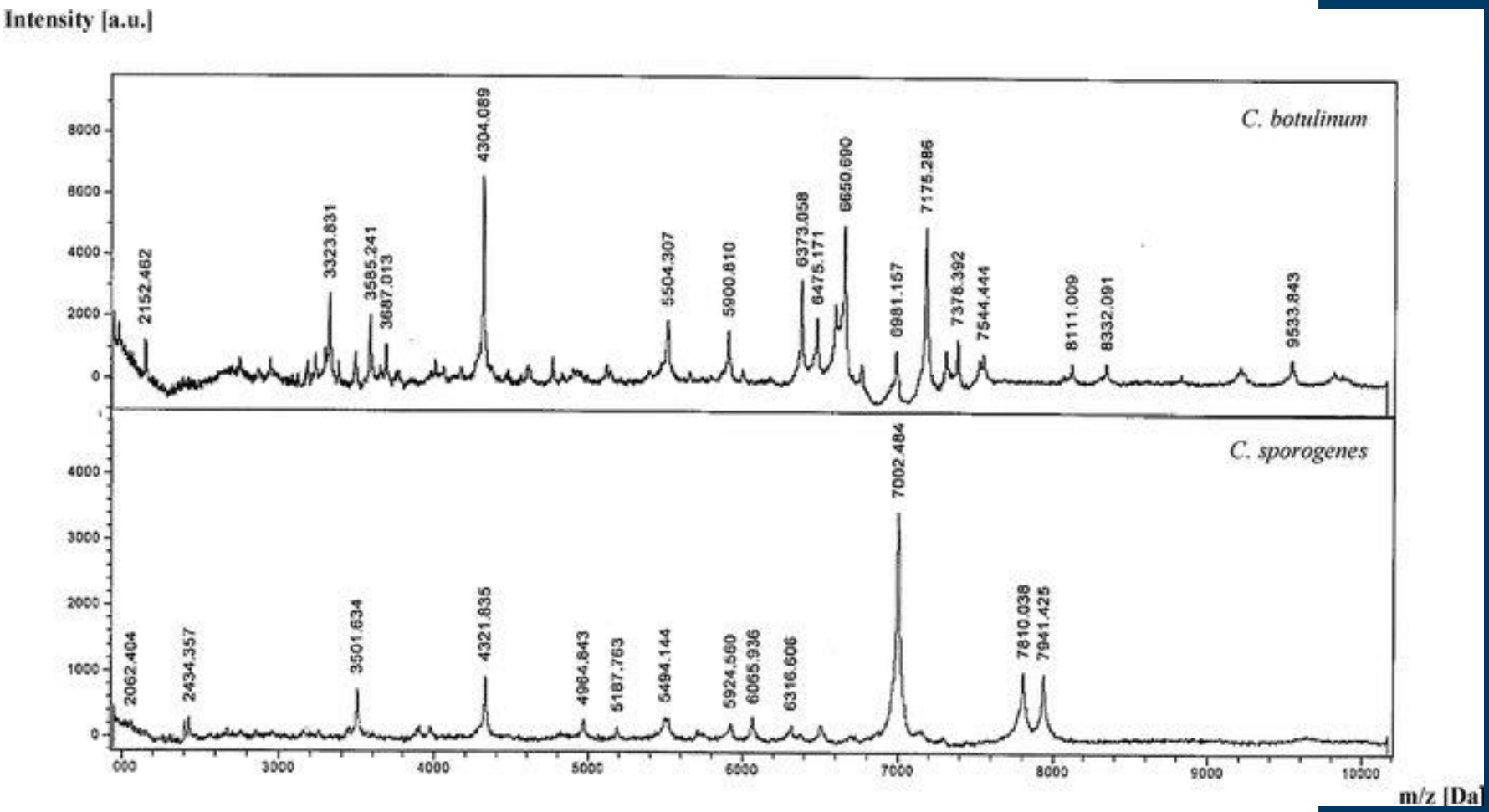
C. sporogenes/botulinum

Historical method of ID

- Obligate anaerobe
- Catalase negative
- Oxidase negative
- Indole negative
- Urease negative
- Lecithinase negative
- Motile
- Beta-hemolysis variable
- Rotten-egg smell



