

Acute Leukemias

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Abstract

The initial diagnosis of acute leukemia should be considered a medical emergency if the patient presents with a white count above 50,000/ul or acute promyelocytic leukemia. These patients require immediate treatment. However, any patient with acute leukemia is at increased risk of infection, bleeding, and problems related to severe anemia, such as high output cardiac failure. If treatment is not available at time of diagnosis, the patient should be transfused with blood products as necessary and then referred to a major cancer center. Chemotherapy will have a greater chance of success if the patient is in a stable condition prior to initiation. However, if stabilization proves impossible within a few days, therapy should begin anyway, even in patients with lower white blood counts (WBC) and without acute promyelocytic leukemia. If AML is left untreated, the median survival is approximately 2 months. When the peripheral blast count exceeds 50-100,000/ul, leukostasis can cause altered mental status, retinal hemorrhages, cerebrovascular accidents, priapism, local perivascular tissue infiltration, and organ failure, especially of pulmonary and renal systems. Emergent therapy for leukostasis includes hydration, effective anti-leukemic therapy and/or leukopheresis. Tumor lysis syndrome may occur with rapid destruction of large numbers of leukemic cells by chemotherapy and can cause life-threatening acute metabolic derangements such as hyperuricemia, hyperkalemia, hyperphosphatemia, hypocalcemia, acidosis, and renal failure. This syndrome can be avoided by vigorous hydration, alkalinization, the use of allopurinol, close observation, and early initiation of hemodialysis when necessary.

During chemotherapy, acute leukemia patients must be followed closely with frequent blood counts, transfusions of blood products to prevent severe anemia and hemorrhage, and possibly prophylactic antimicrobials during times of severe neutropenia. Bactrim or Ciprofloxacin are commonly used for broad spectrum antibacterial coverage; Fluconazole for prevention of candidiasis; and Itraconazole for prophylaxis of aspergillosis. Despite prophylaxis, patients are still at an increased risk of life-threatening infections throughout the duration of chemotherapy, therefore attention to any temperature elevation is imperative. Electrolyte imbalances occur during chemotherapy cycles and should be corrected whenever possible to avoid cardiac arrhythmias and other physiologic disturbances.

At The University of Texas M.D. Anderson Cancer Center newly diagnosed patients over the age of 50 years with AML are given induction chemotherapy in a "protected environment" consisting of specially sterilized rooms equipped with laminar air flow to eliminate potential sources of infection, especially pneumonias, in this age group. In addition, no visitors are allowed in the patients' rooms to further reduce infectious incidents during periods of severe neutropenia.

References

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