what is called Richter syndrome or Richter transformation (74,75,76). This syndrome involves transformation of a leukemic cell to a lymphoma, where the neoplasm can occur in the lymph nodes, central nervous system, gastrointestinal tract, or eye. Lymphomas can be quantitated by a modified form of the RECIST criteria (77).

e. Lymphoid Neoplasms

1. *Acute Lymphocytic Leukemia*

In the United States, there are over 5000 new cases of ALL per year (78). The terms lymphocyte and lymphoblast refer to the cells that are involved. When normal, the cells are lymphocytes, but in ALL these cells are in a relatively immature state, and are therefore called blasts. For children under 15 years of age, ALL is approximately five times more common than AML, accounting for approximately 76% of all childhood leukemia diagnoses. Leukemia is the most common cancer diagnosis in children under 15 years of age (79). Appelbaum et al. (80) reviewed the endpoints used in clinical trials on ALL.

ALL can be treated by administering the enzyme, asparaginase (81,82). Asparaginase catalyzes the breakdown of extracellular asparagine into aspartic acid and ammonia. Depletion of extracellular asparagine inhibits the growth of lymphocytic leukemic cells. Unlike normal cells, lymphoblasts lack the enzyme that biosynthesizes asparagine, and thus require an exogenous source of this amino acid.

Imatinib (Gleevec®), shown below, is a small molecule that inhibits tyrosine kinase. Specifically, this drug inhibits the tyrosine kinase activity of the fusion protein, BCR-ABL (83). The drug is used for treating hematological disorders where cells contain the Philadelphia chromosome (or express BCR-ABL) (84). These disorders include CML and a subset of cases of AML. Regarding this subset

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