bloodstream.

Necrotizing Enterocolitis

NEC is an acute inflammatory disease of the bowel with increased incidence in preterm infants. The precise cause of NEC is still uncertain, but it appears to occur in infants whose gastrointestinal tracts have experienced vascular compromise. Intestinal ischemia of unknown etiology, immature gastrointestinal host defenses, bacterial proliferation, and feeding substrate are now believed to have a multifactorial role in the etiology of NEC. Prematurity remains the most prominent risk factor in the development of NEC (Lovvorn, Glenn, Pacetti, et al, 2011).

The damage to mucosal cells lining the bowel wall may be significant. Diminished blood supply to these cells causes their death in large numbers; they stop secreting protective, lubricating mucus; and the thin, unprotected bowel wall is attacked by proteolytic enzymes. Thus, the bowel wall continues to swell and break down; it is unable to synthesize protective IgM, and the mucosa is permeable to macromolecules (e.g., exotoxins), which further hampers intestinal defenses. Gas-forming bacteria invade the damaged areas to produce **pneumatosis intestinalis**, a radiologic finding reflecting the presence of gas in the submucosal or subserosal surfaces of the bowel.

A consistent relationship has been observed between the development of NEC and enteric feeding of hypertonic substances (e.g., formula, hyperosmolar medications). It is unclear whether this connection is a result of the formula imposing a stress on an ischemic bowel, serving as a substrate for bacterial growth, or both.

Diagnostic Evaluation

Radiographic studies show a sausage-shaped dilation of the intestine that progresses to marked distention and the characteristic pneumatosis intestinalis—"soapsuds," or the bubbly appearance of thickened bowel wall and ultra lumina. There may be air in the portal circulation or free air observed in the abdomen, indicating perforation. Laboratory findings may include anemia, leukopenia, leukocytosis, metabolic acidosis, and electrolyte imbalance. In severe cases, coagulopathy (DIC) or thrombocytopenia may be