Nevoid Basal Cell Carcinoma Syndrome in an African American Woman

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Nevoid basal cell carcinoma syndrome (NBCCS) is uncommon in African American patients. Also, basal cell carcinomas (BCCs) arise less frequently in African American patients with NBCCS than in white patients. We present a case of an African American woman with NBCCS.

Case Report

A 26-year old African American woman presented with multiple generalized dark brown papules that were most prominent over the upper trunk (Figure 1). She reported that her father had similar lesions on his face. Also, there were dark 1-mm pits on her palms (Figure 2). She had had previous surgery to correct scoliosis. At the time the patient was being evaluated in the hospital by our service, she was also under the care of the hospital's ophthalmology service. She had a history of cataracts; uveitis; glaucoma; and vitreitis, which had been surgically corrected 6 months prior to the time of our evaluation. She was scheduled to have surgery to correct bullous keratopathy, retrocorneal and papillary membranes, intraocular lens fibrosis, and posterior chamber fibrosis.

Results of a histologic examination of a papule from her axilla showed cords of basaloid cells connected to the epidermis that were anastomosing in a netlike pattern against the background of a loose stroma. The cytology of the basaloid cells showed nuclear hyperchromasia and minimal cytoplasm. Mitoses and apoptotic cells were seen. (Figure 3).

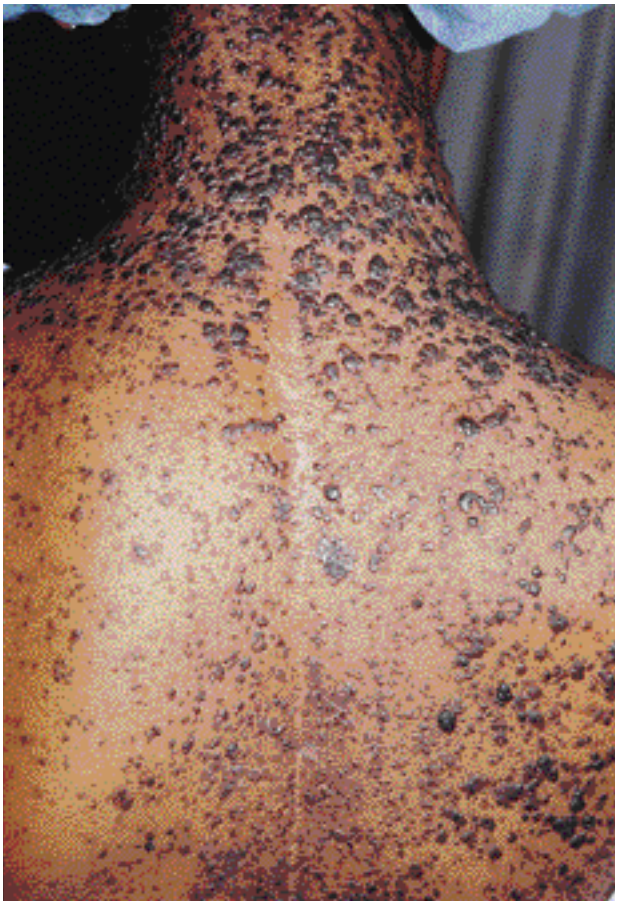

Figure 1. Multiple hyperpigmented papules on the patient's back. Note scar from previous scoliosis surgery.

Comment

Nevoid basal cell carcinoma syndrome (NBCCS), also known as Gorlin syndrome, is an autosomal dominant disorder characterized by multiple basal cell carcinomas (BCCs), keratocysts of the jaw, palmar/plantar pits, calcification of the falx cerebri, and skeletal anomalies. Patients may present at any age. In childhood, congenital defects such as jaw cysts, skeletal anomalies, or medulloblastoma may be present.[1] Skin manifestations can present at birth but usually appear in teenage years.

The principal skin lesions are multiple BCCs that resemble nevi. They commonly appear before puberty, are usually distributed bilaterally and symmetrically, and sometimes erupt in crops.[1] The face, neck, upper trunk, and axillae are most

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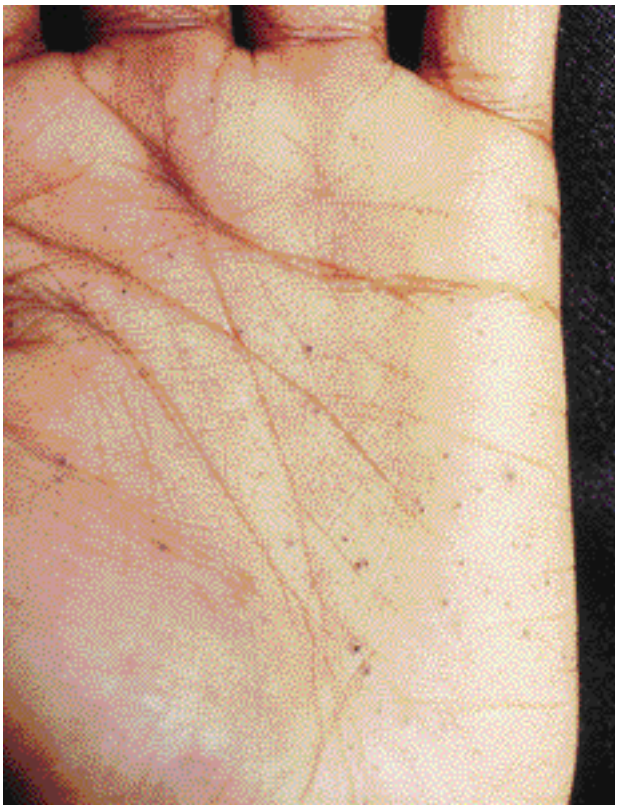

Figure 2. Palmar pits.

