Clusters of Postpartum Group A Streptococcus Infections on a Labor and Delivery Unit June – October 2019



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BACKGROUND

- Group A Streptococcus (GAS, *Streptococcus pyogenes*) is a human bacterial pathogen that causes disease ranging from pharyngitis to severe invasive infections.¹
- Invasive GAS is defined as isolation of GAS from normally sterile site (e.g., blood) or isolation of GAS from nonsterile site in presence of streptococcal toxic shock syndrome or necrotizing fasciitis.²
- GAS can cause severe postpartum infections and may be transmitted from asymptomatic, colonized healthcare workers (HCWs).
- When 2 or more cases are identified within 6 months, an institution is required to conduct a carrier-disseminator investigation.²

INVESTIGATION

- Eight cases of GAS bacteremia and/or endometritis were identified on L&D unit from June to Dec 2019 (Figure 1)
- Initial carrier-disseminator investigation initiated July 2019
- Escalated to broad staff screening October 2019
- HCWs completed screening questionnaire (recent illnesses, skin/soft tissue infections, sick contacts) and cultured for GAS colonization (throat, vaginal, perirectal).
- Any GAS colonized HCW was provided chemoprophylaxis and rescreened 7-10 days after treatment.
- GAS isolates were analyzed by either pulse field gel electrophoresis (PFGE) or whole genome sequencing.

RESULTS and INTERVENTIONS

- 6 total patients identified with the outbreak strain of GAS
- Over 700 staff in total screened for GAS colonization
- 11 asymptomatic staff with positive screening cultures (plus 1 family contact)
- 5 total (4 staff, 1 family contact) colonized with outbreak strain of GAS
- Isolates clustered closely by whole genome sequencing
- Identified as emm 28 type which has increased association with postpartum infections¹

Cluster 1 Patient #2 Patient #1 Outbreak day 0 Outbreak day 17 Vaginal delivery Vaginal delivery Bld Cx +GAS Bld Cx +GAS 5 days later 1 day later Carrierdisseminator investigation initiated 30 staff who had contact with single patient No positive screening cultures 13 staff who had contact with both patients 1 had positive screening cultures at all three sites (HCW A)

