Innovative Approaches in the Treatment and Support of Patients with Acute Myelogenous Leukemia

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This special supplement focuses on innovative advances in treating acute myelogenous leukemia (AML) and associated fungal infections, with particular attention to immune enhancement strategies. AML is one of the most common types of leukemia in adults, second only to chronic lymphocytic leukemia, with more than 13,000 new cases and nearly 9,000 deaths from AML anticipated in the U.S. in 2007 [1]. Unfortunately, while the overall survival rate for all leukemias combined has risen from 14% in the early 1960s to nearly 50% during the period 1996–2002, the overall survival rate for AML has increased to only about 20% in that same time frame [2]. For patients over 60 years of age, overall survival remains even more dismal, with a <10% 3-year survival rate.

The combination of cytarabine and daunorubicin was established as the gold standard for AML induction therapy in 1973 [3]. Standard induction regimens are still based on the combination of cytarabine and an anthracycline or anthracyclinedione. These regimens are associated with a considerable risk for significant life-threatening toxicities, the most important of which are a result of infections or bleeding, and, less commonly, cardiac, renal, gastrointestinal, or hepatic toxicities. The infections usually result from bacterial, viral, or fungal pathogens. Given the low overall survival rate for AML combined with the significant side effects of current induction and postremission therapies, new approaches are needed to enhance survival of patients with AML.

Several areas are at the forefront of significant progress in the understanding and treatment of AML: prognostic factors, which are improving risk discrimination; improvements in the availability and outcome of allogeneic bone marrow transplantation; and targeted therapies for the treatment of AML.

The immnosuppression produced by the disease itself and by the chemotherapy for AML is also a major factor in the risk for serious infections, which, in turn, are associated with increased morbidity and mortality. Fungi, in particular, are increasingly being recognized as leading causes of infections, particularly those occurring after a protracted period of neutropenia, which is common in AML. Because monotherapy with an antifungal agent is often unsuccessful, other approaches are under investigation including the use of combination therapy and immune enhancement agents such as GM-CSF, interferon, and granulocyte transfusions. Newer immunotherapeutic strategies, such as the use of pathogen recognition receptor ligands or M-CSF, are also being studied in experimental fungal infections and in the clinical setting.

Immune enhancement therapies hold considerable promise in the treatment of both AML and associated fungal infections. This supplement provides both clinicians and researchers with an update about some of the recent advances in the therapy of AML and standard as well as experimental approaches to overcoming the immunologic compromise associated with AML and its treatment.

REFERENCES

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