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Supraestructure maxillectomy and orbital exenteration for treatment of basal cell carcinoma of inferior eyelid: Case report and review

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ABSTRACT

Basal cell carcinoma (BCC) is the most frequent type of skin cancer in humans, with cumulative exposure to ultraviolet radiation as an important risk factor for development of illness such as severe solar burns during childhood or adolescence. BCC is mainly located on sun-exposed sites, head and neck being the areas of more incidences; although nose, eyelids and periorbitary tissue are unfavorable due to cosmetic results that BCC involves. Tumors can be classified as nodular, superficial, micronodular, morphea variety, infiltrating, pigmented, metatypic and fibroepithelioma of Pinkus. Several treatment options such as surgical and nonsurgical are available. The goal of treatment is complete excision of the tumor with preservation of surrounding structures in a way aesthetically acceptable. Mohs' micrographic surgery is the standard treatment for all nonmelanoma skin cancers. Orbital exenteration is also used for treatment of malignancies of ocular tissues, mainly squamous cell carcinoma, sebaceous cell carcinoma and BCC. The tissue beneath the surgical site can be left for second-intention granulation or covered with a cutaneous implant of partial thickness. The case of a 77-year-old patient is presented with BCC of inferior eyelid of 14 years' duration, formerly managed with radiotherapy; however, due to recurrent illness and invasion to the maxillary antrum, he needed supraestructure maxillectomy with left orbital exenteration.

KEY WORDS: Basal cell carcinoma, orbital exenteration, supraestructure maxillectomy

CASE REPORT

A 77-year-old man was seen in the clinic with a positive history of smoking and drinking habits. Fourteen years earlier, this patient initially noticed a raised maculate papule, manifesting slowly as an evident tumor in his left inferior eyelid, occasionally hemorrhagic. The patient was treated with some topical treatments without a response. This lesion turned into an infiltrating ulcer from the eyelid to ocular globe. A biopsy from the lesion was taken, with histopathology report of an infiltrating basal cell carcinoma. Due to the extension of this lesion, the patient received radiotherapy with a dose of 60 Gy, fractioned into 30 sessions and with an increase of 10 Gy. Later on, the patient was followed without evidence of tumoral activity for 8 months, but a relapse was detected by the presence of a raised, ulcerated hemorrhagic lesion on malar region, which was analyzed by biopsy, with a histopathology report of keratolytic basal cell carcinoma with dermis infiltration. Cranial tomography showed a tumoral infiltrating lesion with destruction of orbital inferior wall [Figure 1] and infiltration from papyraceous lamina to ipsilateral maxillary antrum [Figure 2].

A supraestructure maxillectomy with left orbital exenteration was performed without complications [Figure 3]. Surgical histopathology report showed free-of-tumor surgical margins. Final histopathology report showed a keratolytic basal cell carcinoma, 3 cm width, with bone and soft tissues infiltrated; perineural permeation and desmoplasic fibrosis; tumoral necrosis; and plurifocal superficial mucosal infiltration of the maxillary antrum, ptisis bulbi [Figure 4].

Eight months after the procedure, patient was alive and remained without symptoms of tumoral activity.

DISCUSSION

Basal cell carcinoma (BCC) is the most frequent type of skin cancer in humans,[1,2] with almost 90,000 new cases diagnosed in the US every year, with cumulative exposure to ultraviolet radiation as an important risk factor for development of the illness such as severe solar burns during childhood or adolescence; however, other factors have been named, such as type 1 and 2 Fritzpatrick's skin, red-haired people, childhood freckles, familiar history

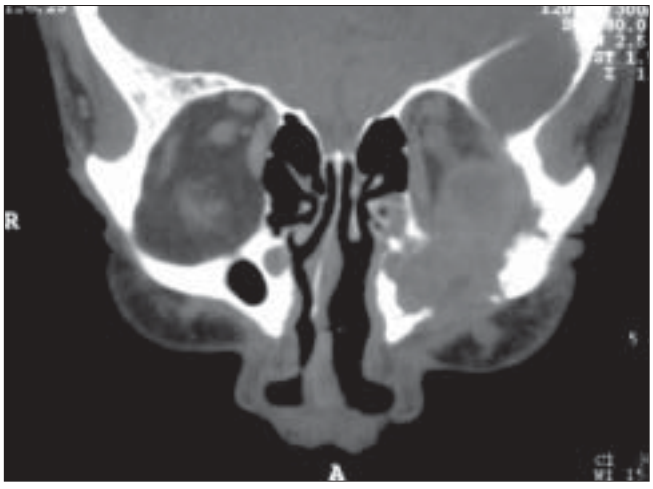

Figure 1: Craneal CT showed a tumoral infiltrating lesion with rupture of papyraceous lamina to ipsilateral maxillary antrum

