Preterm infant with bacterial sepsis

Neonatal Infection

Infants may become infected with bacteria, virus, fungi, or other pathogens. Infection can begin prior to birth (in-utero, called *congenital* infection), during the birth process, or within the first 72 hours of life, called *early-onset sepsis*, or after the first 72 hours of life, called *late-onset sepsis*.[9,10] Infection that begins in utero, may be a result of the fetus swallowing or inhaling infected amniotic fluid, therefore a history of birth asphyxia with the possibility of in-utero gasping is important to recognize.[4] Most infants with early-onset sepsis have signs of infection within the first 24 to 48 hours of life.[11,12] Signs of infection are summarized in Table 5.2.

Bacterial organisms that may infect the fetus or infant

Group B Streptococcus (a Gram-positive organism) and Escherichia coli (a Gram-negative organism) are the two most common organisms that cause early-onset bacterial infection.[13] Other organisms that cause early-onset and late-onset bacterial infection include:[4,9,13-15]

- Gram-positive organisms
  - Coagulase-negative Staphylococcus
  - Staphylococcus aureus
  - Listeria monocytogenes
  - Streptococcus pneumoniae
  - Group A Streptococcus
- Gram-negative organisms
  - Neisseria meningitides
  - Haemophilus influenzae
  - Klebsiella pneumoniae
  - Pseudomonas aeruginosa
  - Acinetobacter species
  - Citrobacter species
  - Enterobacter species
  - Serratia marcescens
  - Proteus species

Clinical Tip

Gram staining refers to a bacterial staining procedure that was developed by a Danish bacteriologist, Hans Christian Gram in 1884. Gram staining is the first step in identifying an organism. The procedure allows differentiation of bacteria into one of two categories – positive or negative. The determination is based on color change. Organisms that stain a blue/purple color (because they retain the stain applied to them) are Gram-positive bacteria. Organisms that stain a pink/reddish color (because they lose their color when the destaining step is performed) are Gram-negative bacteria.