C. sporogenes/botulinum



Schaumann, Reiner & Dallacker-Losensky, Kevin & Rosenkranz, Christiane & Genzel, Gelimer & Stingu, Catalina-Suzana & Schellenberger, Wolfgang & Schulz-Stübner, Sebastian & Rodloff, Arne & Eschrich, Klaus. (2018). Discrimination of Human Pathogen Clostridium Species Especially of the Heterogeneous C. sporogenes and C. botulinum by MALDI-TOF Mass Spectrometry. Current Microbiology. 75. 10.1007/s00284-018-1552-7.

C. sporogenes/botulinum

- Matrix-Assisted Laser Desorption/Ionization Time-of-Flight (MALDI-ToF)
- Method of Mass Spectrometry
- Due to the peak similarities between *Clostridium sporogenes* and *Clostridium botulinum*, unable to distinguish from biochemical or MALDI-ToF methods
- Consultation with SPHL and CDC, it was recommended to send the isolate to CDC for further testing
  - Organism introduced to mice with specific anti-toxin. If the organism was *Clostridium botulinum* and produced botulism toxin, then the toxin would be identified

C. sporogenes/botulinum

- What is botulism and why is it bad

Blood Bank and Micro Collide

- Once Blood Bank was notified:
  - Patient samples were quarantined – Micro alerted BB that risk was very low, but wanted to be cautious

- Blood Bank set up a new testing location….
  - Complete with validations for moved equipment!

Blood Bank and Micro Collide

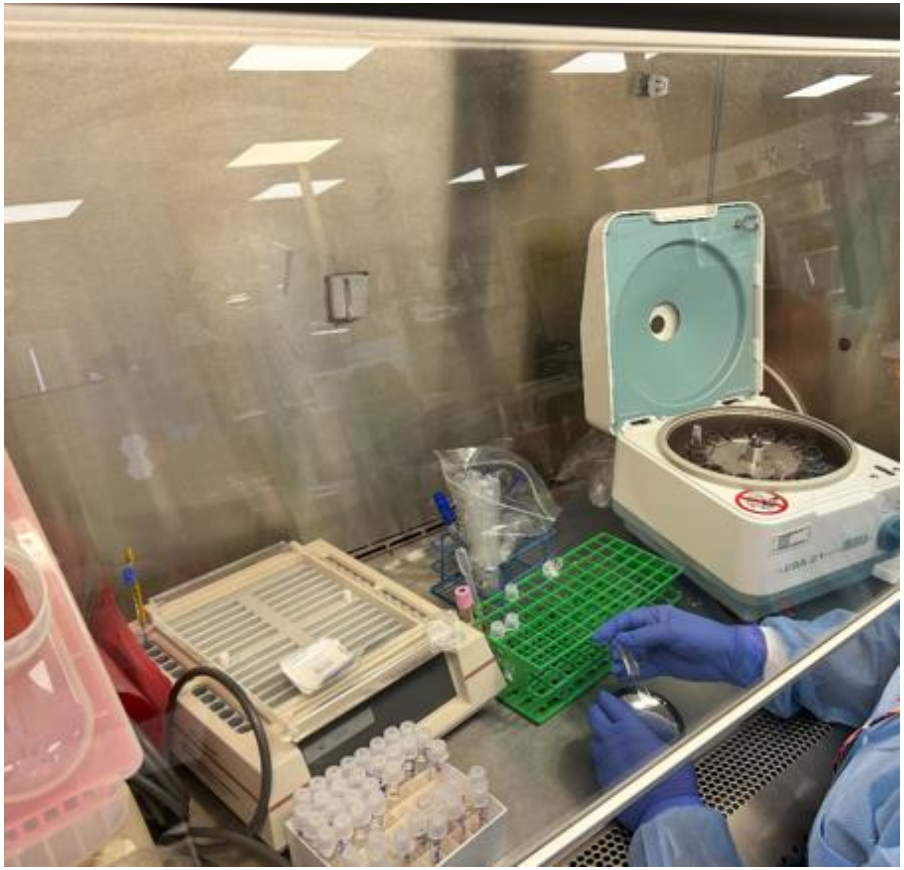
- Memo sent out to Blood Bank staff on how best to handle the specimens – All sample manipulation and testing to be done under the biosafety cabinet
  - Sample to be hand delivered to the Blood Bank or sent in two biohazard bags if sent via tube station
  - Aliquot patient sample into 12X75 tube and seal with parafilm – centrifuge to separate plasma and RBCs. Done to prevent sporulation
  - Antisera/Reagent red cells were aliquoted into tubes and brought to micro biosafety cabinet

