A Slow Growing Nodular Lesion

Alexander K.C. Leung, MD, and Benjamin Barankin, MD

HISTORY

A 74-year-old man presents with a slow growing nodular lesion on his temple. The lesion had been there for perhaps 3 years and central ulceration developed 6 months ago. The lesion was asymptomatic. There was no history of weight loss. His past health was unremarkable. He was an active sport player and enjoyed outdoor activities when he was young. There was no family history of skin cancer.

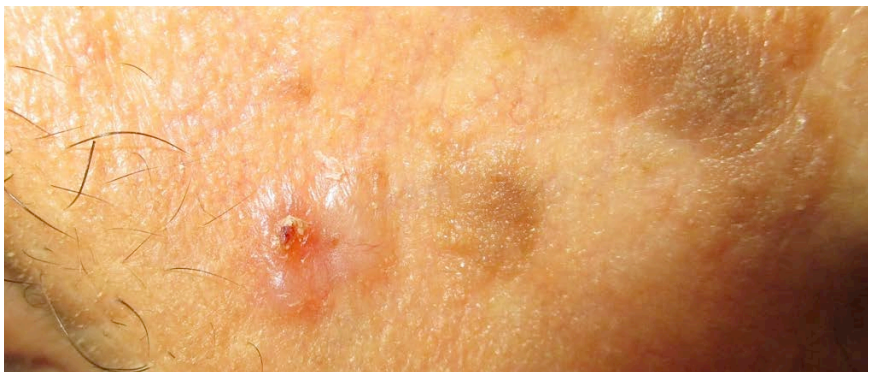
PHYSICAL EXAMINATION

Physical examination revealed a skin-colored to pinkish nodule with a shiny, translucent, tensed surface above the left eyebrow. There was a shallow ulcer crater in the center of the nodule. There was no cervical lymphadenopathy. Incidentally, he also had several brownish, waxy lesions of seborrheic keratosis in the nearby area.

What's Your Diagnosis?

A. Actinic keratosis **B.** Basel cell carcinoma **C.** Dysplastic nevus **D.** Eczema **E.** Psoriasis

Answer: Basal cell carcinoma



In our patient, the mass was removed surgically and histopathological examination of the excised tissue showed nests of basaloid cells with peripheral, palisading of lesional cell nuclei arising from the epidermis without pigmentation, thus confirming the clinical diagnosis of nodular basal cell carcinoma (BCC). The postoperative course was uneventful. He was followed yearly and there was no recurrence at the 5-year follow-up.

DISCUSSION

BCC is generally defined as a locally invasive, slow spreading tumor that rarely metastasizes. It arises in the epidermis or hair follicles, in which case, the peripheral cells usually simulate the basal cells of the epidermis. The condition was first described by Jacob in 1827 and the term basal cell carcinoma was coined by Krompecher in 1903.[1]

In Germany, there are 170 new reports of BCC per 100,000 inhabitants per year.[2] In Australia, the incidence is approximately 726 cases per 100,000 inhabitants per year.[1] The exact incidence in the United States and United Kingdom is not known due to inconsistent data collection as the actual numbers are not reported to cancer registries.[3,4] In the UK, there were approximately 200,000 patients with BCCs treated surgically in 2010.[5] This number does not include those treated by other means. In the US, more than 2.1 million new patients were treated for non-melanoma skin cancers in 2006.[6] In Brazil, there were approximately 56 new cases of nonmelanoma skin cancers per 100,000 men and 56 new cases of nonmelanoma skin cancers per 100,000 women in 2010.[1]

BCC accounts for 80% to 90% of all nonmelanoma skin cancers.[3] Worldwide, there is a continued rise in tumor incidence. Seventy percent to 80% of BCCs occurs in the head and neck region, and the nose is the most common location.[2] The incidence increases with age, with a peak during the 6th to 8th decades.[1] The male to female ratio is approximately 1.5 to 2:1.[1]

