Placental Inflammation: The Good, The Bad, and The Ugly

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1. Infection and Inflammation
   A. There is microbiologic evidence that infection may contribute to 25% of preterm births with bacterial colonization as high as 79% for birth at 23 weeks, 11% at 31 to 34 weeks. Show the relationship of histologic chorioamnionitis and gestational age at delivery (graph).
   B. What does a Venn diagram look like where clinical chorioamnionitis, histologic chorioamnionitis, neonates with positive blood cultures, neonates with systemic inflammatory response syndrome, and mothers with organisms or inflammatory products in amniotic fluid look like: what is the big picture?
   C. Does it matter if a general surgical pathologist versus a pediatric or perinatal pathologist is reviewing the cord and placenta in the diagnosis of placental and cord infection?
   D. What is the evidence that it harms the fetus or neonate, and does it matter whether it occur preterm or term?
   E. Is there any protective role for the offspring, as inflammation is so frequent in preterm birth?
   F. Brief review of the first experimental animal model to compare stress antenatal steroid lung maturation versus infectious inflammation so we can understand time course better.
   G. Does it matter whether the inflammation is acute or chronic with respect to neonatal outcomes?

2. Host Microbe Interactions Against Fetus or Microbe
   A. What is a biofilm, and is there a role in OB?
   B. Show scanning electron micrographs of native biofilms and on medical hardware in patients.
      • Preterm labor might be the result of a shift in the bacterial ecosystem of the vagina, not an infection from a specific organism
      • But treat bacterial vaginitis or periodontitis, preterm labor is not prevented, thus infection alone is not casual
      • Microbes form communities, bacteria, fungi
      • Biofilms encapsulate within a self developed polymeric matrix
• CDC---65% of human bacterial infections involve biofilms
C. What is amniotic fluid “sludge”?

3. It would be important to make a reliable diagnosis of histologic chorioamnionitis or funisitis as soon as possible.

How close are we to maternal blood, umbilical blood marker, or even a vaginal fluid marker?

Any role of placental cultures to aid diagnosis of placental infection/inflammation?

Umbilical cord blood can be collected quickly and easily after birth. The diagnosis of abnormal placental and cord histology can take days to ascertain, but commonly available blood tests on cord blood can be known the same day of birth, typically within an hour of birth.

References


