

Basal Cell Carcinoma Arising in a Bacille Calmette-Guérin Vaccination Scar

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Cases of cutaneous neoplasms occurring on prior sites of trauma and scars are common. Vaccination scars are common sites of this phenomenon. We report a case of superficial basal cell carcinoma (BCC) occurring on a prior bacille Calmette-Guérin (BCG) site in a 59-year-old man. Any modification on a prior vaccination scar should prompt a skin biopsy to be performed to rule out a cutaneous malignancy.

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Basal cell carcinoma (BCC) is the most frequent cutaneous neoplasm.¹ It has been reported to occasionally develop on prior vaccination sites, such as smallpox or bacille Calmette-Guérin (BCG).^{2,3} We report a case of a superficial BCC that occurred on a 40-year-old BCG vaccination scar.

Case Report

An otherwise healthy 59-year-old white man presented with inflammatory infiltration of a 40-year-old BCG vaccination scar localized on the upper left arm. His medical history was notable for herpes zoster 15 years prior to presentation and cholecystectomy. Physical examination revealed an erythematous, slightly scaling, sharply demarcated lesion without ulceration or secretion that was restricted to the vaccination scar (Figure 1). The lesion developed within 3 to 4 months prior to presentation without any other symptoms. A 3-mm punch biopsy was performed and microscopic examination revealed atypical basal cells

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The authors report no conflict of interest.

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Figure 1. Erythematous, scaly, superficial infiltration on the upper left arm (A and B).

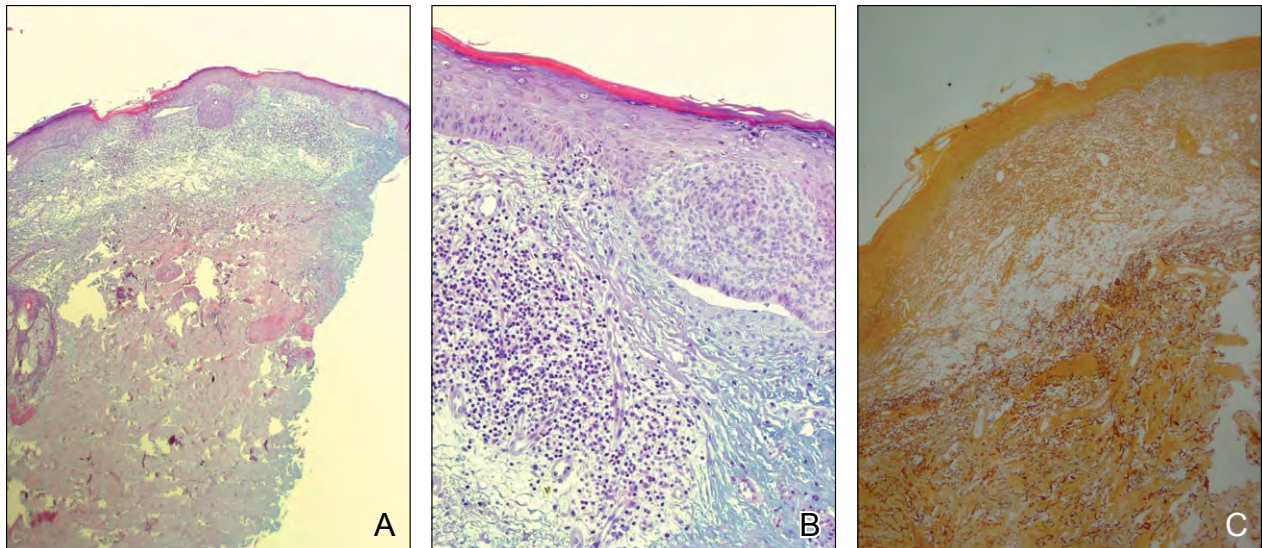


Figure 2. Histology demonstrated an island of atypical basal cells with peripheral palisading beneath the epidermis (A and B)(H&E; original magnifications $\times 10$ and $\times 80$, respectively). Rarefaction of elastic fibers in the dermis also was seen (C)(orcein, original magnification $\times 50$).

with peripheral palisading beneath the epidermis, consistent with a superficial BCC (Figure 2). Topical treatment with imiquimod cream 5% 5 times weekly for 6 weeks was initiated. Unfortunately, the patient was lost to follow-up.

