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Field Cancerization with Multiple Keratoacanthomas Successfully Treated with Topical and Intralesional 5-Fluorouracil

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Case Presentation

Patient: 78-year-old Caucasian male.

History of Present Illness: Our patient is a 78-year-old male who initially presented in March 2014 with a papule on his right forearm for 3 months. It was biopsied in March 2014, diagnosed as a well-differentiated invasive squamous cell carcinoma and subsequently excised with clear margins in April 2014. Squamous cell carcinoma formed two additional times at the incision and was excised with clear margins. The fourth squamous cell carcinoma in the area was treated with x-ray therapy. One month after completion, four papules just adjacent to the x-ray therapy treatment field were biopsied as well-differentiated squamous cell carcinoma, keratoacanthoma (KA) type.

Medical History/Surgical History: Squamous cell carcinoma, myocardial infarction, diabetes mellitus II, chronic obstructive pulmonary disease, hypertension, hypercholesterolemia, gout, diverticulosis.

Medications: Fluticasone/salmeterol inhaled, aspirin, allopurinol, atorvastatin, furosemide, brimonidine ophthalmic, and clinical implications.

Physical Examination: Pink patch at radiation site.

Studies: A CT with contrast of the chest and right upper extremity.

At this time, the patient had four biopsy proven KAs on the right forearm in the area of prior radiation (figure 1). The patient was treated with topical 5-Fluorouracil (5-FU) 5% cream twice daily for 4 weeks, applied to the right arm from the elbow to the wrist and occluded under an elastic bandage. The development of an expanding neoplastic field appears to play an important role in cutaneous carcinogenesis.2,3 It is necessary to consider the cutaneous field as a highly photodamaged area that contains clinical and subclinical lesions.2,3,4 The treatment of cutaneous neoplasms, squamous cell carcinoma in particular, should focus not only on the tumor itself, but also on the surrounding tissue.4 Adjunctive field-directed therapies should be considered after treatment of the primary tumor.4 Field cancerization may cause the development of multiple clonally related neoplasms within a field of genetically altered cells. These may continue to develop after excision and clinical implications.

Discussion

At this time, the patient had four biopsy proven KAs on the right forearm in the area of prior radiation (figure 1). The patient was treated with topical 5-Fluorouracil (5-FU) 5% cream twice daily for 4 weeks, applied to the right arm from the elbow to the wrist and occluded under an elastic bandage. The patient stated that the biopsy sites became sore and inflamed during the treatment. After 4 weeks of treatment, 2 of the KA biopsy sites had healed without clinical evidence of tumor. The other two biopsy sites had developed adjacent firm pink papules (figure 2). These 2 lesions were then treated with intralesional (IL) 5-FU injectable 50mg/ml once weekly to resolution at 4 weeks.

At the end of treatment, both tumors had clinically resolved. These have not recurred, nor has he developed any new tumors at 9 months after his last injection. The concept of “field cancerization” was first proposed in 1953 by Slaughter et al. while studying oral squamous cell carcinoma in an effort to explain the development of multiple primary tumors and locally recurrent cancer.2,3 Histopathologically, the authors observed 1) oral cancer develops in multifocal areas of precancerous change, 2) histologically abnormal hyperplastic tissue surrounds the tumors, 3) oral cancer consists of multiple independent areas that coalesce, and 4) the persistence of abnormal tissue after surgery may explain local recurrences and the development of new lesions in a previously treated area.1,2 Since its original publication the concept has been applied to several other organ systems including the lung, vulva, breast, bladder, colon and skin.2 Field cancerization may cause the development of multiple clonally related neoplasms within a field of genetically altered cells. These may continue to develop after excision with clear margins or radiation therapy. Given the success of treatment in our patient, we recommend consideration for topical and IL 5-FU in patients who develop squamous cell carcinomas and KAs within an area of field cancerization.

References: