the bone marrow and lymphatic system. It is a complex disease of varying heterogeneity. Consequently, classification has become increasingly complex, sophisticated, and essential because identification of the subtype of leukemia has therapeutic and prognostic implications. The following is an overview of the major classification systems currently used.

Morphology

In children, two forms are generally recognized: ALL and acute myelogenous leukemia (AML). Synonyms for ALL include lymphatic, lymphocytic, lymphoid, and lymphoblastic leukemia. ALL is the most common form of childhood cancer, with an annual incidence of two to five cases per 100,000 children (Rabin, Gramatges, Margolin, et al, 2016). It occurs more frequently in boys than in girls and in Caucasians than in African Americans (Rabin, Gramatges, Margolin, et al, 2016). The peak onset is between 2 and 5 years old. It is one of the forms of pediatric cancer that has demonstrated dramatic improvements in survival rates. Before the use of antileukemic agents in 1948, a child with ALL lived 2 to 3 months. Current long-term disease-free survival rates for children with ALL approach 80% in major research centers.

AML accounts for 20% of all cases of childhood leukemia and has an annual incidence of eight cases per million (Arceci and Meshinchi, 2016). The incidence is similar for males and females, and higher rates are seen during the first year of life. Overall survival rates vary dramatically according to sex, race, and constitutional characteristics of the disease (Arceci and Meshinchi, 2016).

Pathologic and Related Clinical Manifestations

Leukemia is an unrestricted proliferation of immature white blood cells in the blood-forming tissues of the body. Although not a "tumor" as such, the leukemic cells demonstrate the neoplastic properties of solid cancers. Thus the resultant pathologic and clinical manifestations of the disease are caused by infiltration and replacement of any tissue of the body with nonfunctional leukemic cells. Highly vascular organs, such as the spleen and liver, are most severely affected.

To understand the pathophysiology of the leukemic process, it is