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Prevention and Treatment of Acute Radiation Dermatitis: A Literature Review

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Purpose/Objectives: To review historical and current research data on prevention and treatment of acute radiation dermatitis.

Data Sources: 18 research trials and 1 case report published from 1967–2001 and 1 unpublished research trial from 1972.

Data Synthesis: Washing the skin with mild soap and water and the hair with mild shampoo is safe during radiation therapy. Biafine® (Medix Pharmaceuticals, Inc., Largo, FL), chamomile cream, almond ointment, topical vitamin C, and gentian violet have not been proven effective and should not be used. Transparent, hydrocolloid, and hydrogel dressings have been beneficial, as have sucralfate cream and corticosteroid cream. Aloe vera may be beneficial and is not harmful.

Conclusions: The existing scientific data are lacking in quantity and quality. The current body of evidence is unable to provide clinicians with comprehensive guidelines for prevention and management of acute radiation dermatitis.

Implications for Nursing: Nurse clinicians and nurse scientists must partner to conduct further research to add to the limited resources about the prevention and management of acute radiation dermatitis and develop comprehensive evidence-based clinical practice guidelines.

Key Points . . .

- Acute radiation dermatitis is a significant problem for patients undergoing radiotherapy.
- No comprehensive, evidence-based consensus guidelines exist, and scientific data are limited about the management of radiation dermatitis.
- Additional research must be conducted to test currently used therapies and novel therapies with blinded, randomized clinical trials and large sample sizes to determine the best practice for managing radiation dermatitis.
- Therapies shown to have no effect on preventing or treating radiation dermatitis no longer should be used.

Goal for CE Enrollees:

To enhance nurses' knowledge related to the prevention and treatment of acute radiation dermatitis.

Objectives for CE Enrollees:

On completion of this CE, the participant will be able to

1. Describe the pathophysiology of acute radiation dermatitis.
2. Describe two interventions for prevention or treatment of acute radiation dermatitis that are supported by currently available evidence.
3. Identify one intervention that has not been proven effective for the prevention or treatment of acute radiation dermatitis.

Acute radiation dermatitis is a common side effect of radiotherapy. The majority of patients receiving radiation therapy will develop this skin toxicity, which is caused by the effect of radiation on the rapidly dividing cells of the basal layer of the epidermis as well as the dermis (Williams et al., 1996). Fisher et al. (2000) estimated that 87% of all women undergoing radiation therapy for breast cancer will develop some degree of radiation dermatitis. The intensity of the reaction depends on the radiation fraction schedule, total dose, anatomic treatment area, radiation type, and individual differences among patients (Bostrom, Lindman, Swartling, Berne, & Bergh, 2001; Sitton, 1992). Severe radiation dermatitis can be painful, may lead to localized and systemic infections, and can cause permanent scarring. Occasionally, severe reactions can necessitate temporary or permanent cessation of treatment, which could decrease the odds for cancer control or cure (Williams et al.).

Pathophysiology

The epidermis of the skin contains a self-renewing system where cell production at the basal layer equals cellular loss

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