Radiation-induced morphea: an under-recognized complication of breast radiation

Worldwide, breast cancer was the most common new diagnosis and common cause of death in women in 2012. As screening for breast cancer has improved patients are often identified in the early stage of disease and are candidates for breast-conserving therapy (lumpectomy) with adjuvant radiation therapy (RT).

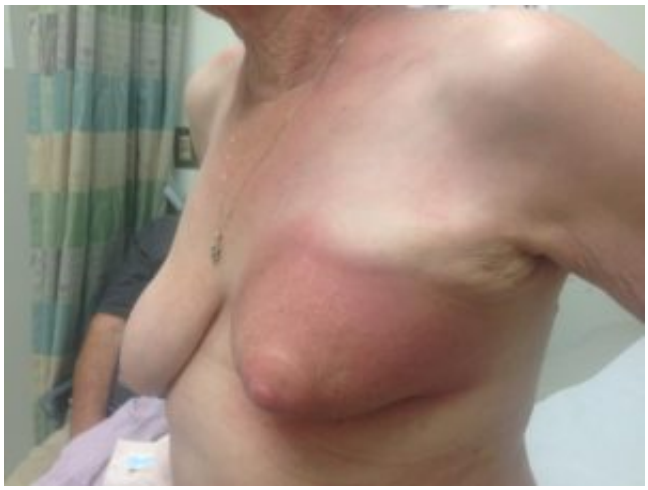

Fig. 1. Radiation Induced Morphea. Photograph taken 6 months after the completion of radiation. Note the dramatic breast erythema, visible lymphatic channels and skin retraction as compared with the contralateral breast.

A rare, and often under-recognized, radiation treatment complication is radiation-induced morphea (RIM). Morphea, also known as localized scleroderma, is a disorder characterized by excessive collagen deposition leading to pain, and thickening of the dermis, subcutaneous tissues, or both. Of note, this distinct entity is different from post-irradiation fibrosis, which more commonly arises within the several months after completion of RT and is primarily a deep subcutaneous tissues and is limited to the radiation treatment field. RIM is a painful and disfiguring condition that can occur months to years after the completion of RT, leading to poor cosmesis in patients treated with breast-conserving therapy (lumpectomy) and there are limited treatment options.

There are typically two clinical phases involved in RIM. The first phase is characterized by pain, skin changes, and swelling. The second phase, can occur months after the initial phase and is characterized by induration, fibrosis, and pigmentation changes.

90% of breast cancer patients treated with radiation develop some degree of radiation-induced skin

reaction including redness or blistering, fibrosis (10%), skin telangiectasia (10%), atrophy (8%), and pain (2%). Despite common skin reactions with RT, the incidence of localized morphea after RT is very rare -- approximately 2 per 1000 treated. RIM is uncommon, and failure to recognize this condition, and its frequent misdiagnosis as metastatic carcinoma or recurrent disease, can lead to a potentially morbid, expensive additional medical workup that could potentially be avoided.

RIM is a clinical diagnosis of exclusion and most cases are often mistaken for cellulitis/mastitis, or inflammatory breast cancer, and initial treatment with antibiotics, imaging, or biopsy is common.

Although healing can be affected in these patients, early biopsy can be helpful. Typical biopsy results would show an inflammatory lymphocytic infiltrate in the superficial tissues, increased collagen in the reticular dermis with possible eosinophilia, accompanied by some amount of chronic inflammation.

Various treatments including antibiotics, steroids of all varieties (topical, intralesional, systemic), vitamin E, pentoxifylline, colchicine, D-penicillamine, cytotoxic agents, and immunosuppressants, photopheresis (PUVA), or phototherapy (Ultraviolet A [UVA], UVA1, Ultraviolet B) and even plasmapheresis have all been used for symptomatic relief with varying results. In particular, UVA and PUVA therapy have been shown to result in clinical improvement. Breast reconstruction for morphea has been reported to yield good cosmesis; however, surgery in the setting of RIM has not been reported in the literature and it is possible for skin changes to persist even after mastectomy.

Regardless of the treatment modality chosen, treatment should be initiated early to prevent progressive fibrosis, unnecessary patient pain (physical and emotional), and to provide the best possible outcome. Early referral to dermatology is recommended.

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