

CASE REPORTS

BASAL CELL CARCINOMA: WHAT DENTISTS NEED TO KNOW

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Basal cell carcinoma, or BCC, is the most common dermatologic cancer and the most common malignancy in white people, with 400,000 new cases reported each year in the United States.¹⁻³ It occurs primarily in fair-skinned people who work or spend a considerable amount of daylight time outdoors being exposed to ultraviolet, or UV, light derived from the sun. The incidence of skin cancer has increased dramatically over the past 30 years, increasing from approximately 200 to 500 cases per 500,000 people, and it is estimated that 2 percent of people older than 60 years of age will develop BCC or squamous cell carcinoma.^{3,4} It is rare in dark-pigmented people such as blacks, Hispanics, Asians, American Indians and Eskimos.^{2,5} The majority of cases of BCC (approximately 80 percent) occur in the head and neck, particularly in the upper face.² Typically, the lesions of BCC show slow progression.

The increase in incidence of BCC is thought to parallel the increase in exposure to UV radia-

A B S T R A C T

Background. Basal cell carcinoma, or BCC, is a malignant epithelial tumor of the skin, commonly seen in the head and neck. Because dentists routinely evaluate the head and neck, the authors present three examples of BCC of the face and jaw to help clinicians recognize the condition. They also provide a literature review regarding BCC's etiology, classification, treatment and prevention.

Description of the Disease. Sun exposure plays an important role in the development of BCC. The most susceptible people are those with minimal skin pigmentation. BCC is more frequently seen in men than in women. The most common form of BCC is the nodular type, which, if untreated, eventually ulcerates and may result in extensive local tissue destruction. The three cases described in this article highlight the range of BCC severity.

Clinical Implications. Oral health care providers may play an important role in the recognition and diagnosis of BCC involving the head and neck. Early recognition and diagnosis may lead to management that results in improved cure rates, with reduced morbidity and reduced treatment costs.

tion.^{2,6} Ultraviolet A, or UVA (with wavelengths from 315 to 400 nanometers), is less biologically active than ultraviolet B, or UVB (with wavelengths from 280 to 315 nm). UVB is the wavelength primarily responsible for skin damage, erythema, skin aging and risk of skin cancer, although UVA also has been shown to induce carcinogenesis.^{6,7} Exposure to UVA has increased because UVB-blocking sunscreens

have led to increased time spent in the sun and because tanning beds use UVA. Sun exposure is the main cause of skin cancer, and that exposure in childhood is particularly important.^{2,3,6,8-10} The pattern of sun exposure has been assessed based on patient history, and it has been suggested that intense, infrequent sun exposure (numbers of sunburns per lifetime), rather than total sun exposure, is associated with increased risk, particularly in poor tanners.^{11,12} Depletion of ozone has been predicted to further increase rates of BCC.¹³ Risk factors for BCC include increasing age,



Figure 1. This superficial basal cell carcinoma is a nonelevated, firm, irregularly pigmented lesion with morpheaform presentation. A central area of bleeding has occurred, resulting in crusting.

male gender, red or blond hair, blue or green eyes, freckles and UV exposure.^{2,10} It should be noted that patients with BCC are at a high risk of developing additional primary lesions; in addition, that risk increases with the number of previous lesions, with additional lesions occurring in 27 percent to 90 percent of patients.^{2,14} Patients with BCC also are at increased risk of experiencing squamous cell carcinoma, or SCC, and malignant melanoma, two other diseases associated with UV exposure.^{15,16} An increased risk of BCC but not SCC has been demonstrated in patients who have completed a course of therapeutic irradiation.¹⁷ Immunosuppression has been identified as a risk factor for skin cancer, with increased risk demonstrated in patients who have undergone renal transplantation.¹⁸

