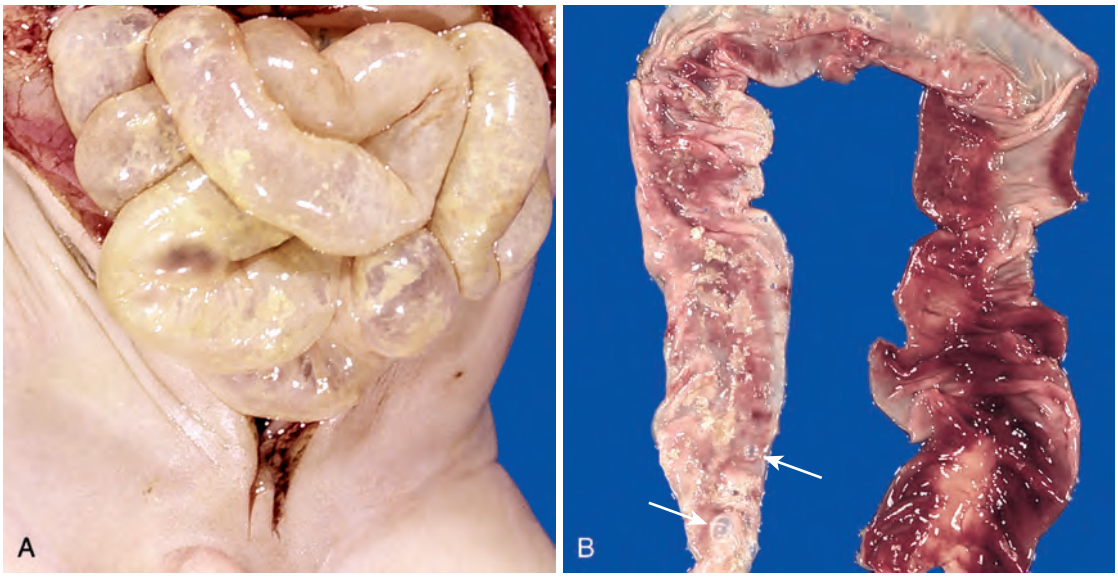

Figure 10-8 Necrotizing enterocolitis (NEC). **A,** Postmortem examination in a severe case of NEC shows the entire small bowel is markedly distended with a perilously thin wall (usually this implies impending perforation). **B,** The congested portion of the ileum corresponds to areas of hemorrhagic infarction and transmural necrosis microscopically. Submucosal gas bubbles *(pneumatosis intestinalis)* can be seen in several areas *(arrows).*

birth. In general the fetus acquires the infection either by inhaling infected amniotic fluid into the lungs shortly before birth or by passing through an infected birth canal during delivery. As stated before, preterm birth is a common and unfortunate consequence of infection. Preterm birth due to infection may be related either to damage and rupture of the amniotic sac as a direct consequence of the inflammation or to the induction of labor by prostaglandins released from infiltrating neutrophils. Inflammation of the placental membranes and cord are usually seen, but the presence or absence and severity of chorioamnionitis do not necessarily correlate with the severity of the fetal infection. In the fetus infected by inhalation of amniotic fluid, pneumonia, sepsis, and meningitis are the most common sequelae.

Transplacental (Hematologic) Infections

Most parasitic (e.g., toxoplasma, malaria) and viral infections and a few bacterial infections (i.e., *Listeria*, *Treponema*) gain access to the fetal bloodstream transplacentally via the chorionic villi. This hematogenous transmission may occur at any time during gestation or occasionally, as may be the case with hepatitis B and HIV, at the time of delivery via maternal-to-fetal transfusion. The clinical manifestations of these infections are highly variable, depending largely on the gestational timing and microorganism involved.

Parvovirus B19, which causes erythema infectiosum or "fifth disease of childhood" in immunocompetent older children, can infect 1% to 5% of seronegative (non-immune) pregnant women, and the vast majority have a normal pregnancy outcome. Adverse pregnancy outcomes in a minority of intrauterine infections include spontaneous abortion (particularly in the second trimester), stillbirth, hydrops fetalis (see later), and congenital anemia. Parvovirus B19 has a particular tropism for erythroid cells, and diagnostic viral inclusions can be seen in early erythroid progenitors in infected infants (Fig. 10-9).

The *TORCH group of infections* (see earlier) are grouped together because they may evoke similar clinical and pathologic manifestations, including *fever, encephalitis, chorioretinitis, hepatosplenomegaly, pneumonitis, myocarditis, hemolytic anemia, and vesicular or hemorrhagic skin lesions.* Such infections occurring early in gestation may also cause chronic sequelae in the child, including growth and mental retardation, cataracts, congenital cardiac anomalies, and bone defects.

Sepsis

Perinatal sepsis can be grouped clinically based on early onset (within the first 7 days of life) versus late onset (from 7 days to 3 months). Most cases of early-onset sepsis are acquired at or shortly before birth and tend to result in clinical signs and symptoms of pneumonia, sepsis, and occasionally meningitis within 4 or 5 days of life. Group B

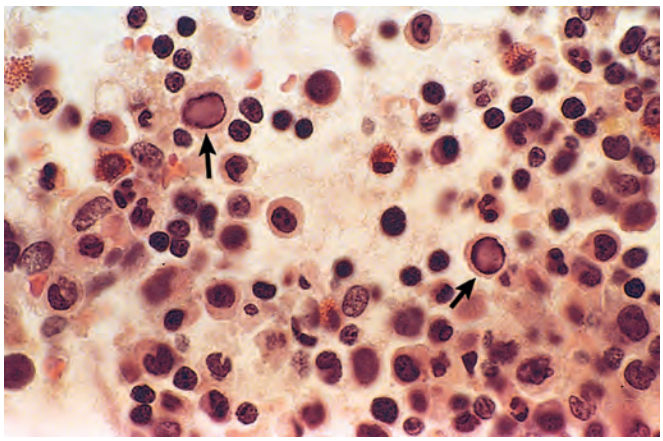

Figure 10-9 Bone marrow from an infant infected with parvovirus B19. The *arrows* indicate two erythroid precursors with large homogeneous intranuclear inclusions and a surrounding peripheral rim of residual chromatin.