Basal cell carcinoma arising in a smallpox vaccination site

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SUMMARY A case of pigmented basal cell carcinoma developing in a smallpox revaccination site is presented. Any progressive change within a smallpox vaccination scar should be thoroughly evaluated and treated appropriately after tissue diagnosis.

Malignant change in post-traumatic scars appears with a clinically significant frequency, most notably squamous cell carcinoma arising in burn scars of long-standing duration. In addition, a variety of other malignant tumours have been reported in chronically traumatised skin.¹⁻³ Malignant change in smallpox vaccination scars has been infrequently described in the world medical literature.⁵ According to Kulwin⁶ a total of 54 cases have been reported, of which 31 were basal cell carcinomas, nine were squamous cell carcinomas, and a surprising 13 (24%) were malignant melanomas. A review of the histological types of basal cell carcinomas arising in smallpox vaccination scars revealed only two being described as pigmented.⁷ The patients' ages ranged from 40 to 60 years, and in most cases vaccination had been performed more than 30 years before the appearance of the lesion. A case terminating in death was reported by Dorsey *et al.*⁸

Case report

A 56-year-old Caucasian woman was revaccinated in the left deltoid area in July 1974. She had been initially vaccinated in 1969 in the right deltoid area. Shortly after the disappearance of the characteristic crusting from the vaccination site a slightly irregular, raised area appeared which very gradually increased in size. Four and one-half years later the patient was seen and noted to have a $2\frac{1}{2} \times 3$ cm irregularly pigmented, exophytic lesion on the left upper arm with a central area of ulceration (Fig. 1). Upon careful questioning the patient stated emphatically that the lesion had arisen in precisely the location of the revaccination. No other scars were visible on the deltoid region.

No nodes were palpable in the left axilla. The lesion was excised with a 1 cm margin, and primary closure was accomplished. Satisfactory wound healing ensued.

Histological examination of the specimen revealed a basal cell carcinoma with underlying inflammation (Fig. 2). A central area of ulceration was noted, and a moderate degree of pigment was present within the tumour. The final diagnosis was pigmented basal cell carcinoma. All margins were free of neoplasm.

Fig. 1 Clinical appearance of lesion appearing in smallpox vaccination site.

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Fig. 2 Basaloid cells, peripheral palisading, and frequent mitoses.

Discussion

A variety of malignant tumours have been described arising in vaccination sites. Marmelzat⁹ described the various aetiological factors associated with his reported cases, including the effect of the vaccinia virus, possible contact carcinogens, and the recognised carcinogenic potential in scar tissue. It is well recognised that live viruses can play an inductive role in the formation of tumours in experimental animals.¹⁰ Lokich¹¹ observed a malignant melanoma arising in a BCG scarification site. It is interesting to speculate concerning the possible aetiological role

of the vaccinia virus in regard to malignant change within the vaccination scar.

The opinions or assertions contained herein are the private views of the authors and are not to be construed as official or as reflecting the views of the Department of the Army or the Department of Defense.

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