Maculopapular Skin Rashes Associated With High-Dose Chemotherapy: Prevalence and Risk Factors

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Purpose/Objectives: To determine the prevalence of and risk factors for maculopapular skin rashes associated with high-dose chemotherapy.

Design: Observational pilot study.

Setting: A bone marrow transplant hematology-oncology unit in a private city hospital.

Sample: Data were collected on 14 patients who developed maculopapular rashes out of 127 patients who received high-dose chemotherapy (purposive sampling).

Methods: Observation of the distribution and nature of skin rashes in relation to chemotherapy, disease, adjuvant medications, and white blood cell counts.

Main Research Variables: Diseases, chemotherapy protocols and doses, adjuvant medications, and blood counts.

Findings: Skin reactions ranged from mild, scattered macular or maculopapular rashes to severe rashes. Patients newly diagnosed with acute myelogenous leukemia (AML) who received induction protocols containing cytarabine had the most rashes, affecting 6 of 11 patients (55%). No rashes were observed on patients treated with the protocol that included high-dose corticosteroids. Patients rarely had recurrence of the rash with further courses of chemotherapy.

Conclusions: Cytarabine doses higher than 700 mg/m² may be a cause of maculopapular skin rashes. Patients most at risk were those newly diagnosed with AML who received induction therapy. Corticosteroids may prevent the development of skin rashes.

Implications for Nursing: No useful nursing strategy exists to prevent, lessen the intensity of, or shorten the course of a delayed hypersensitivity rash. Knowing which patients are most at risk is useful to enable close monitoring and patient and staff education.

During the course of treatment with high-dose chemotherapy, a substantial number of patients in a nine-bed bone marrow transplant hematology-oncology unit in a progressive inner-city hospital developed maculopapular skin rashes of varying intensity and subsequent complications that prolonged their courses of treatment and affected their physical and emotional well-being. The chemotherapy was given as induction therapy, consolidation therapy, or conditioning therapy prior to autologous peripheral blood stem cell transplantation (PBSCT).

This article describes an observational pilot study to monitor all skin rashes that occurred after certain high-dose chemotherapy protocols during a 12-month period. The aims of the study were to determine the prevalence of and risk factors leading to maculopapular skin rashes on the unit.

Key Points . . .

- A substantial number of patients developed maculopapular skin rashes after receiving high-dose chemotherapy for a range of hematologic diseases.
- When skin rashes occur, they have a severe effect on patients' physical and emotional well-being at a time when they are coping with a life-threatening disease and other debilitating side effects of treatment.
- Patients who are newly diagnosed with acute myelogenous leukemia and are treated with cytarabine-containing protocols are at greater risk for developing rashes.
- More research needs to be done to determine possible prophylaxis and to increase knowledge in this specialty area to enable nurse and patient education to decrease patient distress and length-of-stay issues.

Literature Review

A review of the current literature revealed a scarcity of research detailing the prevalence and causes of dermatologic problems. Much of the literature consisted of reviews rehashing current views on the management of toxicities (Armstrong, Rust, & Kohtz, 1997; Gallagher, 1995; McCarthy, 2002) or case studies focusing on rare skin reactions or chemotherapy not used in the current study (Gallagher, 2001; Haisfield-Wolfe & Rund, 2002; Hockett, 2004; Keung, Knovich, Powell, & Pettenati, 2004; Schaich, Schakel, Illmer, Ehninger, & Bornhauser, 2003; Tse, Lie, Ng, & Kwong, 2003). Pichler (2003) researched the pathophysiology of delayed drug hypersensitivity reactions in detail, but more research is needed in the context of high-dose chemotherapy. Only Pearson, Sirohi, Powles, Treleaven, and Mortimer (2004) reported data on

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