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Introduction

Early-onset sepsis (EOS) is increasingly caused by Gram-negative (GN) pathogens, and specifically *E. coli*. Unlike intrapartum antibiotic prophylaxis for GBS, there is no recommended intrapartum prophylaxis for GN EOS. An understanding of risk factors specifically associated with GN EOS could identify newborns at highest risk and lead to targeted prevention strategies.

Objective

To determine peripartum risk factors associated with GN EOS among infants of all GAs.

Methods

- Secondary analysis of the NRN EOS-II Study.
 Infants ≥22 wks' GA with BW >400g.
 18 NRN centers from 4/2015 to 3/2017.
 EOS defined as pathogen in blood/CSF ≤72 hours of age.
 Controls (1 or 2) without EOS selected for all GN EOS cases, matched by center and GA, drawn from:
- Infants <37wks: regardless if EOS evaluation performed
 - Infants ≥37wks: NOT evaluated for EOS

Peripartum maternal and infant characteristics were assessed as potential risk factors for GN EOS using conditional logistic regression models.

Peripartum risk factors including prolonged ROM, fetal tachycardia, and foul smell at birth were associated with Gram-negative EOS among infants of all GAs.



<https://Neonatal.RTI.org/Publications/>

Results

	Case N=110	Control N=178	aOR, 95% CI
Age <25	35 (32)	56 (32)	0.8 (0.4-1.7)
Age ≥35	23 (21)	27 (15)	1.2 (0.5-3.1)
Antibiotics ≥2h before delivery	62 (56)	78 (44)	0.8 (0.4-1.8)
ROM ≥ 18h	73 (66)	41 (23)	6.3 (2.8-14.0)
Vaginal delivery	48 (44)	68 (38)	1.7 (0.6-4.3)
Chorio	55 (50)	24 (14)	1.4 (0.5-3.7)
Maternal fever	35 (32)	13 (7)	2.1 (0.7-6.3)
Maternal tachycardia	71 (65)	85 (48)	0.8 (0.4-1.8)
Fetal tachycardia	46 (42)	22 (12)	3.2 (1.4-7.4)
Male sex	62 (56)	88 (49)	1.3 (0.7-2.5)
Foul smell infant	11 (10)	5 (3)	4.8 (1.2-19.6)

81% of cases and 82% of controls were <37 wks GA. *E. coli* (77%) and *Haemophilus spp.* (9%) were the most common pathogens.

Future Directions

Future studies should compare Gram-negative and Gram-positive EOS risk factors, pathogen-specific risk factors, and the additive effect of such risk factors, in order to strengthen GN EOS risk assessment and inform empiric antibiotic decisions.



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