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Case Report

Squamous cell carcinoma arising in a keloid scar

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A 50-year-old female patient, farmer by profession, initially presented with complaints of 3×3 cm cut injury by a thresher on her right forearm in June 2014. The wound was sutured by the surgeon at a local hospital, and she was put on antibiotics. She was also advised to report for regular dressing of the wound. However, her compliance was poor owing to the remote location of her place of stay. Subsequently, the patient reported to the dermatology outpatient department after 6 months of her initial injury with complaints of redness, itching, and excessive scarring of the skin at the suture site. No ulceration of the overlying skin was, however, noted. A biopsy was performed which revealed hyperkeratosis and acanthosis of the epidermis. Hypocellular zones of fibrous tissue were seen in dermis containing glassy eosinophilic and hyalinized collagen fibers. No evidence of dysplasia or malignancy was noted (Fig. 1a and b). A diagnosis of postsurgical keloid scar was hence offered. She was put on conservative management with injection triamcinolone acetate and advised regular reviews at intervals of 3 weeks till regression of the scar. However, due to her professional commitments and remote place of stay, the patient could not continue with her treatment. In December 2016, she reported back to the dermatologist with complaints of a discharging ulcer at the same site for the past 3 months which had been progressively increasing in size. No history of application of any irritant such as herbal oil/tar/powder could be elicited. Physical examination revealed an ulcerated nodule 5 cm in diameter with serosanguinous discharge at the surface of the scar (Fig. 2). There was no associated regional lymphadenopathy. No bone involvement was noted on radiographs. A punch biopsy was performed with a clinical suspicion of malignancy. Histopathological examination of ulcer tissue revealed tissue lined by stratified

Introduction

Squamous cell carcinoma (SCC) has been known to develop in burn wounds and chronically inflamed skin (Marjolin's ulcer). Cutaneous metastases of primary SCC arising in the head and neck regions have also been frequently reported. However, primary SCC arising in a postsurgical keloid scar is an extremely rare event. Although, there have been a few case reports of development of basal cell carcinoma in surgical scars, till date there are only 2 case reports of SCC arising in postsurgical scars.

Here, we present a case of a 50-year-old female patient with SCC arising in a keloid scar that was successfully resected.

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Fig. 1 – Punch biopsy of ulcer showing (a) Nests of malignant squamous cells (H&E stain, 10 $\times$ magnification) and (b) Individual cell keratinization with tumor inflammatory response (H&E stain, 40 $\times$ magnification). H&E, hematoxylin and eosin.

squamous epithelium exhibiting full-thickness dysplasia. Underlying stroma showed nests and sheets of malignant, pleomorphic squamous cells. Atypical mitoses and focal necrosis were noted. A diagnosis of a moderately differentiated SCC was made (Fig. 3a and b). The patient underwent wide local excision of the lesion. Histopathology reconfirmed the earlier diagnosis with resected surgical margins free of tumor. Postoperative recovery was uneventful. The patient has been on regular follow-up with no evidence of disease recurrence.

Discussion

A keloid is an abnormal scar that grows beyond the boundaries of the original site of skin injury. They have the clinical appearance of a raised amorphous growth and are frequently associated with pain and pruritus. Keloids are often associated with negative wound healing factors such as infection, excessive tension, foreign bodies, and repetitive trauma. Dark skinned people are more prone to develop keloids. A light

Fig. 2 – Photograph of the keloid scar with overlying discharging ulcer.

micrograph shows haphazard arrangement of fairly acellular collagen with decreased myofibroblasts. In contrast to hypertrophic scars and normal healing wounds, keloids tend to be hypovascular suggesting hypoxia to be one of the underlying causative factors for keloid formation. At the molecular level, keloids show increased levels of transforming growth factor beta and other cytokines along with decreased apoptosis leading to increased fibroblastic proliferation.^{1,2}

Cancers arising in burn scars or chronic ulcers is a well-recognized entity. In 1828, the French physician Jean Nicholas Marjolin was the first to document the villous changes in a burn scar. The condition is therefore sometimes referred to as ‘Warty ulcers of Marjolin’. Apart from burn scars, Marjolin’s ulcer has also been reported in pressure sores, osteomyelitic fistulae, scarring from lupus, frostbite, and radiation. The most common site is the lower extremity with a male preponderance. The most common malignancy reported is SCC, although basal cell carcinoma and melanoma have also been documented.^{3–6} In contrast, malignant transformation of a postsurgical keloid scar is a very rare event. Although, there are a few cases of keloidal basal cell carcinoma reported in literature, development of SCC in a postsurgical keloid scar is a very rare and poorly understood entity.

Several theories have been proposed to explain the malignant transformation of ulcers. The role of an immunocompromised state, chronic irritation, repeated trauma leading to regenerative atypia, and continuous reparative mitotic activity is being investigated. Persistent solar exposure may be a predisposing factor particularly in countries such as India with a sizeable agrarian rural population. The relative avascularity of scar tissue due to dense fibrosis leads to delayed clearance of local carcinogens and impedes local immunosurveillance. This may also be the reason behind the slow growth and reduced propensity for distant metastasis.^{1–4} However, once the malignant cells invade adjacent normal tissue, the predilection for locoregional metastasis is same as that of carcinoma at any other nonscar site. Regional lymph node metastases may be present in 20–49% of cases with scar

Fig. 3 – Punch biopsy of ulcer showing (A) nests of malignant squamous cells (H&E stain, 10× magnification) and (B) individual cell keratinization with tumor inflammatory response (H&E stain, 40× magnification). H&E, hematoxylin and eosin.

carcinoma. Hematogenous metastases to the liver, lung, and kidney have also been documented. Prognosis largely depends on the anatomical location and extent of the lesion, involvement of deeper structures, presence of lymphatic and distant metastases, and response to treatment.

Clinically, scar carcinoma is characterized by a classic triad of nodule formation, ulceration, and induration at the scar site, all of which were noted in this case. Wide local excision with a 2 cm margin is the treatment of choice. The presence of a deeper tissue involvement calls for more radical surgery such as amputation. Radiotherapy may be considered for nonresectable or inadequately resected tumors.^{3–6}

Conclusion

In conclusion, we have presented the third ever reported case of SCC arising in a postsurgical keloid scar. Although rare, any change in the character of a long-standing scar should be treated with suspicion of a lurking malignancy. Steps should be taken to increase awareness in general population about the malignant potential of chronic ulceration in scar tissue. Early diagnosis and management of scar carcinomas may help to save many lives in the long run.

Conflicts of interest

The authors have none to declare.

Ethics statement

The study was performed in a manner to conform to the Helsinki Declaration of 1975, as revised in 2000 and 2008 concerning Human and Animal Rights, and the authors followed the policy concerning informed consent.

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