

Epidemiological aspects of serious bacterial infections of infants younger than 90 days of age with fever without source

*de Lucas Nieves, de la Torre Mercedes, Gomez Borja, Velasco Roberto, Mintegi Santiago ,
Group for the Study of the Young Febrile Infant (RiSEUP-SPERG Network, Spain)*

Objective: For infants younger than 90 days with fever without source (FWS), the description of the frequency of serious bacterial infection (SBI) and invasive bacterial infection (IBI), microbiology and outcomes.

Methodology: Subanalysis of a prospective multicenter RiSEUP-SPERG network study on infants younger than 90 days with FWS, for two years (October 2011 - September 2013), in 19 Spanish pediatric Emergency Departments. The definitions used were: IBI, isolation of pathogenic bacteria in blood or cerebrospinal fluid; SBI: in addition to IBI, include urinary tract infections (UTI), isolation of pathogenic bacteria in stool, umbilical cord or a sterile liquid. Patients were followed-up by telephone.

Results: 4,008 infants were evaluated. After applying the exclusion criteria, 3,401 (84.8%) were analyzed with the following age distribution: <28 days, 905; days 28-59, 1,403; 60-89 days, 1,093. 86.4% were previously healthy patients and 89.2% were well-appearing infants at the Emergency Department.

IBI was diagnosed for 106 of them (3.1%: 31 occult bacteremia, 38 UTI with bacteremia, 19 sepsis, 17 bacterial meningitis and 1 cervical adenitis with bacteremia). The main causes of IBI were *E. coli* (49), *S. agalactiae* (23), *S. aureus* (9) and *S. pneumoniae* (7). Among infants < 28 days, 48/905 IBI were diagnosed (5.3 %). Bacteria distribution was similar to bacteria of general population: *E. coli* (25), *S. agalactiae* (11). Only one case of IBI was caused by *Listeria monocytogenes*.

678 patients were diagnosed with a non-invasive SBI, mostly UTI (666). The most frequent bacterias in patients with UTI (with or without bacteremia) were *E. coli* (595), *K. pneumoniae* (39), and *E. Faecalis* (25). Three patients were diagnosed with herpes virus infection. Four patients died: 1 herpes simplex, 1 meningococcal sepsis, 1 bronchiolitis (in a hypotonic patient) and 1 clinical sepsis without microbiological isolation. Seven had serious complications or sequelae: 2 pneumococcal meningitis (seizures and cerebral palsy), 1 *E. coli* meningitis (middle cerebral artery infarction), 1 enterovirus meningitis (myocarditis), 1 herpes simplex meningitis (seizures), 1 *S. agalactiae* sepsis (arthritis and myositis) and 1 Kawasaki disease (left coronary ectasia).

Conclusion: For FWS infants < 90 days, including for neonates, *E. coli* bacteria is now the leading cause of SBI and IBI. The prevalence of *Listeria monocytogenes* infection is very low, for our setting, coinciding with that described for other series. Although the prevalence of herpes infection for these patients is low, we have to consider it for its high associated morbidity and mortality.