While BCC primarily is seen in older adults, the nevoid BCC syndrome (called basal cell nevus syndrome or Gorlin's syndrome) is a condition with significant oral and head and neck involvement that occurs at a younger age (under 30 years) and should be recognized by dentists. The syndrome consists

of multiple BCCs, keratocysts of the jaw, palmar or plantar pits, anomalies of the ribs and spine (bifid ribs, spina bifida) and calcification of the falx cerebri.^{19,20} In one study, cysts of the jaws were found in approximately three-quarters of affected

patients, and the first tumors were identified in 80 percent of affected patients by 20 years of age.²⁰ Other cranial deformities, including macrocephaly and hypertelorism, occur in approximately one-half of patients who have nevoid BCC syndrome. The syndrome has been linked to an abnormality on chromosome 9q (9q22.3-q31).^{19,20}

CLASSIFICATION OF BCC

BCC is classified according to clinical and histological characteristics.^{1,21,22} Among the more common types are nodular BCC, noduloulcerative BCC, superficial BCC, pigmented BCC, morpheaform (sclerosing) BCC and keratotic BCC. Early lesions may be translucent, with raised borders covered by a thin epidermis through which dilated blood vessels can be seen. Pigmentation is not common. The lesions may progress with a variety of patterns as follows.

Nodular. The nodular type is the most common and appears as a bulky, nodular growth lacking keratin. These early lesions are telangiectatic, shiny and translucent and resemble a pimple that fails to heal.

Noduloulcerative. Neglected nodular BCC may result in noduloulcerative BCC, which appears as large eroding tumors with characteristic central depression and rolled and raised borders. They once were called "rodent ulcers." These lesions bleed easily after even mild injury and may double in size every six to 12 months, with a growth rate of approximately 5 millimeters per year.³ Although metastasis is rare, noduloulcerative BCC is a local or regional disease that can cause significant local morbidity and cosmetic deformity.²

Superficial. Superficial BCC often occurs on the face, trunk, extremities and neck regions and resembles psoriasis or localized eczema.¹ The lesions appear as a flat, scaly, erythematous region that can attain a size of several centimeters (Figure 1).

Pigmented. Pigmented BCC is a nodular tumor containing brown or black pigment in the epidermis and within the tumor. This tumor may resemble a melanoma clinically, with blue, black or brown coloration (Figure 2).

Morpheaform. Morpheaform, or sclerotic, BCC is aggressive. Its lesions lack rolled borders, have indistinct margins and are skin-colored. These lesions, which appear on the face and neck, may remain undetected and undermine the surface of the skin. Morpheaform/sclerotic BCC has a lower cure rate than that of the nodular type.²¹

Keratotic. Keratotic BCC is an aggressive lesion that often recurs locally and is the most likely to metastasize. These lesions often are found in the pre- and postarticular sulcus.

TREATMENT

Treatment options for BCC vary with the size and site of the lesion(s), as well as the patient's age and sex. Principles of management include early detection, complete removal of the lesion and careful follow-up to detect recurrence or new primary tumors. In general, the smaller the tumor, the more successful the treatment, with reduced morbidity and improved prognosis.^{23,24}

Therapeutic options include surgery, curettage, excision, electrosurgery, laser surgery, cryosurgery, Mohs micrographic surgery and ionizing radiation.^{2,4,6,23,24} It has been estimated that 80 percent of BCC lesions can be removed with primary closure.² Primary excision results in cure rates of higher than 90 percent.² However, advanced tumors are disfiguring and difficult to manage, making early recognition and diagnosis important.

Radiotherapy may be effective in sites where surgery is more difficult to perform, as margins can be extended as needed, and it can be used as an adjunct to surgical approaches. However, it is not indicated in basal cell nevus syndrome, in which recurrence is high. A recent randomized study compared surgery with radiotherapy in the management of BCC.²⁵ The radiotherapy consisted of brachytherapy, contact therapy or external-beam therapy. A four-year follow-up revealed a failure rate of 0.7 percent in patients who underwent surgery as compared with 7.5 percent in those treated with radiotherapy, and the researchers felt the cosmetic results were better in the surgical patients.²⁵ The re-



Figure 2. This basal pigmented cell carcinoma lesion demonstrates elevation, ulceration and telangiectasia.

searchers concluded that for BCC lesions of less than 4 cm in diameter, surgical management was preferred.

