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The correlation between placental pathology and microbiologic infection in diagnosis of chorioamnionitis in preterm delivery

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Objective

We aimed to investigate the correlation between positive post-partum placental cultures and histologic diagnosis of chorioamnionitis, and to evaluate its clinical significance.

Methods

Retrospective cohort study of all women with preterm delivery (24-34 weeks) whose placentas were evaluated for placental culture, polymerase chain reaction (PCR) and histologic assessment in a university-affiliated hospital (2012-2016). Histologically proven chorioamnionitis was considered the gold standard for diagnosis. Cohort was divided into four subgroups: Group A- Negative placental cultures and negative histology; Group B- Positive cultures and negative histology; Group C- negative cultures and positive histology; Group D- positive placental cultures and positive histology. Obstetrical and neonatal outcomes were compared between groups. Isolation of candida, lactobacillus and Coagulase Negative Staph from the placenta were defined as culture contamination. Clinical chorioamnionitis was defined as uterine tendency or hypertonicity, offensive amniotic fluid odor and maternal or fetal tachycardia. Maternal infection composite outcome was defined as: elevated White Blood Cell (WBC) count (>15K) and fever, or clinical chorioamnionitis.

Results

182 deliveries were evaluated: 50 (27%) in group A, 45 (25%) in group B, 37 (21%) in group C and 50 (27%) in group D. 2) Groups were comparable regarding baseline characteristics. 3) Group B demonstrated lower ante-partum WBC count compared to groups C and D (13. 07 vs. 13. 86 and 14. 70 p=0. 024), lower rates of clinical chorioamnionitis (0 vs. 5 and 14%, 0=0. 003) and lower raters of maternal infection composite outcome (20 vs. 30-46%, p<0. 001). Group D demonstrated higher rates of neonatal infection composite outcome in comparison to groups A-C (46% vs. 20-24%, p<0. 001). 4) Different organisms were isolated with different rates between groups B and D. Klebsiella Pneumonia was found to be with the highest positive predictive value for chorioamnionitis (78%) whereas e. coli was found equally in both proven histological chorioamnionitis (group D) and without (Group B) ; 5) Prediction model for histological chorioamnionitis according to positive culture revealed specificity of 64% and sensitivity of 53%.

Conclusion

Women with some positive microorganism isolated from placenta should be regarded as chorioamnionitis until proven otherwise. Differences in placental culture and histologic diagnosis of chorioamnionitis might result from the specific organism diagnosed.