

# Management of Patients With Chronic Lymphocytic Leukemia Treated With Lenalidomide

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Lenalidomide is an immunomodulatory drug that has shown preliminary activity in the treatment of chronic lymphocytic leukemia (CLL). Much is known about the safety profile of lenalidomide from experience in other hematologic malignancies, such as myelodysplastic syndromes and multiple myeloma. In addition to the known adverse effects associated with lenalidomide (e.g., myelosuppression, rash, fatigue), some unique effects (e.g., tumor flare reactions, tumor lysis syndrome) have arisen during clinical studies of CLL. Typical signs of tumor flare reactions include early onset of painful enlargement of the lymph nodes or spleen, with or without low-grade fever, rash, and bone pain. Management may require nonsteroidal anti-inflammatory drugs or a short course of corticosteroids. Dose delays or reductions usually are not required for tumor flare reactions. Signs of tumor lysis syndrome may include shortness of breath, peripheral edema, generalized weakness, sweating, fever, and tachycardia. Untreated tumor lysis syndrome can result in renal impairment and congestive heart failure. Careful monitoring and appropriate management of treatment-related side effects can help ensure that patients with CLL achieve maximum therapeutic benefit from lenalidomide therapy.

**C**hronic lymphocytic leukemia (CLL), a malignant disorder of the lymphocytes, is one of the most common forms of leukemia in the United States. An estimated 15,490 new cases of CLL were diagnosed in the United States in 2009, and about 4,390 people died from CLL (Jemal et al., 2009). The incidence of CLL increases with age, and men are more likely to develop the disorder. The disease also is slightly more prevalent in Caucasians than in African Americans (Redaelli, Laskin, Stephens, Botteman, & Pashos, 2004).

Diagnosis of CLL is based on clinical examination and specific tests on the peripheral blood and bone marrow. Flow cytometry is helpful in diagnosing CLL and ruling out other lymphoproliferative disorders. Signs and symptoms of CLL usually develop slowly, with many patients being asymptomatic during the early stages of the disease. Common symptoms include fatigue, shortness of breath, swollen lymph nodes, repeated infections, and unintended weight loss.

In general, patients with CLL do not require treatment until they develop symptoms or experience disease progression (Hallek et al., 2008). Approved treatments include purine analogs (such as fludarabine), bendamustine, alkylating agents (such as chlorambucil or cyclophosphamide), or various combinations (Catovsky et al., 2007; Eichhorst et al., 2006; Flinn et al., 2007; Rai et al., 2000). The anti-CD20 monoclonal antibody rituximab appears to improve outcomes when added to fludarabine-based chemotherapy

## At a Glance

- ◆ Ongoing clinical trials continue to investigate the efficacy and disease-specific side effects of lenalidomide.
- ◆ The use of lenalidomide in chronic lymphocytic leukemia (CLL) may result in tumor flare reaction and tumor lysis syndrome, which can be managed with appropriate prophylaxis, monitoring, and treatment.
- ◆ With proper monitoring, particularly in the first cycles of therapy, lenalidomide can be administered safely in CLL, resulting in minimal dose interruption or reductions.

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