The greatest risk factor is chronic exposure to ultraviolet radiation, as evidenced by a higher frequency of disease in sun-exposed areas.[1,4] Other risk factors include fair skin color, history of blistering sunburns (particularly in childhood), freckles in childhood, ionizing radiation, indoor tanning exposure, arsenic exposure, immunosuppression, close relatives with skin cancers, and mutations in tumour suppressor genes such as *p53* and patched homologue 1 (*PTCH 1*).[1,3] Genodermatoses that may predispose to the development of BCC include albinism, xeroderma pigmentosum, Gorlin syndrome, Bazex syndrome, and Rombo syndrome. BCC often arises *de novo* without a precancerous lesion.[1,3]

Nodular BCC is associated with increased levels of hyaluronic acid concomitant with up-regulation of gene expression of hyaluronic acid synthase 3 (*HAS3*), hyaluronidase 3 (*HYAL3*), and receptor hyaluronic acid-mediated motility (*RHAMM*) when compared with adjacent healthy skin tissue.[7]

CLINICAL MANIFESTATIONS

BCCs are a heterogeneous group of tumors that based on their clinical morphology can be classified most commonly into the following subtypes: nodular, superficial, sclerosing, infiltrative, micronodular, and pigmented.

Nodular BCC accounts for 50% to 80% of cases. It affects mainly the head and neck, as is illustrated in the present case. Typically, nodular BCC presents as a circumscribed, yellow-red nodule with a shiny, translucent, tensed surface. Telangiectasia, rolled edge with pearly papules, central depression, and ulceration may also be found. The tumor is usually indolent, grows slowly, and is associated with a low mortality rate. It can be locally destructive and disfiguring, and although rare, more than 300 reports of metastasis are in the literature.

Superficial BCC affects mainly the trunk and shoulders. Typically, the lesion presents as a slowly growing, erythematous or pinkish, scaly patch or plaque that has a thin pearly border. Diagnosis is often delayed as it is often mistaken for a dermatitis or tinea infection.

Sclerosing BCC affects mainly the face as a depressed plaque or scar with ill-defined borders.[1] It can have extensive subclinical spread and carries a poor prognosis.

Infiltrative BCC comprises approximately 5% of all BCCs. It does not have a distinctive morphological appearance but has infiltrative growth, more aggressive clinical course, and higher risk of recurrence. Infiltrative BCC has the worst prognosis. Micronodular BCC simulates nodular BCC clinically but has small nodules histologically.

Pigmented BCC occurs mainly in individuals with dark skin complexion. The lesion is often blue, brown, or black in color. Foci of pigment may scatter randomly throughout the lesion. Histologically, there is abundant melanin within the tumor cells.

DIAGNOSIS

The diagnosis is usually clinical, aided by dermoscopy. The classical dermoscopic features are lack of pigment network, ulceration, maple leaf-like structure, blue-gray globules (pigmented type), blue-ovoid nests, arborizing vessels, and spoke-wheel structures. If the diagnosis is in doubt, a skin biopsy is warranted. Imaging studies, such as a CT and MRI, to rule out metastasis are rarely recommended unless there is clinical suspicion of metastasis.[2]

The differential diagnosis includes squamous cell carcinoma, actinic keratosis, seborrheic keratosis, Merckel cell carcinoma, Bowen disease, Paget disease, dysplastic nevus, folliculitis, ruptured cyst, eczema, tinea infection, and psoriasis.

COMPLICATIONS

BCC may bleed easily when bumped or irritated. The tumor may become ulcerative (rodent ulcer), and cause local tissue invasion and destruction. Very rarely, it may metastasize.[4] Risk factors for metastasis include occurrence on the genitalia, size greater than 3 cm in diameter, deep invasion of tumor cells into extradermal structures, and infiltrative or sclerosing histological type.[8] Patients with BCC are at increased risk of developing further BCC or other skin malignancies such as melanoma and squamous cell carcinoma.

