Neonatal Sepsis of Early Onset, and Hospital-Acquired and Community-Acquired Late Onset: A Prospective Population-Based Cohort Study

Eric Giannoni, Philipp K A Agyeman, Martin Stocker, Klara M Posfay-Barbe, Ulrich Heininger, Ben D Spycher, Sara Bernhard-Stirnemann, Anita Niederer-Lohrer, Christian R. Kahlert, Alex Donas, Antonio Leone, Paul Hasters, Christa Relly, Thomas Riedel, Claudia Kuehni, Christoph Aebi, Christoph Berger, Luregn J Schlapbach & Swiss Pediatric Sepsis Study

OBJECTIVE
To assess the epidemiology of blood culture-proven early-onset (EOS) and late-onset (LOS) neonatal sepsis.

STUDY DESIGN
All newborn infants admitted to tertiary care neonatal intensive care units in Switzerland and presenting with blood culture-proven sepsis between September 2011 and December 2015 were included in the study. We defined EOS as infection occurring <3 days after birth, and LOS as infection ≥3 days after birth. Infants with LOS were classified as having community-acquired LOS if onset of infection was ≤48 hours after admission, and hospital-acquired LOS, if onset was >48 hours after admission. Incidence was estimated based on the number of livebirths in Switzerland and adjusted for the proportion of admissions at centers participating in the study.

RESULTS
We identified 444 episodes of blood culture-proven sepsis in 429 infants; 20% of cases were EOS, 62% hospital-acquired LOS, and 18% community-acquired LOS. The estimated national incidence of EOS, hospital-acquired LOS, and community-acquired LOS was 0.28 (95% CI 0.23-0.35), 0.86 (0.76-0.97), and 0.28 (0.23-0.34) per 1000 livebirths. Compared with EOS, hospital-acquired LOS occurred in infants of lower gestational age and was more frequently associated with comorbidities. Community-acquired LOS was more common in term infants and in male infants. Mortality was 18%, 12%, and 0% in EOS, hospital-acquired LOS, and community-acquired LOS, and was higher in preterm infants, in infants with septic shock, and in those requiring mechanical ventilation.

CONCLUSIONS
We report a high burden of sepsis in neonates with considerable mortality and morbidity. EOS, hospital-acquired LOS, and community-acquired LOS affect specific patient subgroups and have distinct clinical presentation, pathogens and outcomes.

type: journal paper/review (English)
date of publishing: 24-07-2018
journal title: J Pediatr
ISSN electronic: 1097-6833