FEATURE ARTICLE

Hematopoietic Support With Moderately Myelosuppressive Chemotherapy Regimens: A Nursing Perspective

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The proactive use of granulocyte–colony-stimulating factors (G-CSFs) in patients with cancer treated with chemotherapy reduces the incidence of hospitalizations for febrile neutropenia (FN) as well as minimizes chemotherapy dose reductions and delays that could compromise treatment outcomes. In accordance with earlier economic analyses, the guidelines of the American Society of Clinical Oncology recommended the use of G-CSF in the first cycle only with chemotherapy regimens associated with a 40% or greater risk of FN. However, more recent guidelines by the National Comprehensive Cancer Network (NCCN) recommended that the use of G-CSF in the first cycle of chemotherapy be considered for patients at a 20% or higher risk of developing FN or other neutropenic complications. The results of a clinical trial, which led to NCCN's recommendations, are reviewed in this article. Patients with breast cancer were treated with single-agent docetaxel, a regimen that is associated with a risk of approximately 20% for developing FN. The use of pegfilgrastim in all cycles of chemotherapy caused a significantly lower incidence of FN, fewer hospitalizations as a result of FN, and lowered use of IV anti-infectives than placebo. Thus, when assessing patients before treatment, nurses should consider discussing with the multidisciplinary team the use of growth factor support even with moderately myelosuppressive chemotherapy regimens.

Febrile neutropenia (FN) is a serious complication of neutropenia, which is the primary dose-limiting toxicity of many modern chemotherapy regimens. The standard of care for most patients with FN is hospitalization and empiric IV antibiotics (National Comprehensive Cancer Network [NCCN], 2005a). Hospitalization for FN, however, is associated with substantial morbidity and mortality (Kuderer, Cosler, Crawford, Dale, & Lyman, 2002). Chemotherapy doses may be delayed or reduced in response to FN, and data show that chemotherapy dose delays and reductions in curative settings such as early-stage breast cancer and aggressive non-Hodgkin lymphoma correlate with poorer treatment outcomes, including shorter overall survival (Gillespie, 2001). Another approach is to manage neutropenia proactively by using granulocyte–colony-stimulating factors (G-CSFs) as an adjunct to chemotherapy to reduce the incidence of FN, a strategy that may be particularly beneficial in settings in which chemotherapy doses and schedules should be maintained for optimal outcomes.

Recombinant human G-CSF stimulates the proliferation of bone marrow progenitor cells and their differentiation into fully functional blood cells (Welte, Gabrilove, Bronchud, Platzer, & Morstyn, 1996). In clinical trials, the use of G-CSF filgrastim begun 24 hours after myelosuppressive chemotherapy resulted in lower incidences of FN and infection and fewer days of IV

At a Glance

- The proactive use of granulocyte–colony-stimulating factors (G-CSFs) in patients with cancer treated with myelosuppressive chemotherapy reduces neutropenic complications and allows for delivery of chemotherapy at full dose and on schedule.
- Recent economic analyses indicate that the cost of G-CSF is offset when the risk of febrile neutropenia is lower than 20%.
- In clinical trials, benefits of G-CSF have been observed with moderately myelosuppressive regimens associated with a risk of febrile neutropenia of approximately 20%.

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