MANAGEMENT

Treatment options include local excision, Mohs microscopic surgery, radiotherapy, curettage with electrodessication and, less commonly, cryotherapy. The size of the tumor, its location, microscopic pattern, complete tumor eradication, preservation of function, cosmesis, and patient's preference should be considered when a treatment modality is selected.[9] The mainstay of treatment for nodular BCC is surgical excision for low-risk lesions and Mohs microscopic surgery for high-risk lesions (large size, poorly defined tumor margin, histological features of aggression, location in a danger zone such as the face and genitalia).[3,4,9] Mohs microscopic surgery combines staged resection with comprehensive surgical margin examination. This procedure results in extremely high cure rates even for the most high-risk lesions.[4] Topical immunotherapy (eg, imiquimod), topical fluorouracil, and photodynamic therapy are reasonable options for superficial BCCs.[10] Vismodegib is a potent inhibitor of the protooncogene product smoothened, which is a key component in the hedgehog signaling pathway.[11,12] The product has been found effective in the treatment of locally advanced and metastatic BCC and was approved by the FDA in January 2012 for such purposes.[11,12]

Patients with BCC should have regular follow-up at least yearly for 5 years following diagnosis.[4] ■

Alexander K.C. Leung, MD, *is clinical professor of pediatrics at the University of Calgary and pediatric consultant at the Alberta Children's Hospital in Calgary, Alberta, Canada.*

Benjamin Barankin, MD, *is medical director and founder of the Toronto Dermatology Centre in Toronto, Ontario, Canada.*

REFERENCES:

1. Chinem VP, Miot HA. Epidemiology of basal cell carcinoma. *An Bras Dermatol.* 2011;86(2):292-305.
2. Hauschild A, Breuninger H, Kaufmann R, et al. Brief S2K guidelines – basal cell carcinoma of the skin. *J Dtsch Dermatol Ges.* 2013;11(suppl 3):10-15.
3. Kwasniak LA, Garcia-Zuazaga J. Basal cell carcinoma: evidence-based medicine and review of treatment modalities. *Int J Dermatol.* 2011;50:645-658.
4. Telfer NR, Colver GB, Morton CA. Guidelines for the management of basal cell carcinoma. *Br J Dermatol.* 2008;159(1):35-48.
5. Levell NJ, Igali L, Wright KA, et al. Basal cell carcinoma epidemiology in the UK: the elephant in the room. *Clin Exp Dermatol.* 2013;38(4):367-369.
6. Rogers HW, Weinstock MA, Harris AR, et al. Incidence estimate of nonmelanoma skin cancer in the United States, 2006. *Arch Dermatol.* 2010;146(3):283-287.
7. Tzellos TG, Kyrgidis A, Vahtsevanos K, et al. Nodular basal cell carcinoma is associated with increased hyaluronan homeostasis. *J Eur Acad Dermatol Venereol.* 2011;25(6):679-687.
8. Nakamura Y, Ishitsuka Y, Ohara K, et al. Basal cell carcinoma on the dorsum of the foot with inguinal and pelvic lymph nodes metastasis. *Int J Dermatol.* 2012;51(9):1068-1073.
9. Brownell I. Nodular basal cell carcinoma: when in doubt, cut it out. *J Drugs Dermatol.* 2007;6(12):1245-1246.
10. Arts AH, Mosterd K, Essers BA, et al. Photodynamic therapy versus topical imiquimod versus topical fluorouracil for treatment of superficial basal-cell carcinoma: a single blind, non-inferiority, randomised controlled trial. *Lancet Oncol.* 2013;14(7):647-654.
11. Harms KL, Dlugosz AA. Harnessing hedgehog for the treatment of basal cell carcinoma. *JAMA Dermatol.* 2013;149(5):607-608.
12. Sekulic A, Migden MR, Oro AE, et al. Efficacy and safety of vismodegib in advanced basal-cell carcinoma. *N Engl J Med.* 2012;366:2171-2179.

For past What's Your Diagnosis® columns, visit **www.consultant360.com**.