Puerperal Group A Streptococcal Infection: Beyond Semmelweis

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Question 1:

You mention swelling or pain in the extremities or joints as one of the features of Group A streptococcus (GAS) infection. What might be the mechanism that causes this atypical symptom? Is there any feature of this non-specific symptom that would lead to an earlier diagnosis of GAS?

Response from Dr. Anderson:

The importance of recognizing that extremity pain can be associated with GAS is that the symptom can be a distraction from the true diagnosis. The symptom itself can be caused by generalized myalgias from fevers, from hypoperfusion, or joints may become seeded with GAS. However, when a provider is faced with a postpartum patient with fever and extremity pain, the logical thought process would be to assume that it isn’t related to a genital source. By keeping in mind that this atypical symptom can be seen in peripartum GAS infection, delay in diagnosis may be avoided.

Question 2:

Outpatient primary care physicians often use a “rapid strep test” to evaluate for streptococcal pharyngitis. Might it be useful for evaluation of an endometrial aspirate?

Response from Dr. Anderson:

This is a very interesting question and one that might be used for future research. To date, most “rapid strep tests” have only been validated for use from throat swabs, and are CLIA-waived for that purpose. There are a number of factors that can cause false-positive and false-negative results, such as cross-reactivity with other bacterial species, or mixing with food or fluids. For this reason, I would not recommend use of such tests from endometrial samples until they have been validated in these conditions.
Question 3:
You discussed the alteration in normal laboratory values that occurs in pregnancy. Could you also speak to the changes in normal vital signs and what criteria you would recommend for the diagnosis of sepsis in a pregnant or postpartum patient?

Response from Dr. Anderson:
Because of the physiologic changes of pregnancy, diagnosing sepsis according to standard criteria can be difficult. Maternal heart rate increases and systolic blood pressure decreases as part of normal pregnancy, and firm cut-offs for sepsis in pregnancy have not been established. Established scoring systems for diagnosing sepsis have been shown to be poor predictors in pregnancy. Recent research by our group highlights the need for prospective validation of a sepsis scoring system in obstetrics (Albright CM, Ali TN, Lopes V, Rouse DJ, Anderson BL. The sepsis in obstetrics score: a model to identify risk of morbidity from sepsis in pregnancy. Am J Obstet Gynecol. In Press Accepted Manuscript.).

Question 4:
Is there a characteristic of GAS that might render intravenous immunoglobulin (IVIG) a more effective treatment to patients with streptococcal toxic-shock syndrome (TSS) than to patients with other types of severe sepsis or septic shock?

Response from Dr. Anderson:
Those who believe that IVIG may be more effective in GAS sepsis than in other types of septic shock suggest that there is. Kaul et al cite that the cause of shock in gram positive sepsis may be related to cytokine-induced exotoxins belonging to a family of gram-positive bacterial superantigens (Kaul R, McGeer A, Norrby-Teglund A, Koth M, Schwartz B, O'Rourke K, et al. Intravenous Immunoglobulin therapy for streptococcal toxic shock syndrome-a comparative observational study. Clin Infect Dis; 1999;28:800–7). These bind to cells expressing major histocompatibility complex class II molecules and lead to massive T cell proliferation and cytokine production. In vitro, IVIG administration can block T cell activation by streptococcal superantigens.

Question 5:
It doesn't seem that universal screening of patients for GAS would be prudent, as is done for Group B streptococcus (GBS). Are there selected populations who you think might benefit from targeted screening? Do you recommend treatment of asymptomatic women colonized with GAS in the vagina?

Response from Dr. Anderson:
I agree that universal screening of patients for GAS is unlikely to be cost-effective. There are no known high risk groups that may be targeted for screening and this may be an important topic for research endeavors. The only clearly high risk patient I would consider screening may be one who has had a previous pregnancy complicated by puerperal GAS infection.

If I receive an incidental report of GAS in the vagina of a pregnant patient, I would likely treat her in a fashion similar to one colonized with GBS. There is no literature to support this practice but it is fairly low risk and could theoretically decrease the risk of ascending infection.
Question 6:
Do you recommend amniocentesis and culture for all patients with “intact” chorioamnionitis?

Response from Dr. Anderson:

Yes, identification of a causative organism can be critical in this rare setting. Organisms that have been associated with the entity of “intact” chorioamnionitis include GAS, GBS, and Listeria monocytogenes. These are treated quite differently in terms of antibiotic regimens as well as the likely need for surgical intervention.

Question 7:
Is there a situation where you would recommend proceeding with hysterectomy for presumed GAS, even without a positive culture result?

Response from Dr. Anderson:

Yes, culture can take days to yield results and sepsis management decisions frequently need to be made before final culture results are available. If a patient has severe puerperal sepsis and the source is thought to be a necrotic uterus, hysterectomy can be life-saving regardless of the causative organism.