Prenatal Onset of GBS Sepsis (PO-GBS-EOS) is a Distinct Cause of Stillbirth and Perinatal Mortality

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ABSTRACT

Objective: Intrauterine infections are increasingly recognized as a possibly preventable cause of SB/PM. Our objective is to evaluate evidence justifying POGBSS classification as a distinct medical entity.
Methods: We conducted a systematic review of knowledge regarding putative POGBS;
To correlate patient experience with medical knowledge we conducted a quasi-experimental "internet commons" inquiry of parent contacts through internet-based parents' groups connected with Group B Strep International. These parents' babies had apparently suffered prenatal-onset GBS disease.
Results: Much is known about GBS diseases. The CDC-P recommended preventative regime is inconsistently successful (85-90%) and does not address late-onset or prenatal-onset GBS disease. GBS demonstrates estrogenized tissue tropism and can initiate DAMP and RAGE molecular cascades.
There were 26 responders of which 12 adequately described GBS-caused losses. Of these, 4 GBS+ mothers recalled "membrane stripping" for labor induction with subsequent SB or EOGBS. Only 6 mothers recalled any peripartum fever or tenderness.
Conclusion: There is sufficient knowledge to support the CDC-P proposed (MMWR 2010, Volume 59, RR-10) classification of prenatal-onset GBS POGBS sepsis.
Our limited uncontrolled "internet commons" enquiry
supports clinical observation of perinatal infection after "membrane stripping" in GBS+ mothers, and suggests that
mothers do not reliably describe fever or other "textbook" findings of intrauterine infection .
Other observations are precluded by the anecdotal uncontrolled nature of our self-reported sample.
Authoritative agencies should include POGBS sepsis in an analysis of GBS disease burdens.

BACKGROUND

- Group B streptococcus (GBS) was identified as a leading cause of perinatal infection in the 1970s.
- The prevalent "dogma" is that GBS exposure and subsequent infection occurs only during passage through the GBS colonized birth canal. This notion is the basis of the present CDC-P, ACOG and AAP guidelines to prevent GBS Early Onset Sepsis (EOS).
- Non-congruent observations by Katz and more recently Tudela, Wendel and Sheffield suggest that GBS infection occurs before birth, across intact fetal membranes and causes both stillbirth (SB) and perinatal depression (PD) with depressed Apgars and neonatal death.
- Systematic epidemiologic investigations may allow for investigations to possible reduce risks of pre-labor onset of GBS infections.

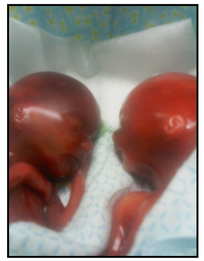
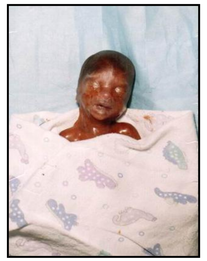
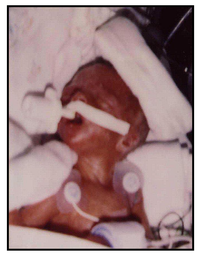
GOALS

- Review and Analyze prior observations including:
  - Animal models
  - Microbiologic findings
  - Microbiologic
  - Immunologic
  - Clinical experimentations

  Which can justify naming "prenatal onset of early GBS neonatal infection (PO-GBS-EOS)
- Provide rational for expanded epidemiologic studies suggest strategies which may reduce risks of PO-GBS-EOS

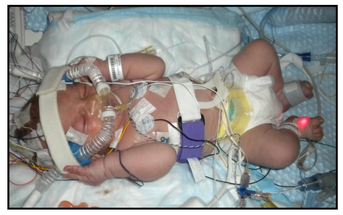
METHODS

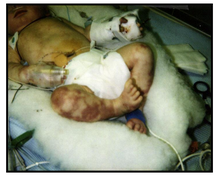
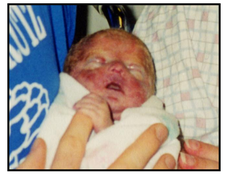
1. Review/Analyze available information justifying "official" designation of prenatal onset GBS infections
2. Evaluate this proposal using historical "causal criteria" i.e., Kock's postulates & Bradford Hill causal criteria
3. Apply pathophysiologic principles including innate and acquired immunologic prevention strategies (i.e., vaccination, microecologic, and clinical strategies to reduce risk of perinatal GBS infection including SB 20-28 and very early PTB and/or late miscarriage (16-20 weeks gestation)

RESULTS

1) Prenatal onset GBS intrauterine infection has been previously described (Katz, Tudela, Benirske, others
2) GBS is the commonest or among the commonest microorganisms isolate from normally "sterile" sites after passage through the vagina, between membranes, within placenta, cord blood, heart blood or spleen at autopsy.
3) GBS demonstrates, pathophysiologic virulence capacities which can explain:
   a. Intrauterine infection with intact fetal membranes
   b. Invasive fetal infection
   c. Lethal factors leading to placental or fetal death
4) Multiple studies/Analysis demonstrate feasibility and practicability of **ACTIVE GBS VACCINATION**

Promoting awareness and prevention of GBS disease in babies before birth through early infancy

CONCLUSIONS

1) GBS similar to other "perinatal pathogens" is an apparent cause of intrauterine infection (1º chorioamnionitis "CAM" or intramniotic infection "IAI" can cause SB and very early PTB and possibly EM
2) Intrauterine infection or prenatal onset GBS may explain GBS selective culture based antibiotic chemoprophylaxis (IAP)
3) Recognition of PO-GBS-EOS can allow renewed experimentation in order to further reduce risks of GBS perinatal disease including: Rapid "Point of Care"; microbial testing as well as adjuvant VACCINATION or other novel strategies

RECOMMENDATIONS

1. Reconvene well funded national study group to explore novel strategies to further reduce risk of GBS neonatal disease burden
2. These strategies can include separate or in combination with culture guided IAP:
3. VACCINATION
4. Microecologic
5. Clinical Strategies - screen UTI/ASB
6. Further refine- microbials screening i.e., early in pregnancy, UTI/ASB, and in labor or after ROM
7. Improve operational procedures to enhance efficacy of IAP

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