



Figure 15-32 Comparison of bronchopneumonia and lobar pneumonia.

of pneumonia caused by this organism. It also causes Pontiac fever, a related self-limited upper respiratory tract infection. This organism flourishes in artificial aquatic environments, such as water-cooling towers and the tubing systems of domestic (potable) water supplies. The mode of transmission is either inhalation of aerosolized organisms or aspiration of contaminated drinking water. *Legionella* pneumonia is common in individuals with predisposing conditions such as cardiac, renal, immunologic, or hematologic disease. Organ transplant recipients are particularly susceptible. It can be quite severe, frequently requiring hospitalization, and immunosuppressed patients may have fatality rates of up to 50%. Rapid diagnosis is facilitated by demonstration of *Legionella* antigens in the urine or by a positive fluorescent antibody test on sputum samples; culture remains the diagnostic gold standard.



Figure 15-33 Bronchopneumonia. Section of lung showing patches of consolidation (arrows).

Mycoplasma pneumoniae

Mycoplasma infections are particularly common among children and young adults. They occur sporadically or as local epidemics in closed communities (schools, military camps, and prisons).

MORPHOLOGY

Bacterial pneumonia has two patterns of anatomic distribution: lobular bronchopneumonia and lobar pneumonia (Fig. 15-32). Patchy consolidation of the lung is the dominant characteristic of **bronchopneumonia** (Fig. 15-33), while consolidation of a large portion of a lobe or of an entire lobe defines **lobar pneumonia** (Fig. 15-34). These anatomic categorizations may be difficult to apply in individual cases because patterns overlap. The patchy involvement may become confluent, producing virtually total lobar consolidation; however, effective antibiotic therapy may limit involvement to a subtotal consolidation. Moreover, the same organisms may produce either pattern depending on patient susceptibility. **Most important from the clinical standpoint are identification of the causative agent and determination of the extent of disease.**

In **lobar pneumonia**, four stages of the inflammatory response have classically been described: congestion, red hepatization, gray hepatization, and resolution. In the first stage of **congestion** the lung is heavy, boggy, and red. It is characterized by vascular engorgement, intra-alveolar fluid with few neutrophils, and often the presence of numerous bacteria. The stage of **red hepatization** that follows is characterized by massive confluent exudation, as neutrophils, red cells, and fibrin fill the alveolar spaces (Fig. 15-35A). On gross examination, the lobe is red, firm, and airless, with a liver-like consistency, hence the term hepatization. The stage of **gray hepatization** that follows is marked by progressive disintegration of red cells and the persistence of a fibrinosuppurative exudate (Fig. 15-35B),



Figure 15-34 Lobar pneumonia—gray hepatization. The lower lobe is uniformly consolidated.