PREVENTION

Prevention of BCC has focused on reducing UV exposure.^{2,10} While use of sunscreens has been strongly advocated, there is no definitive evidence that it will prevent BCC in anyone (including patients with prior BCC). However, there is evidence that use of sunscreens will reduce actinic keratoses.²⁶ Despite this, wearing hats, reducing sun exposure and using UVA and UVB sunscreens are recommended. Studies of vitamin A analogues to prevent BCC have not shown differences in those treated with retinol, isotretinoin or placebo,^{27,28} although a dose of 25,000 international units of retinol has shown effectiveness in preventing SCC in at-risk subjects.²⁸

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Three cases of orofacial BCC



Figure 3. Persisting, superficial, erythematous, nonhealing basal cell carcinoma lesion on the nose (Case 1).

that demonstrate the range of clinical manifestations from small to large lesions follow.

Case 1. A 68-year-old white man reported to the dental clinic of the Vancouver Hospital & Health Sciences Centre, Vancouver, British Columbia, Canada. His chief complaint was "a soreness on the centre of the nose that won't go away for the last three years." His medical history revealed nothing significant. The clinician's examination of the lesion on the nose showed a superficial, erythematous region measuring 1 to 1.5 cm in diameter (Figure 3). A biopsy was performed that confirmed the suspicious lesion to be BCC.

The patient was treated with radiation in a single-field technique using 100 kilovolts of radiation that delivered a total of 3,500 centigrays, or cGy, in five treatments in five days. The patient was seen at six-month intervals for two years without recurrence. At 28 months after initial treatment, the clinician



Figure 4. Shiny, erythematous, crusting ulcer on the cheek with minimally elevated borders (Case 2).



Figure 5. Noduloulcerative basal cell carcinoma of the skin of the upper back (Case 2).

noted a faint, pink area centrally located in the previously treated zone. The results of a biopsy were positive, and the region was treated surgically. The patient was again seen routinely at six-month intervals with no evidence of recurrence after two years.

Case 2. A 73-year-old white man, who described a “nickel-sized sore of the right side of face that had been growing for two to three years,” appeared for examination. His medical history revealed that he had had a motor vehicle accident

about 10 years before in which he had suffered injury to the right side of his face that resulted in a scar in the region. The patient became alarmed when “the sore started to bleed and was not getting better.”

Clinical examination revealed a facial ulcer 2.5 × 3 cm that had an erythematous border with a crusting margin. The central portion appeared as an open, red, shiny ulcer (Figure 4). Further examination revealed another lesion on the patient’s back measuring 4 × 5 cm (Figure 5). Biopsies of the raised superficial lesions confirmed the clinical diagnosis of BCC.

Both sites were treated with single-field superficial radiation at 100 kv. The right cheek received 4,500 cGy in 10 treatments, and the back received 3,500 cGy in five treatments. The facial lesion responded well to the radiation treatment, and no recurrence was seen after two years. However, BCC developed on the skin of the back. This lesion was treated surgically. There was no subsequent recurrence at either site after another two years of follow-up examinations.

Case 3. A 72-year-old white man was brought to the emergency department by ambulance after experiencing dyspnea and profuse sweating that led to a brief syncopal episode. There was no report of angina prior to the syncope. The patient’s medical history was un-

remarkable.

He had been employed as a carpenter for most of his working life. He reported that about 10 years earlier, a pneumatic nail gun had accidentally fired and lodged a nail close to the left side of his nose. The patient’s chief complaint on admission was that his “teeth hurt.”

On visiting the patient on the ward, the clinician noticed that the patient was sitting in bed with a towel on his face. He reported that “air bothers my face.” Clinical examination revealed a destructive ulcer of the anterior right aspect of the face measuring 6 × 8 cm (Figure 6) that invaded the right maxillary antrum, right orbit and right hard palate. The lesion exhibited signs of erosion, purulent discharge, necrosis and a fetid odor. The remainder of the physical examination showed nothing else remarkable.

A diagnosis of iron deficiency anemia was reached after a review of laboratory results.

A pantomogram revealed the presence of maxillary right molar root tips and three mandibular anterior teeth. There was an expansile, lytic, radiolucent lesion with thick, well-defined sclerotic margins measuring 6 × 4 cm in the left mandible.

