

Dermoscopy of multiple radiation-induced basal cell carcinomas in a patient treated previously for pinealoma

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Abstract

Background: Malignancies secondary to radiation, such as radiation-induced skin cancer, are possible consequences of radiation therapy. The most frequent post-radiation skin neoplasm is basal cell carcinoma.

Main observations: We report a case of a 49-year-old woman who underwent multiple radiotherapy sessions for pinealoma and developed post-radiation alopecia. After 26 years the patient noticed the emergence of eighteen superficial scalp lesions in the previously irradiated areas. Dermoscopy showed predominance of ovoid nests and presence of arborizing vessels on pink background, consistent with basal cells carcinoma. The diagnosis was confirmed by histopathology.

Conclusion: There is an absolute need to guide patients through the possible late adverse events of radiotherapy. Regular dermoscopy examinations should be performed, especially in areas previously exposed to radiation. (*J Dermatol Case Rep.* 2014; 8(4): 115-117)

Introduction

Induction of neoplasia after radiotherapy is a troubling chronic effect.^{1,2} Among the malignant neoplasias, basal cell carcinoma is the most common in regions previously exposed to radiotherapy.^{1,3} Ionizing radiation is a well-established etiological factor for the development of basal cell carcinoma.³

We report the case of a patient with lesions in scalp, right nasal wing, dorsal and upper left clavicular region, suggestive of basal cell carcinoma clinical and dermatoscopically, 26 years after surgical resection of tumor in the pineal gland, followed by multiple cranial radiotherapy sessions.

In this case we draw attention to the presence of numerous basal cell carcinomas, predominantly in the region exposed to radiotherapy, showing the need to guide patients through the possible chronic effects of radiotherapy, in order to keep skin lesions, especially in the areas exposed to radiation, under clinical and dermoscopy surveillance.

Case report

A 49-year-old (phototype II) woman noticed the onset of eighteen superficial lesions since 2010. In her past medical

history, she reported pineal gland tumor treated with surgical resection in September 1984, and multiple sessions of radiotherapy, between October 1984 and May 1985. Diffuse alopecia of the scalp was present since the radiotherapy treatment. The scalp lesions were erythematous with partly pearly borders, measuring between 0.5 and 2.5 cm in diameter (Fig. 1). Nodular pigmented lesions with pearly luster on the left supra-clavicular region and right nasal wing were also noticed on physical examination. Also with pearly lesion with perilesional desquamation was present on the lower back. At scalp dermoscopy (trichoscopy) the lesions showed ovoid nests and arborizing vessels on pink background (Fig. 2).

Discussion

Radiotherapy is an option for the treatment of locoregional neoplasias. It reaches neoplastic cells, but also normal cells surrounding the tumor, which can lead to acute and chronic adverse effects. Malignancies secondary to radiotherapy are possible chronic manifestations with radio-induced skin neoplasias described since 1902.^{1,2} It is accepted that radiation causes DNA damage and genetic changes



Figure 1
Multiple basal cell carcinomas on facial (A) and scalp (B, C) skin.

