Radiodermatitis in Patients With Cancer: Systematic Review and Meta-Analysis

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Radiation therapy is one of the pillars of cancer treatment that has led to an increase in cancer survival rates in the United States. In 2000, about 24% of cancer survivors received radiation and, in 2020, that number was expected to increase to 29% (Bryant et al., 2017). This increase was seen across cancer sites, with the largest increases for patients being treated for breast or prostate cancer (Bryant et al., 2017). A prevalent side effect of ionizing radiation is radiodermatitis (also referred to as radiation dermatitis or radiation-induced skin reaction). An estimated 95% of patients who receive radiation therapy will develop some level of radiodermatitis (Singh et al., 2016). Because of this high risk, interventions for radiodermatitis are aimed at minimizing the severity or delaying progression to higher grades, rather than prevention.

Skin changes from radiation therapy are caused by disruption to the normal process of cell division and repair related to ionizing radiation therapy (Bray et al., 2016). Radiodermatitis can range from mild erythema to dry desquamation and moist desquamation (Singh et al., 2016). These skin changes usually manifest within two to three weeks of radiation initiation and can persist for as long as four weeks following the completion of treatment (Naylor & Mallett, 2001). These skin changes can be painful and uncomfortable to patients and can have a negative effect on quality of life (Aistars, 2006; Vaz et al., 2007). If severe, it can also lead to changes in radiation treatment schedules (McQuestion, 2006).

Symptom management strategies for radiodermatitis among patients with cancer that are likely to be effective include topical nonsteroidals, topical steroids, and dressings.

**KEYWORDS** radiodermatitis; radiation therapy; guideline; systematic review; meta-analysis

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