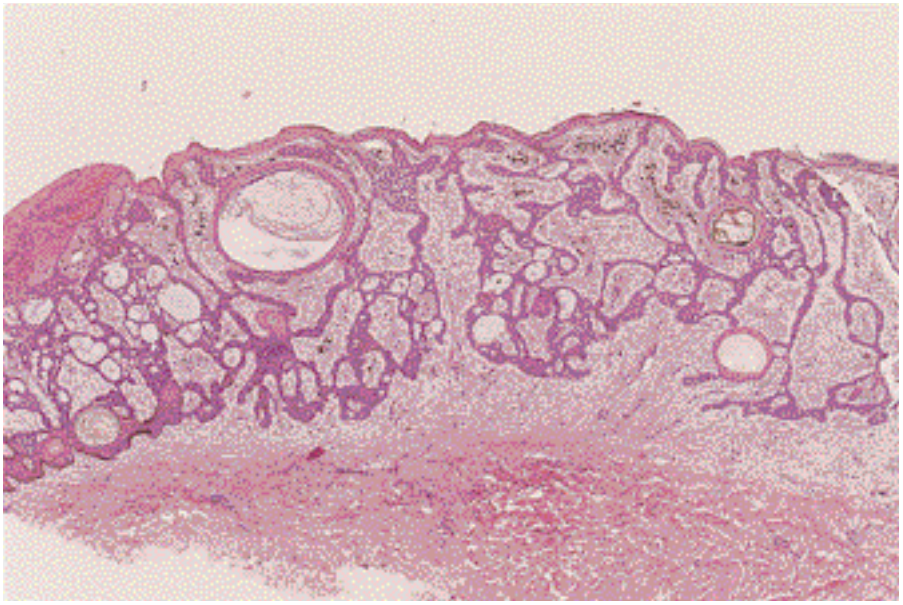

Figure 3. A basal cell carcinoma of the Pinkus type (H&E , original magnification ×10).

commonly involved. The lesions tend to be smooth round papules that can be either skin-colored or pigmented and can vary in size from 1 to 15 mm in diameter. BCCs in the axillae, around the neck, or on the eyelids can be pedunculated.[2] Most lesions are benign prior to puberty and tend to be more invasive after puberty, especially those on the eyelids and nose.[1,2]

Palmoplantar pits are present in about 85% of patients.[3] These pits range in size from pinpoint to several millimeters and have an erythematous base. They result from a premature shedding of defective

keratin due to a delay in maturation of the epidermal basal cells. BCCs rarely develop in palmar pits.[2]

Other associated extracutaneous lesions involve the skeletal, neurologic, ophthalmologic, and genitourinary systems. Approximately 10% to 15% of patients with NBCCS reported in the literature have ophthalmologic abnormalities.[4] These include congenital blindness due to corneal opacity, congenital glaucoma, coloboma, strabismus, nystagmus, cataracts, microophthalmia, ptosis, proptosis, medullated nerve fibers, and retinal hamartomas.

Odontogenic keratocysts are often the initial complaint in patients with NBCCS, with the median age of presentation at 13 years.[3] The cysts tend to recur after surgical removal. Other common clinical signs include frontal bossing, macrocephaly, coarse facies, hypertelorism, palate abnormalities, and syndactyly.[1,3] Common radiological findings include bifid ribs, falx calcification, bridged sella, scoliosis, and spina bifida occulta. Medulloblastoma is the most common malignancy other than BCC, and its frequency is estimated to be 3% to 5%. Cardiac fibroma and ovarian fibroma also have been reported.[3]

Linkage studies have localized the gene defect to chromosome 9q22.3-3.1. Mutations in the patched (PTCH) gene, the human homolog of the Drosophila patched gene, have been identified in most exons of the gene in patients with NBCCS, as well as in sporadic BCC.[5] The human PTCH encodes a transmembrane protein that functions as a receptor for signaling proteins of the Hedgehog family.[6] In addition, PTCH has been identified as a tumor suppressor gene. Its role in organogenesis and carcinogenesis may explain both the birth defects and cancer predisposition in NBCCS.[7]

The diagnosis of NBCCS is usually made based on associated features and family history, with BCC confirmed histologically. Major criteria are multiple BCCs, odontogenic keratocysts, palmoplantar pits (3 or more), ectopic calcification, and a positive family history of NBCCS.[8] Surgical excision and Mohs micrographic surgery are necessary for larger or more invasive lesions, and small lesions on the trunk or extremities can be treated with electrocautery and curettage. Cryotherapy and combined topical 0.1% tretinoin and 5-fluorouracil also have been reported to be helpful.[1]

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