SKIN

BRIEF ARTICLE

Digital Pigmented Squamous Cell Carcinoma In-situ: A Case Report

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ABSTRACT

Pigmented squamous cell carcinoma in-situ (SCCIS) is a rare variant of cutaneous SCC that can clinically mimic malignant melanoma. This variant is more commonly seen in patients with brown and black skin and often presents in sun-protected areas. We report a case of a 38-year-old man with a dark brown, expanding lesion on the lateral aspect of the left middle finger and history of immunosuppression secondary to chronic corticosteroid treatment for systemic sarcoidosis. Histologic examination of the lesion was consistent with a diagnosis of pigmented SCCIS. This report highlights a unique association between iatrogenic immunosuppression for inflammatory disease and development of pigmented SCCIS. Additionally, the case emphasizes the importance of surveillance for pigmented SCC in patients with skin of color, particularly those who may be at higher risk due to immunosuppression.

INTRODUCTION

Cutaneous squamous cell carcinoma in-situ (SCCIS), or Bowen's disease, is a keratinocyte neoplasm limited to the epidermis. The classic description is an erythematous, scaly patch or slightly elevated plaque that arises within sun-damaged skin of an elderly individual. Pigmented SCCIS is a rare variant that represents between 1.6% and 5.5% of SCCIS cases[1,2] and presents as hyperpigmented, well-demarcated plaque with a velvety, verrucous surface that can clinically mimic malignant melanoma.

Although skin cancer is less common in people with brown and black skin, these patients are more likely to have pigmented SCCIS than those with white skin. In some cases, pigmented SCCIS is located on non-sun exposed sites, suggesting the role of factors other than ultraviolet (UV) radiation in the pathogenesis of this condition.[3] Here we present a case of digital pigmented SCCIS in a patient with history of immunosuppression secondary to chronic corticosteroid treatment for systemic sarcoidosis. This case highlights a unique association between inflammatory disease and development of pigmented SCCIS and emphasizes the importance of surveillance for atypical presentations of skin cancer in this patient population.

CASE REPORT

A 38-year-old man presented with a five-year history of a dark brown, expanding lesion on the lateral aspect of the left middle finger. The patient's constitutive skin color was brown. The lesion first appeared as a small, dark spot and had steadily enlarged in size. There was no associated pain, drainage, bleeding, or pruritis. The patient had no reported history of arsenic exposure or chronic scars or ulcers in the area. His past medical history was remarkable for systemic sarcoidosis, maintained on prednisone for three years after not tolerating a trial of mycophenolate mofetil. He quit smoking cigarettes six years prior and had a 3.5 pack year history. HIV screening was negative.

On clinical exam there was an 8mm dark brown, irregularly shaped, keratotic papule with an eccentric area of lighter coloration on the radial aspect of the left third finger (figure 1). The clinical differential diagnosis included malignant melanoma and seborrheic keratosis. A shave biopsy was obtained. The histopathologic exam was notable for full-thickness epidermal atypia with prominent scattered mitotic figures throughout the epidermis. Melanin pigment was present within the stratum corneum and epidermis (figure 2). In-situ hybridization staining for high-risk human papilloma virus (HPV) was negative. These features were consistent with a diagnosis of pigmented SCCIS.

The patient subsequently underwent Mohs micrographic surgery for removal of SCCIS. The lesion was removed in one stage and the wound was left to heal by secondary intention. The surgical site healed well with no evidence of recurrence at a 2-year follow up visit.

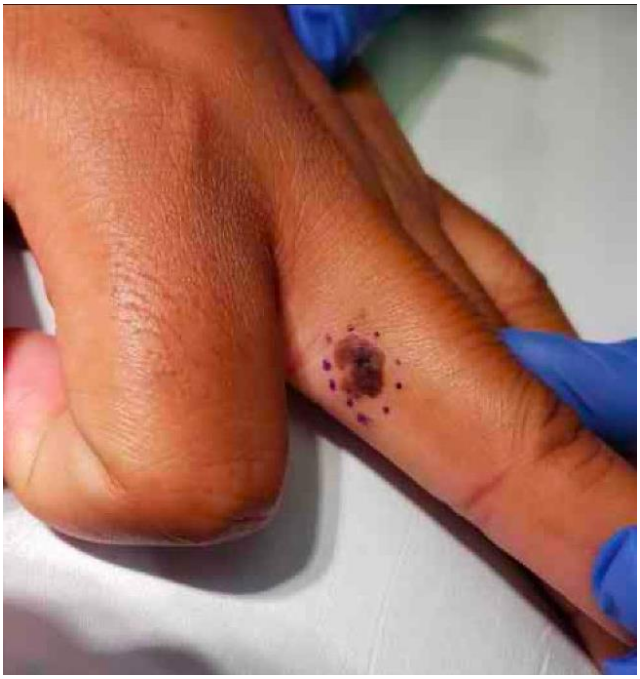

Figure 1. Pigmented squamous cell carcinoma in-situ on the radial aspect of the left third finger