Comment

Basal cell carcinoma is the most frequent cutaneous skin cancer. Prior sun exposure that is intense, repetitive, and chronic is the main risk factor for the development of BCC.¹ Nevertheless, there are occasional case reports in the literature of various skin neoplasms, including BCCs, occurring on chronic inflammatory sites, cutaneous traumas, and/or scars. Thus cases of BCCs have been reported on burns, *Leishmania* scars, lupus vulgaris sites, surgical scars, blunt traumas, and tattoos.⁴⁻⁸ Cutaneous neoplasms also have been described on prior vaccination sites, with BCCs being the most common^{2,9}; smallpox⁹ and BCG^{3,10-14} vaccination scars are the most frequently reported sites, but any vaccination scars seem to be affected.^{11,15} Lesions may arise in a highly variable delay ranging from 1 year³ to several decades later. Trauma, scarring process, and chronic inflammation have been considered as a potential cause of skin carcinogenesis because of the lack of any other risk factor (ie, prior UV exposure and sun-damaged skin). However, a true pathogenic relationship between the scarring process and carcinogenesis remains unclear. Indeed we cannot assume that all scars adhere to a single and unique process, as a burn scar, a *Leishmania* scar, a tattoo, and a BCG vaccination scar do not share the same physiopathologic pathway. Additionally, not all patients with a

scar will develop a BCC. Our patient did not have a history of skin cancer, but Panizzon¹³ reported a case of BCC on a BCG scar in a patient with basal cell nevus syndrome (Gorlin syndrome) who was therefore more likely to develop BCCs. Skin carcinogenesis with a scarring process is most likely caused by the combination of various exogenous factors including the trauma itself, a chronic inflammatory reaction, and other environmental factors such as UV exposure, as well as endogenous factors such as genetic background.⁸

Our case acts as a reminder that any modification, even asymptomatic, occurring on a prior vaccination scar should prompt a skin biopsy to be performed to rule out a potential BCC or any intraepithelial or dermal cutaneous malignancy.⁹

REFERENCES

1. Nseir A, Estève E. Basal cell carcinoma [in French] [published online ahead of print August 6, 2008]. *Presse Med.* 2008;37:1466-1473.
2. Reed WB, Wilson-Jones E. Malignant tumors as a late complication of vaccination. *Arch Dermatol.* 1968;98:132-135.
3. Ben-Hur N, Avni J, Neuman Z. Basal cell carcinoma following BCG vaccination. report of two cases. *Dis Chest.* 1963;44:653-655.
4. Noodleman FR, Pollack SV. Trauma as a possible etiologic factor in basal cell carcinoma. *J Dermatol Surg Oncol.* 1986;12:841-846.
5. Ozyazgan I, Kondaç O. Previous injuries or scars as risk factors for the development of basal cell carcinoma. *Scand J Plast Reconstr Surg Hand Surg.* 2004;38:11-15.

6. Ozyazgan I, Kondaç O. Basal cell carcinoma arising from surgical scars: a case and review of the literature. *Dermatol Surg.* 1999;25:965-968.
7. Wilkin JK, Strobel D. Basal cell carcinoma arising at the site of venipuncture. *Cutis.* 1985;36:297-298.
8. Kluger N, Phan A, Debarbieux S, et al. Skin cancers arising in tattoos: coincidental or not [published online ahead of print July 10, 2008]? *Dermatology.* 2008;217:219-221.
9. Curry JL, Goulder SJ, Nickoloff BJ. Occurrence of a basal cell carcinoma and dermatofibroma in a smallpox vaccination scar [published online ahead of print December 5, 2007]. *Dermatol Surg.* 2008;34:132-133.
10. Polat M, Parlak AH, Hasdemir O, et al. Basal cell carcinoma in a bacillus Calmette-Guérin scar. *Int J Dermatol.* 2009;48:542-543.
11. Smith VH, Soon C, Dharma B, et al. Basal cell carcinomas arising in travel vaccination scars [published online ahead of print May 12, 2008]. *Clin Exp Dermatol.* 2008;33:515-516.
12. Braithwaite IJ, Miller G, Burd DA. Basal cell carcinoma in a BCG scar in a young woman. case report. *Scand J Plast Reconstr Surg Hand Surg.* 1992;26:233-234.
13. Panizzon R. Basal cell epithelioma in a BCG vaccination scar. *Arch Dermatol.* 1980;116:381.
14. Nielsen T. Basal cell epithelioma in a BCG vaccination scar. *Arch Dermatol.* 1979;115:678.
15. Pace A, Degaetano J. Basal cell carcinoma developing in an influenza vaccine scar. *Australas J Dermatol.* 2004;45:75-76.



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