Blood Bank and Micro Collide

- All washing was done manually
  - All tubes were sealed prior to centrifugation

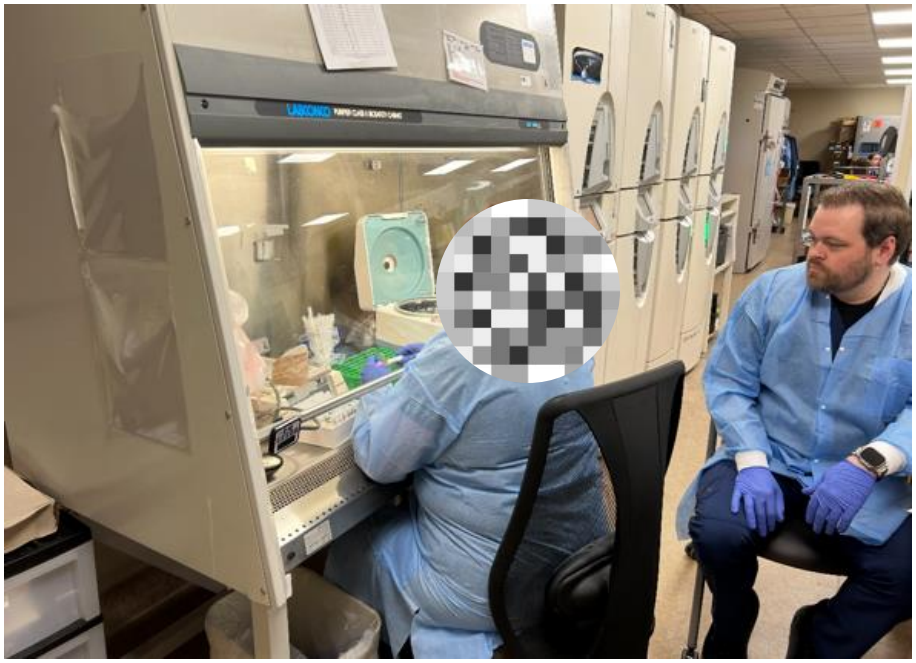
Blood Bank and Micro Collide

- Any testing requiring 37C was done under the newly dubbed “Micro Heat Block”



Blood Bank and Micro Collide

- We also used a second tech to document results so there was no risk of contamination



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Blood Bank and Micro Collide

Blood Bank and Micro Collide

- Patient discharged on day 25!
  - Patient being released to care facility

Blood Bank and Micro Collide

- Patient came back 18 hours later…

Blood Bank and Micro Collide

- Blood Bank had not moved the equipment
  - Micro was gracious enough to let us continue using their space
  - Blood Bank received one additional sample before the patient was discharged for the second time
- Lessons Learned
  - Communication between departments is crucial, even if the subject may seem trivial
  - Processes can always change – learn to evolve/adapt

Questions?

- Big thanks to Microbiology for allowing Blood Bank to invade their space ☺
- Big thanks to Blood Bank staff for being adaptable