HCW A received 10 days of clindamycin

chemoprophylaxis

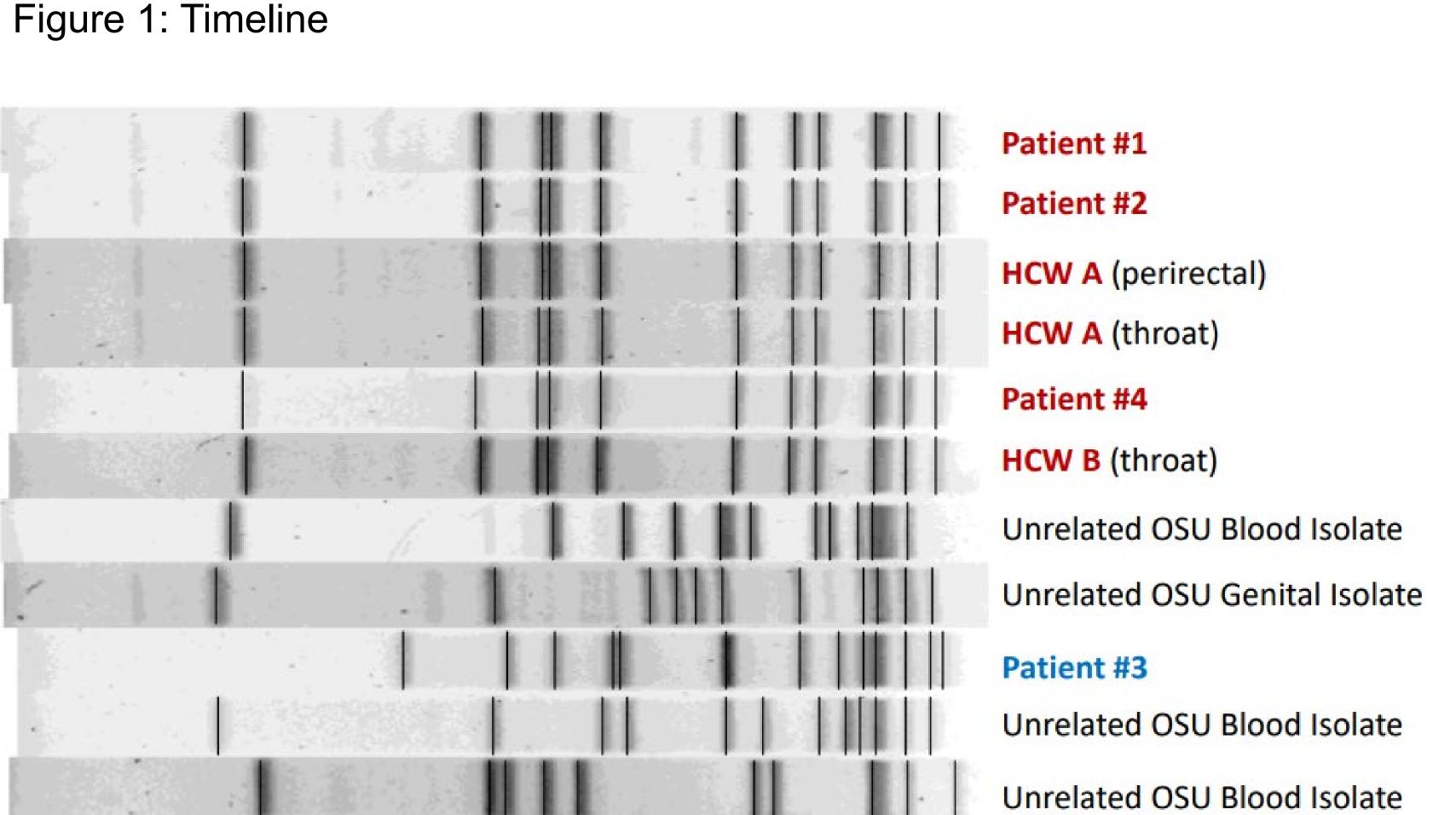


Figure 2: Pulsed-field Gel Electrophoresis

Cluster 2

Patient #3 Outbreak day 80

Septic abortion and D&C Bld and throat Cx +GAS Same day

Determined to

be community

acquired, no

investigation

confirmed

PFGE

unrelated by

further

Patient #4 Outbreak day 96

Vaginal delivery

Bld Cx +GAS
2 days later

Carrierdisseminator
investigation
initiated

9 staff screenedHCW A involved,

repeat screening

negative

• HCW B throat cx
positive, received
IM PCN x 1 and PO
rifampin x 4 days

Cluster 3

Patient #5 Outbreak day 119

Vaginal delivery Bld Cx +GAS 2 days later

Patient #6 Outbreak day 119

delivery +GAS later Vaginal Cx +GAS 5 days later

Patient #7

Outbreak day 119

Vaginal delivery Vaginal and perirectal Cx +GAS 9 days later

Initiated unit wide staff screening outbreak day 125

- Outbreak strain identified by whole genome sequencing as emm 28 type
- Initiated unit wide screening (681 total staff members)
- HCW A involved in cases 5 and 6, culture positive at all 3 sites again
- 11 total staff with GAS colonization (including HCW A)
 - 3 staff (including HCW A) with emm 28 outbreak strain
 - HCW A household contacts screened
 - 1 positive for emm 28 outbreak strain
 - HCW A retreated with Clindamycin + PO Vancomycin x 10 days
 - Others treated with IM PCN x1 and PO rifampin x 4 days

Whole genome sequencing negative for outbreak strain, identified as emm 1 type

Patient #8

Outbreak day 166

Vaginal delivery

Bld Cx +GAS

1 day later

LESSONS LEARNED

- Coordination between inpatient medical teams, infection control, microbiology and the health department is crucial.
- Prompt screening of employees and treatment of colonized staff in a timely manner is critical to stop the spread to not only patients but also other staff.
- Do not hesitate to seek assistance from the CDC when standard outbreak management measures are unsuccessful.

REFERENCES

¹Jain I, Sarkar P, Danger JL, et al. A Mobile Genetic Element Promotes the Association Between Serotype M28 Group A Streptococcus Isolates and Cases of Puerperal Sepsis. *The Journal of Infectious Diseases*. 2019;220(5):882-891.

² Prevention of Invasive Group A Streptococcal Disease among Household Contacts of Case Patients and among Postpartum and Postsurgical Patients: Recommendations from the Centers for Disease Control and Prevention. *Clinical Infectious Diseases*. 2002;35(8):950-959.