A computed tomographic scan of the face revealed massive destruction of soft tissue and bone on the right side of the face involving the nose, the premolar region, the anterior portion of the hard palate and the floor of the orbit. In addition, the entire anterior wall of the right maxillary antrum was absent. The lesion also extended into the region of the nasal lacrimal gland, the inferior frontal sinus and

CLINICAL APPEARANCE OF BASAL CELL CARCINOMA LESIONS.

- Small, shiny, firm nodule
- Flat, scarlike indurated plaque
- Pearly border with telangiectasia
- Central ulcer with raised borders
- Recurrent crusting or bleeding
- Slowly enlarging lesion



Figure 6. Large, eroding, destructive facial basal cell carcinoma demonstrating the local destruction that can occur in untreated lesions (Case 3).

the anterior ethmoid sinuses.

The clinical and primary diagnosis of the right facial lesion, confirmed by biopsy from the nasal and zygomatic regions, was BCC. Secondary diagnoses were of iron deficiency anemia, malnutrition and eccentric personality disorder.

The patient's anemia and malnutrition were managed by a course of penicillin V, vitamin B₁₂, folic acid, oral iron, vitamin supplements and a liquid supplement diet. The maxillary root tips and three mandibular anterior teeth were extracted. Because of the patient's general poor health, surgery was ruled out for the treatment of the lesion, but the physician considered using external-beam radiotherapy for palliation, with a small chance of local control and cure. The patient continued to deny the presence of disease and focused on his tooth pain. His feeling of having been cured after the teeth were extracted made treatment of the lesion difficult. While waiting for a biopsy of the radiolucent lesion of the mandible, the patient discharged himself against medical advice. Unfortunately, he had left no address or telephone number.

Six months later, the patient returned to the emergency department with a complaint of increasing facial pain. He was admitted and given analgesics. His iron deficiency again was addressed with oral iron and vitamin supplements. Consultations with staff from the palliative care, social services and geriatric psychiatry departments were completed. The patient again discharged himself against medical advice and refused further help.

DISCUSSION

These cases demonstrate a range of facial involvement of BCC. The first two cases of BCC, representing the disease's early stages, were much easier to treat than the last case. If dentists are aware of the signs and symptoms of BCC (Box, "Clinical Appearance of Basal Cell Carcinoma Lesions"), they may be able to recognize the disease in its early stages during an extraoral examination. With early detection and treatment, BCC can be cured in many people.

BCC is managed most commonly either with surgery or with radiotherapy. Timely intervention allows for a cure

with less invasive and complex treatment; it will reduce the risk of recurrence, with better cosmetic results, and, most importantly, prevent damage to adjacent tissue. The best outcome of either option depends on having the procedure performed at the earliest possible time. In the third case presented, the extensive BCC was left untreated because of the patient's denial, and radiotherapy was offered to him as a palliative treatment. This case demonstrates the locally destructive nature of BCC; metastasis was not detected. Unfortunately, the patient did not accept the diagnosis and treatment. The patient refused geriatric psychiatric education and assistance from staff in social services, both of which his physician deemed necessary to his care. Therefore, no further treatment was possible.

It is rare to see such a massive facial lesion as that in the third case. The patient's denial and, possibly, fear of recognizing his facial deformity may have accounted for the erosion and disfigurement of the right side of the face. It was quite clear that the BCC had been present for years, but his con-

tinual claim of, and focus on, dental pain made it difficult for him to understand the extent of the lesion—and probably made him refuse the treatment. The complaint of painful teeth was a clear sign of the progressive eroding lesion of his soft and hard palates. This resulted in a decrease of nutritional intake, leading to body wasting, seclusion and possibly depression. The patient denied ever having suicidal thoughts, but according to his psychiatric assessment, he exhibited long-standing characteristic traits of schizoid/paranoid personality.

CONCLUSION

Dentists have the opportunity to closely inspect facial skin for lesions such as those of BCC, and they must be alert to changes that may represent BCC so that referral, diagnosis and treatment can be completed in a timely manner—and so that the patient's prognosis can be improved. It is important to recognize that recurrent lesions or new primary lesions are more common in patients with a history of BCC. ■

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