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Paper Poster Session
News on ESBL and AmpC

Extended-spectrum-beta-lactamase (ESBL) producing Enterobacteriaceae in maternal urine cultures and related neonates' cultures

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Background: Enterobacteriaceae (EB) has become a major cause of neonatal sepsis in the last decades. EB resistance to broad spectrum antibiotics has led to excessive morbidity and mortality. The problem of a growing incidence of extended-spectrum-β-lactamase producing Enterobacteriaceae (ESBL-PE) in the community means that more pregnant women are potential carriers of these resistant bacteriae. Neonates are at particular risk of acquiring Gram-negative flora from the environment, beginning from the birth channel. The information about the importance of maternal ESBL-PE carriage as an independent risk factor for neonatal colonization is sparse. To prevent neonatal morbidity and mortality, there is a need to measure the influence of ESBL-PE prevalence in pregnant women on the risk of ESBL-PE in neonates.

The objective of the study was to examine correlation between the growth of ESBL-PE in urine cultures of pregnant women and the finding of ESBL-PE in related neonates' cultures.

Material/methods: A retrospective cohort study performed on data from the centralized Clalit Health Services (CHS) database. The study population included pregnant women that were members of CHS for at least one year before date of delivery, and who gave birth in one of 7 CHS hospitals between the years 2009-2013 and their neonates. The urine cultures obtained from the women during the year prior to the delivery date were screened for EB growth. In neonates, all clinical bacteriological cultures that were performed until the age of 3 months were screened for EB.

Results: The study population included 133,152 pregnant women that performed urinary cultures (95% of all pregnant women as defined). Of the women who had urinary cultures, 15,282(11.4%) had a positive EB, and 653(4.3%) of these positive urinary cultures grew ESBL-PE.

The number of neonates with ESBL-EP positive culture of any kind was 290, which is a prevalence of 0.22% out of all births in the study. The prevalence (0.31%) is greater in the children of women with positive urine cultures. The greatest prevalence (0.92%) was found in the cohort of neonates that were born to women with positive to ESBL-PE urinary cultures. The relative risk (RR) of ESBL-PE was 1.5 fold (95%CI: 1.1-2.1) greater in neonates of women with positive urinary cultures, than in neonates of women with negative cultures. The RR of ESBL-PE was 4.6 fold (95%CI: 2.1-10.3) in neonates of women with ESBL-PE in urinary cultures, than in neonates of women with negative cultures.

Conclusions: Our study demonstrates that maternal carriage of ESBL-PE is an important risk factor for colonization of infants with these resistant bacteriae. As a consequence, the policy to prevent ESBL-PE outbreaks in neonatal units should include maternal screening and neonatal screening and cohorting, with priority to women with risk factors for ESBL-PE carriage and their neonates.