Figure 3: Intraoperative image of suprastructure maxillectomy with left orbital exenteration

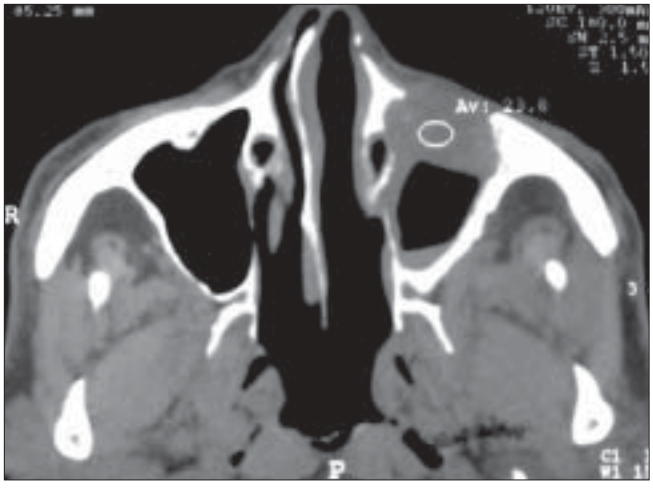

Figure 2: Craneal CT reveals infiltrating lesion with rupture of maxillary antrum

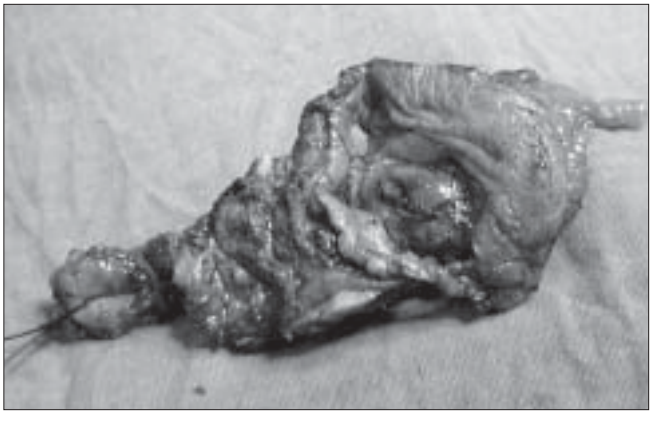

Figure 4: Gross finding of removed orbital exenteration shows eye, eyelid and maxillary antrum

of skin cancer, but it is less common in AIDS and transplanted patients.[2] In a case series of 703 eyelid malignant tumors treated by Oncology Service in the National Medical Center "Siglo XXI" of the Mexican Social Security Institute from 1986 to 2000, 596 (84.7%) were classified as BCC.[3] BCC is mainly located on sun-exposed sites, head and neck being the areas of more incidences; although nose, eyelids and periorbitary tissue are unfavorable due to cosmetic results that BCC involves.[1-4]

Histological types of BCC have been associated with different results and prognosis. Tumors can be classified as nodular, superficial, micronodular, morpheic variety, infiltrating, pigmented, metatypic and fibroepithelioma of Pinkus.[5]

Nodular variant is the most frequent form of BCC, addressing more than 50% of lesions, being superficial or ulcerated and is often visualized on actinic damaged skin; this lesion often shows a slow growth and is best known as Jacobi's ulcer or *ulcus rodens*. Superficial BCC appears as a plaque or as an erythematous squamous papule, often found on the trunk, arms and legs and occasionally seen in sunlight-exposed areas such as head and neck. Micronodular variant presents as firm plaques not well defined or indurated; it is related to an increase in relapse of the tumor.

Morpheic variety (also known as sclerotic, fibroid or desmoplasic) occurs in more than 50% of all BCC. It tends to be more aggressive, sometimes infiltrating deeper in muscle or fat tissue. It clinically resembles a scar or a small patch. There are no preferential sites of location and these lesions rarely bleed or get ulcerated. Infiltrating type of BCC is linked to morpheic or nodular variants. Pigmented type is often seen in black-skin people and is often wrongly classified as a melanoma, seborrheic keratosis or melanocytic benign nevus. Metatypic BCC shows clinical signs of BCC as well as squamous cell carcinoma (SCC); tends to be more aggressive than other BCC forms; and it could grow and extend as SCC does, with a great presence of metastasis.

