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Topical Treatment of Basal Cell Carcinoma with Neomycin

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Abstract: Basal cell carcinoma (BCC) is the most common skin cancer, occuring more frequently than malignancies of any other tissue or organ, either individually or in total. Medical treatment modalities of BCC offer cost reduction and clinical advantages in selected cases. Neomycin has been reported to have an important role on proliferation of endothelial cells and neoplastic cells. This finding may lead to new strategies for the therapeutic use of agents which block FGF activities in disease states associated with enhanced keratinocyte proliferation. We report here a case of BCC treated with neomycin 5% cream that induced a regression of BCC.

Key words: Basal cell carcinoma. Neomycin.

Introduction

Basal cell carcinoma (BCC), characterized by a non-aggressive behaviour, is the most common cancer among humans, and its incidence is increasing [1,2] . The most commonly used treatment modalities include simple excision, Mohs micrographic surgery, curettage and electrodessication, cryosurgery and irradiation therapy [2]. However, different topical medical options as chemotherapy, immunotherapy and photodynamic therapy, have been proposed for BCC, according to number, sites of distribution and size of lesions, patient age, ease of treatment, costs and cosmetic results [3]. We previously reported that the aminoglycoside antibiotic, neomycin, exerts significant antiproliferative and antiangiogenic effects in gliomas [4-7] acting as a fibroblast growth factor (FGF) inhibitor [8]. FGF appeared to have a role in maintaining epidermal integrity, as well as in keratinocyte proliferation, wound healing [9,10] and skin carcinogenesis [11]. Furthermore, immunohistochemical studies revealed that endogenous FGF was localized within the cytoplasm of keratinocytes in BCC [12]. Since FGF family of proteins has an important function in proliferative- and angiogenesis-related diseases such as in malignant cutaneous neoplasms [13-15], we assessed the effect of topical neomycin in BCC. In the present study, the efficacy of neomycin application in BCC for two weeks is reported and discussed in a case report.

Case Report

A 45-year-old man presented with a nodular BCC of more than 1 year duration in the left inferior eyelid. He was asymptomatic with no associated pain or bleeding. Patient medical history was unremarkable.

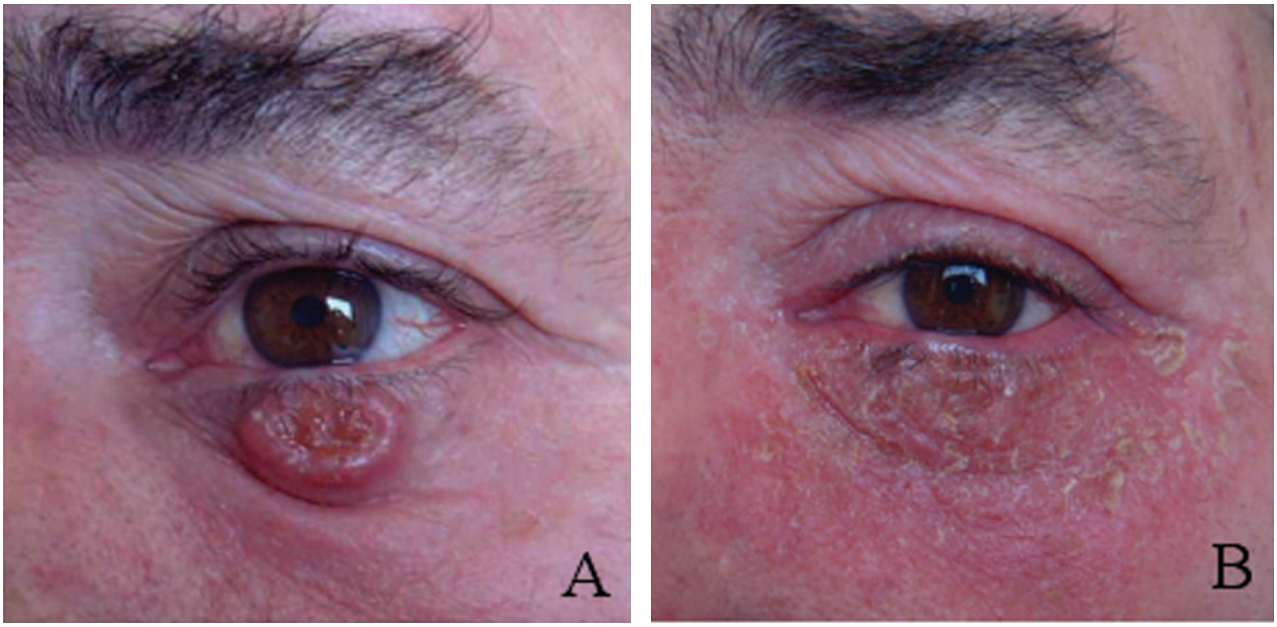

Fig. 1. Patient with BCC, (A) before treatment, (B) at two weeks of treatment with neomycin 5% cream twice a day.

After discussing the risks and benefits of the different treatment options, the patient declined surgical excision. A physical examination and photographic documentation were obtained at baseline and after treatment. He was started on neomycin sulphate (Sigma, St. Louis, USA) 5% cream twice daily for two weeks. As Figure 1 shows, treatment with neomycin induced a regression of the BCC. No recurrence was observed after 8 weeks of follow-up.

Discussion

Medical treatment modalities for BCC may offer cost and clinical advantages in selected cases, such as tumours mainly located in low-risk areas, difficult sites on which to operate (nose, ears, eyelids), cases with a high number of neoplasms or otherwise inoperable patients [3]. We report a case of BCC regression treated with neomycin 5% cream. The mechanism of action of neomycin in the treatment of BCC is not known. Molecular effects similar to those observed in the case of gliomas [4-7], as antiproliferative and antiangiogenesis effects as well as proapoptotic activity, may mediate the therapeutic effect of neomycin reported here for BCC. Furthermore, this case report suggests that neomycin may be a potential treatment option for patients who are poor candidates to surgery or who face disfigurement and functional impairment from resection. Further randomized controlled trials are needed to evaluate the efficacy of neomycin for treatment of BCC.

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