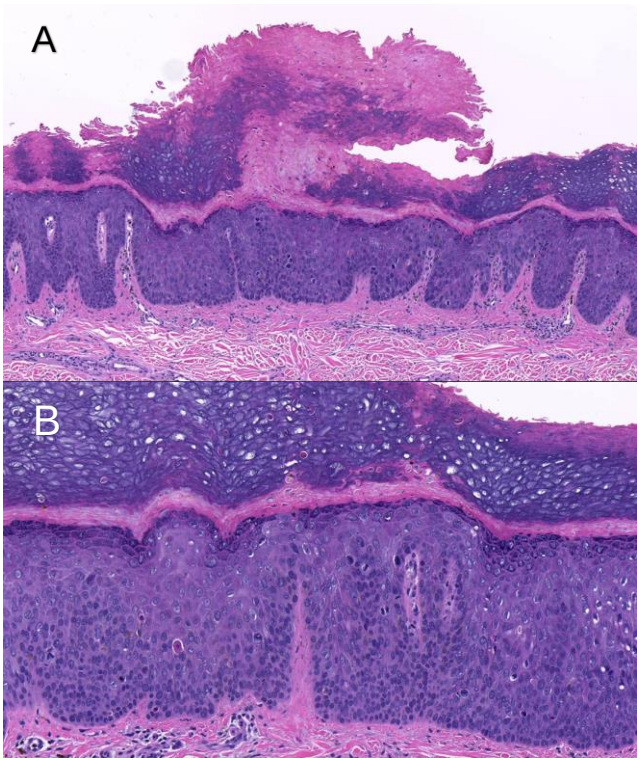

Figure 2. Shave biopsy revealing full-thickness epidermal atypia, mitotic figures scattered throughout the epidermis, and melanin pigment within the stratum corneum and epidermis. **A)** H&E, 10x magnification, **B)** H&E, 20x magnification.

DISCUSSION

While skin cancer is more common in individuals with white skin, patients with brown and black skin account for 1-5% of all skin cancer cases, with SCC being the most common skin cancer in this group.[4] As illustrated in our case, patients with brown and black skin are more likely to have pigmented SCCIS in sun-protected areas, particularly acral surfaces.[5] Factors other than UV damage, including advanced age, immunosuppression, scars, burns, arsenic exposure, and/or HPV infection, may play a role in the pathogenesis of pigmented SCC.[6]

The mean age of patients with pigmented SCCIS is approximately 63 years.[3] A small number of cases of pigmented SCCIS have been documented in the pediatric population related to HPV, but cases in young adults, as in this case, are rare.[5] Cigarette smoking is a well-established risk factor for lung SCC and mucosal head and neck SCC, but there is inconsistent evidence on the association between smoking and development of cutaneous SCC.[7] In a recent meta-analysis, people who actively smoked were found to have an increased incidence of cutaneous SCC, while people who previously smoked did not have the same increased risk.[7] Given our patient's former smoking status and lack of other known risk factors, we hypothesize that his long-term corticosteroid therapy for systemic sarcoidosis may have played a role in the development of pigmented SCCIS at a young age.

Chronic immunosuppression significantly increases the risk of developing SCC. Patients who have undergone solid organ transplant and are on immunosuppressive therapy are 65 times more likely to develop SCC than immunocompetent people.[8] Patients with HIV/AIDS also have an increased risk of developing SCC, and there are case reports of pigmented SCCIS occurring in this population.[9,10] Risk of non-melanoma skin cancer from immunosuppression for treatment of autoimmune or inflammatory disease is less well studied. Patients with psoriasis who are treated with biologic agents, specifically tumor necrosis factor inhibitors, may have an increased risk of non-melanoma skin cancer.[9] However, the relationship between corticosteroid-induced immunosuppression and risk of pigmented SCC has not been studied.

HPV infection is another proposed risk factor for development of pigmented SCCIS. HPV infection is recognized as a cause of SCCIS in the genital region[11] and having a high-risk HPV serotype (specifically HPV 16 or 18) is thought to be an important risk factor for non-genital SCCIS, particularly on the digit.[5,11] It has been hypothesized that the spread of HPV can occur from the genitals to the digits and that the nail matrix may serve as a reservoir for the HPV virus.[11] However, there are cases of HPV-positive, digital pigmented SCCIS without a history of genital lesions.[5] Although it is not feasible to detect HPV in all cases of pigmented SCCIS due to high mutational burden in these lesions[10], our patient had no known history of anogenital warts, penile cancer, or anal cancer and high-risk HPV testing was negative.

CONCLUSION

While cases of pigmented SCCIS have been reported in transplant and HIV patients[10,12], our case is unique in that it describes pigmented SCCIS in a patient with a history of immunosuppression secondary to prolonged corticosteroid use. Although

patients on certain immunosuppressants have been shown to be at higher risk for SCC[9], future studies are needed to examine the risk of corticosteroids and biologic agents on development of pigmented SCCIS. This case highlights the importance of including pigmented SCCIS on the differential for pigmented lesions in patients with skin of color.

Conflict of Interest Disclosures: None

Funding: None

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