Fibroepithelioma of Pinkus, described by Hermann Pinkus

Szuchmacher in 1953, often appears in lumbar area and resembles a fibroepithelial polypus or seborrheic keratosis.[2,3,5,6] Several treatment options, such as surgical and nonsurgical, are available.[2,7,8] The goal of treatment is complete excision of the tumor with preservation of surrounding structures in a way aesthetically acceptable.[7] Mohs' micrographic surgery is the standard treatment for all nonmelanoma skin cancer.[7-10]

Topical chemotherapy agents such as 5-Fluorouracil (5-FU) have been used for treatment of *in situ* and superficially extended BCC and SCC. The major value of this type of chemotherapy is for actinic keratosis. Other chemotherapy drugs used in BCC and SCC treatment with limited results are methotrexate, 5-mercaptouracil, nitrogen mustard, actinomycin D, intravenous cisplatin or intralesional bleomycin.[7.8] Agent Imiquimod (Aldara®) is a synthetic immune system response modifier; when applied locally, it has been shown to have a very good response in BCC treatment, more often in superficial lesions and tumors from 0.5 to 2.0 cm width, excluding those tumors with faster growth or face H-zone tumors.[7,8,11] Some vitamin A derived retinoids such as topic isotretinoin have proved to be effective in decrease of solar keratosis and could help in the prevention of cancer progression. Intralesional injections of Interferon (IFN), specially 2-a and 2-b, show positive effects in BCC and SCC treatment due to malignant cell growth inhibition via immune cell response stimulation. Cyclo-oxygenase-2 (COX-2) overexposure has been related with some neoplasms such as colon and mammary cancer as well as skin tumors. COX-2 inhibitors, particularly celecoxib, have a therapeutic role in skin cancer chemoprevention, although further placebo-controlled randomized trials are needed in order to arrive at a definite conclusion with respect to this issue.[7,8]

In a clinical trial by Kwan *et al,*[6] on 61 samples of patients with BCC diagnosis and treated with radiotherapy, a 4-year local disease control was achieved in 86%, finding no evidence of factors affecting loco-regional control. Median time of relapse was 40.5 months and relapses were locally situated in all cases. Of the eight cases of relapse, four were rescued with surgery, two more received a new radiotherapy course and one patient rejected treatment. None of the patients developed distance metastasis and no one died due to this cancer. Similar results were obtained by Seegenschmiedt *et al* in 99 patients with 127 BCC lesions situated on head and neck areas treated with radiotherapy, using orthovoltage equipment, with a 36 ± 21 months following. Complete improvement from tumor was achieved in 99% of the cases by month 3 after the treatment. Cosmetic results ranged from good to excellent in 98% and just two cases developed local relapse at 6 and 20 months after radiotherapy.[9]

In a trial conducted by Malhotra *et al,* 1,295 patients were treated with MMC, finding nodulocystic (39.5%) and infiltrating (34.8%) as the main histological variants. Also, they found as the most common periocular area the medial edge (48.4%), lower eyelid (47.6%) and superior eyelid (3.9%). Thirty-two percent of the tumors (415/1289), were recurrent BCCs and just 1% (n = 12) of the cases exhibited perineural invasion.[10]

In another study from the same authors, 819 patients with periocular BCC treated with MMC showed a relapse index of 2% (7/346), principal relapse factors being the previous relapse, infiltrating (n = 5) and superficial (n = 2) variants and female gender (6/7). Principal anatomic sites of relapse were medial edge (n = 5) and inferior eyelid (n = 2).[11]

Orbital exenteration is used for treatment of malignancies of ocular tissues – mainly SCC, sebaceous cell carcinoma and basal cell carcinoma. Other tumors treated by this mean are melanoma, cystic adenoid carcinoma and uveal carcinoma with extra-scleral invasion. The tissue beneath the surgical site can be left for second-intention granulation or covered with a cutaneous implant of partial thickness.[12]

In a case-series of 34 patients undergoing orbital excision, Simon found 26.5% (n = 9) of SCC cases; 17.6% (n = 6) of BCC; and 14.7% (n = 5) of conjunctival orbital and eyelid melanoma as histological diagnoses before surgery. Less frequent histological diagnoses were choroid melanoma, sebaceous cell carcinoma, cystic adenoid carcinoma, osteosarcoma, benign mixed tumors, adenocarcinoma and mucormycosis. In 7 cases (20.6%) an extended procedure was needed, including maxillectomy, etmoidectomy or zigomatic bone resection. Only in 4 patients (11.8%) undergoing subtotal exenteration, a patch covering postsurgical defect was not needed.[12]

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