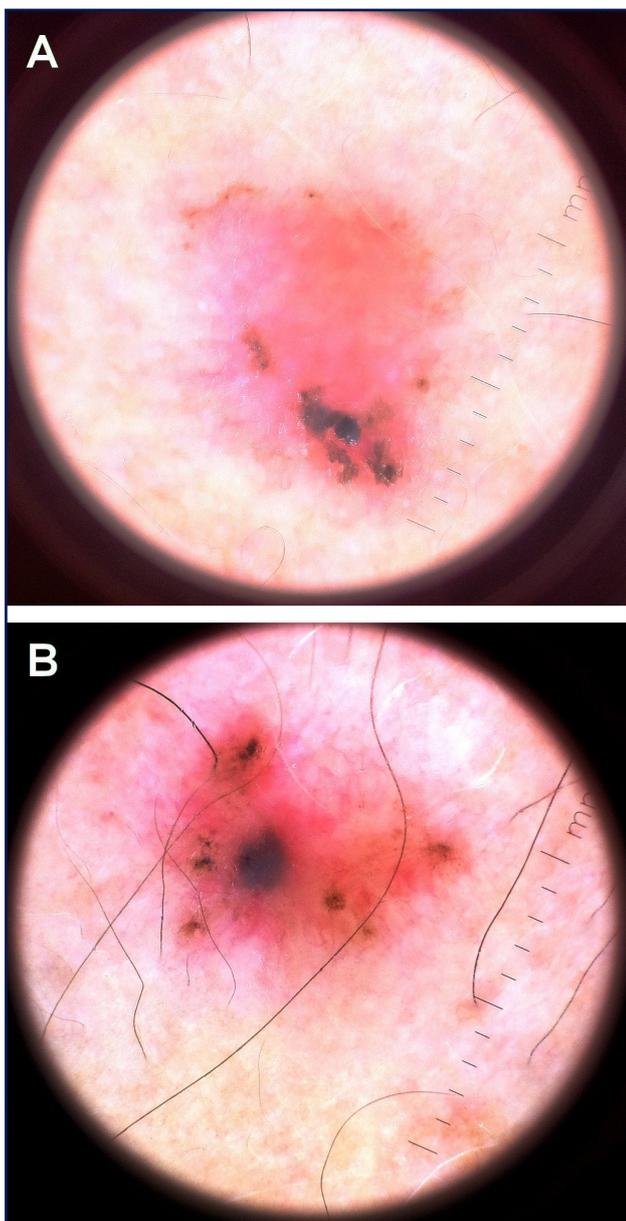


Figure 2
Dermoscopy of the basal cell carcinomas in the radiation-exposed areas showed predominating presence of ovoid nests and arborizing vessels on pink background (A, B).

in cells of irradiated area, but cells with the same alterations outside the area exposed to radiation were also described.³ The mechanisms for the onset of these lesions include abnormal intracellular signaling, cytokine production, generation of free radicals and individual inflammatory response.³ Among the malignant radiation-induced neoplasias, basal cell carcinoma (BCC) is the most commonly found, besides being the locally invasive malignant cutaneous tumor with the highest incidence in individuals of the lowest phototype.^{1,3,4} Its etiology is related to ultraviolet radiation exposure and, less frequently, other factors, such as radiotherapy and absorption of arsenic compounds.^{3,4} Individuals who presented a lesion of this neoplasm have an increased risk of developing subsequent lesions in other areas.^{3,4} Skin cancer related to ionizing radiation has features like extensive ulceration, devitalization of the tumor bed and proneness for multiple lesion formation.² There are reports of intervals of up to 64 years between the exposure to radiation and the emergence of lesions, suggesting that the risk of carcinogenesis on the irradiated skin persists throughout the patient's entire life.¹ When basal cell carcinomas are located in previously irradiated areas or with radiotherapy sequels, the association between this therapy modality and the appearance of skin neoplasia is strengthened.^{2,5}

Ionizing radiation is a well-established etiological factor for generation of basal cell carcinoma and the development of these tumors is probably due to a complex interaction of factors. The simple development of a basal cell carcinoma in a skin area that was previously exposed to radiotherapy is not sufficient to establish a causal relationship between neoplasia and radiotherapy. However, the practically simultaneous development of multiple lesions on the scalp and on the patient's face with diffuse alopecia by radiotherapy, without having any genodermatosis, such as basal cell nevus syndrome or xeroderma pigmentosum, allows us to consider such association. The importance of periodical dermoscopy examinations of areas previously irradiated in patients who were subject to radiotherapy should be emphasized.

In our patient dermoscopy revealed predominating ovoid nests and arborizing vessels on pink background. These are known features of basal cell carcinoma.⁶ However dermoscopy of basal cell carcinoma in radiation-exposed areas was not described previously.

With the new and recent knowledge about dosage and appropriate radiotherapy management, fewer adverse effects would be expected, so that its benefits increasingly outweigh its risks.

Conclusion

There is a need to guide patients through the possible late adverse effects of radiotherapy and they should be advised to have regular dermoscopy check-up of areas previously exposed to radiation.

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