Basal Cell Nevus Syndrome in a Family

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ABSTRACT

Basal cell nevus syndrome is also named Nevoid basal cell carcinoma syndrome (NBCCS) or Gorlin syndrome. Multiple organ systems may be involved, including skin, skeletal system, genitourinary system and Cell Nevus Syndrome (CNS).

We reported two familial cases of basal cell nevus syndrome. The initial presentation was multiple cysts in mandible and maxilla. There were also some skeletal abnormalities in ribs or spine such as hemivertebra, fusion, hypoplasia and fork of the ribs. After correlated with family history, basal cell nevus syndrome was considered.

CASE REPORT 1 (BROTHER)

A 12-year-old male presented with swelling over right upper and lower gingiva for about half a year. Concerning his family history, his mother had history of mandibular cysts. The physical examination revealed gingiva swelling from #17 edentulous ridge to #14 region. Laboratory data were unremarkable. Routine panoramic radiography showed osteolytic lesions at right mandibular angle (Fig. 1). Computed Tomography (CT) scan showed radiolucent, well-defined expansile cysts surrounding crown of an unerupted tooth within bilateral maxillary sinuses without any enhancing part (Fig. 2). Subsequently the patient was admitted for surgical excision. On the pre-operative routine chest plain film, fusion, distorsion, hypoplasia and fork of the ribs, hemivertebra and sprengel deformity were noted (Fig. 3). Histopathology showed cystic lesion lined by compressed stratified squamous epithelium. (Fig. 4). Putting all these findings together, basal nevus cell syndrome was considered.

CASE REPORT 2 (SISTER)

A 16-year-old female, the sister of Case 1, presented with swelling over right upper posterior gingiva for months. The physical examination revealed mild swelling over right upper gingiva. Neither skin nevus nor pit at plantar or palm was noted. Laboratory data were unremarkable. Routine panoramic radiography showed multiple well-defined...
osteolytic lesions in bilateral maxilla and mandible (Fig. 5). CT scan showed well-defined cyst-like lesions over several regions, including right maxillary sinus, inferior part of left maxillary sinus, and left mandibular angle. (Fig. 6). She was admitted for surgical excision and the pre-operative routine chest plain film showed fork, fusion of ribs and scoliosis of thoracic spine (Fig. 7). Histopathology showed cystic lesions characterized by regimentation of the basal layer and a wavy, corrugated surface of parakeratotic squamous epithelium. Combining all these findings, basal nevus cell syndrome was favored.

**DISCUSSION**

Nevoid basal cell carcinoma syndrome (NBCCS)
Basal cell nevus syndrome

is a rare inherited multisystem disorder that is a result of mutations in the PTCH gene. More than 100 clinical abnormalities have been reported in this syndrome. The major criteria are [3-5] (1) Early development of multiple basal cell cancers (BCCs); (2) Odontogenic (bone) keratocysts; (3) Palmar and plantar pitting; (4) Ectopic intracranial calcification; (5) Family history. Minor criteria include [5] (1) Craniofacial anomalies (macrocephaly, frontal bossing, hypertelorism); (2) Bifid ribs; (3) Early onset medulloblastomas; (4) Cardiac or ovarian fibromas; (5) Lymphomesenteric cysts; (6) Congenital malformations (cleft lip/palate, polydactyly, eye abnormalities, colobomas, cataracts, glaucoma). The diagnosis is supported by finding either two major, or one major and two minor criteria.

Basal cell cancers usually affect Caucasian patients with NBCCS more than blacks and Asians. Mean age at first diagnosis is 20 to 21 years old [6]. Although BCCs can occur at any location, it frequently develop on sun-exposed areas such as the head, neck, back, chest, and upper limbs [7].

Odontogenic keratocysts are cystic lesions of the bone that are lined with keratinized epithelium and thought to originate from the dental lamina. They are neoplastic rather than developmental in origin and are characterized

**Figure 4.** Photomicrograph showed cystic lesions lined by squamoid epithelium (arrow) and are surrounded by fibromyxoid stroma and bony trabeculae.

**Figure 5.** Panoramic radiography showed multiple well-defined osteolytic lesions in bilateral maxilla and mandible (arrow).
by aggressive clinical behavior, including involvement of the teeth. Recurrence rate is about 60 percent [8]. Most odontogenic keratocysts present in the mandible. About one-third is asymptomatic and are detected on routine dental examination. About 50 percents of patients have jaw swelling, 25 percents have mild pain, and 15 percents develop altered taste [9].

Palmar and/or plantar pits are highly characteristics.

Figure 6. CT showed well-defined cyst-like lesions within bilateral maxillary sinuses (asterisks).

Figure 7. Chest plain film showed left 4th, 6th and 7th forked ribs (arrow); right 1st / 3rd and left 4th/5th fused ribs (arrowheads); scoliosis of thoracic spine.

Figure 8. Family tree showed a basal cell nevus syndrome is found in our two cases and their mother.
of NBCCS, occurring in approximately 80 percents of affected individuals [6]. Although pitting generally develops during the patient’s 20s and later, it has been reported in much younger patients [7]. They are asymptomatic nonpalpable shallow depressions (1 to 3 mm) in the skin of the palm and/or soles that are due to partial or complete absence of stratum corneum.

The most common brain tumor in patient with NBCCS is medulloblastoma, which usually arise in the midline of cerebellar vermis [2]. The incidence of medulloblastoma in patients with NBCCS is less than 5 percent, and there is a male predominance of 3:1 [10]. Intracranial ectopic calcification is noted in about 65 percents of patients with NBCCS and the most common site is the falx cerebri. Other areas of intracranial calcification include the sella turcica, the tentorium cerebelli and the petroclinoid ligament [11]. The patients with NBCCS usually have a “coarse” facial appearance including frontal bossing, macrocephaly, hypertelorism, high arch eyebrows and palate, widened nasal bridge, and mandibular prognathism [2, 6].

Bone abnormalities are common in patients with NBCCS. About 38-60 percents of patients have rib abnormalities, including bifid ribs, marked widening of anterior rib ends, and fusion/modeling defects of the ribs. Spina bifida can also be seen in patients with NBCCS [2, 6].

Cardiac fibromas are more common in patients with NBCCS, with a prevalence rate of 3 percents. Most of the fibromas locate within the ventricular myocardium, and can result in impaired left ventricular function and conduction defects [5]. Ovarian fibromas develop in 15-25 percents of girls with NBCCS. They are usually calcified and bilateral [5, 6]. Single or multiple lymphomesenteric cysts may also be a component of NBCCS [12]. They are usually calcified and asymptomatic.

Other anomalies include ocular anomalies (congenital cataracts, colobomas, nystagmus, strabismus, hypertelorism, and telecanthus), cleft palate, pectus deformities, Sprengel deformity, and polydactyly may be seen in patient with NBCCS [2, 5, 6].

When the diagnosis of NBCCS is considered, family screen should be performed because this syndrome is autosomal dominate. The two cases we presented here are brother and sister, and their mother also had history of mandibular cysts (Fig. 8).

In conclusion, since there is increased risk of developing basal cell cancer and medulloblastoma in patients with NBCCS, early identification of these patients is necessary for early treatment of the potential malignancies. These patients should be informed of their risks and under active surveillance.

REFERENCE