

## Skin Toxicity after Radiotherapy: About a Case

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### Letter to the Editor

A 60-year-old woman was admitted to the Department complaining of a slow growing mass in the right knee. Physical examination demonstrated a mass on the postero-lateral aspect of the right knee, which was not tender or mobile, however was rubbery and hard in consistency (Figure 1a). Full flexion and extension was observed without any restriction of joint movement. An ultrasound examination of the lesion showed an hyperechoic neoformation (48 × 21.6 × 43.7 mm) well-defined. An magnetic resonance imaging (MRI) showed an expansive neoformation (43 × 21 mm) in contact with the superficial fascia. Subsequently, the patient underwent surgical resection of the lesion. Histological examination diagnosed undifferentiated pleomorphic sarcoma, high-grade with immunophenotypic aspects of muscle differentiation (strongly positive for vimentin and smooth muscle actin and focally and weakly positive for S-100 protein but negative for CK AE1/AE3. The proliferation rate was estimated by Ki-67 to be ~10%). The surgical resection marginal status was negative. Subsequently, the patient refused postoperative chemotherapy and radiation therapy.

After five months, an 8 × 7 mm size tumor was observed on an MRI examination with contrast medium; this investigation was performed during outpatient follow-up. Under the diagnosis of recurrent undifferentiated pleomorphic sarcoma, the patient underwent surgical resection of the lesion. After surgery, the patient received adjuvant chemotherapy (three cycles of 90 mg/m<sup>2</sup> epirubicin and 2500 mg/m<sup>2</sup> ifosfamide every 3 weeks) and radiotherapy. Radiotherapy was given daily with a total dose of 60 Gy at 2.0 Gy per fraction, five days per week.

Two months after the end of radiotherapy, she attended our outpatient dermatologic clinic due to the appearance of cutaneous painful and ulcerated lesions on the irradiated site of the right knee.

Physical examination revealed a warm pruritic erythematous area of about 10 × 15 (Figure 1b). The patients was treated with



Fig.1a

Fig.1b

**Figure 1:** (a) postero-lateral aspect of the right knee, (b) warm pruritic erythematous area



Fig.2a

Fig.2b

**Figure 2:** Remarkable improvement of the skin lesions.

LED irradiation and polyurethane foam with remarkable improvement of the skin lesions (Figure 2a and 2b).

Radiotherapy is used to limit the growth of neoplastic cells. Because radiotherapy exposes healthy cells within the vicinity of tumors and between the tumor site and the radiation source to radiation, undesirable sequelae often are unavoidable [1].

The reactions are a result of radiation treatment disrupting the normal process of cell division and regeneration, resulting in cell damage or cell death [2]. Damage is usually most prominent in tissues with rapid rates of proliferation, such as skin, mucosa, and bone marrow. Acute radiation-induced skin reactions range from mild erythema, dry and moist desquamation, to ulceration, as a result of injury to the epithelium and underlying structures. Late toxicity can include telangiectasia, edema, ulceration, atrophy and fibrosis and typically is defined as changes occurring beyond 90 days of treatment [3,4]. The factors influencing the development or severity of radiation-induced skin reactions are intrinsic (age, general health, ethnic origin, coexisting diseases, UV exposure, hormonal status, and genetic factors) and extrinsic: (dose, volume and fraction of radiation, radio-sensitisers, concurrent chemotherapy, and the site of treatment [1]. Radiation-induced skin reactions have an impact on the level of pain/discomfort experienced and the quality of life of those who undergo radiation

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treatment. Critical analysis of the evidence of clinical interventions available for the prevention and treatment of acute radiation injury demonstrate the lack of objective data. To date, universally accepted guidelines for the management of radiotherapy-induced skin injuries do not exist. Interventions can be generally viewed as either preventive or management strategies. Preventive strategies may include: void the use of metallic-based topical products (zinc oxide creams or deodorants with an aluminum base, for instance), because they may increase the surface dose to skin, wear loose-fitting clothing over the irradiated area to prevent friction injuries, maintain a clean and dry irradiated area, avoid extreme temperatures and the use of starch-based products because they increase the risk of infection. Management strategies may include active management of any erythema, desquamation and ulceration of the skin, with topical preparations and dressings [1]. We report the case of a woman who developed radiotherapy-induced skin reactions

and we underline the importance of dermatological periodic visits to prevent these complications.

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