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Keratocyst In Gorlin-Goltz Syndrome-A Case Report.

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ABSTRACT

Gorlin syndrome, also known as Gorlin-Goltz syndrome, basal cell nevus syndrome, or nevoid basal cell carcinoma syndrome, is an autosomal dominant familial cancer syndrome characterized by numerous basal cell carcinomas, skeletal, ophthalmic, and neurological abnormalities. Diagnosis is crucial through diagnostic tests, clinical signs, and radiological manifestations. The present paper highlights the importance of diagnostic criteria and histopathology in early and prompt diagnosis which will lead to proper treatment and genetic counseling of the patient. We are presenting a case of 28-year-old male patient came with the history of painful swelling over the left cheek and around the left eye**.** His histopathology report was keratocyst and genetic screening done confirmative of: Gorlin-Goltz syndrome. Garlin-Goltz syndrome is a multisystem disorder involving basal cell nevi, jaw keratocysts, and skeletal anomalies, with associated neurological, ophthalmic, endocrine, and genital manifestations, diagnosed using major and minor criteria. This paper emphasizes the importance of ENT and maxillofacial health professionals in the early diagnosis of nevoid basal cell carcinoma syndrome and in a preventive multidisciplinary approach to provide a better prognosis to the patient.

Keywords: Gorlin-Goltz syndrome, keratocyst, genetic screening.

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INTRODUCTION

Gorlin-Goltz syndrome can develop spontaneously, however it is an autosomal dominant hereditary disorder with strong penetrance variable expressivity. According to estimates, the general population has a disease incidence of in 50,000–1,50,000, depending on the location.[1,2,3] Both men and women are equally afflicted, and it manifests in all ethnic groups, however it mostly affects White people.[4] Jarish and White published the first description of NBCCS in 1894. In 1960, Gorlin and Goltz defined the primary triad of numerous BCC, keratocyst, and skeletal anomalies as the conditions that make up Gorlin Goltz syndrome.[5, 6, 7] Many names for this syndrome include jaw cyst basal cell tumor-skeletal anomaly syndrome, multiple NBCCS, multiple BCC syndrome, and fifth phacomatosis.8 The causal gene is located on the long arm of chromosome 9q (22.3-q31).

CASE REPORT

A 28year old male patient came with the history of painful swelling over the left cheek and around the left eye for 8 months (Figure 1). Patient was apparently alright 8 months back when he noticed small painful swelling started from left eyelid and gradually increasing in size & spreading over cheek. He went to Dentist where extraction of upper 2 molar teeth was done. But there was no decrease in size of lesion. The swelling gradually increased in size and started spreading from left cheek to left mandible & to left ramus in the span of 2 months. Patient also had history of pus discharge from swelling since 1 month & history of weight loss of 6 kg in 2 months. He has negative history of nasal Obstruction, nasal Bleeding, trauma, diminution of vision or diplopia. He has negative history of facial paraesthesia, aural fullness, anosmia or parosmia. Height of patient was 165cm and weight 36kg. Patient was afebrile thin built respiratory rate 14/min and blood pressure 120 /80 mm hg.

On examination there was 7cm×5cm Firm immobile tender non fluctuant swelling with Cheesy material oozing out of the surface of swelling over left cheek with multiple sinus lesions over skin surface present. There was no cervical lymph node palpable. Ultrasonography of the face was done which was suggestive of infection with soft tissue inflammation without any abscess formation. Computed Tomography of skull base to neck done with Contrast was suggestive of soft tissue lesion with foci of calcification at lateral wall of maxillary sinus, body of ramus of left mandible, skin and subcutaneous tissue. Heterogenous material extending from inferior wall of orbit to lateral wall of premaxillary space and infratemporal fossa. 4cm×5.5cm×5cm lesion noted in bilateral mandibular ramus. There was heterogenous enhancing multiple odontogenic keratocyte in maxilla and mandible with bony destruction (Figure 2). Ophthalmic examination was normal for both eyes regarding conjunctiva, cornea, anterior chamber, vision, extraocular movements, intraorbital

tension and fundus examination. Swab culture was negative for any fungal infection. After preanaesthetic evaluation and proper consent patient was taken for functional endoscopic sinus surgery under general anesthesia.

Nasal endoscopy showed pale nasal mucosa with secretion in left nasal cavity. There was no evidence of any mass in left nostril or maxillary sinus. Left Uncinectomy done, Maxillary ostium widened, maxillary antrum was contracted. Multiple sinuses over left cheek dilated and widened from that white cheesy fowl smelling material squeezed out. Curettage done and Cheesy material removed from sinuses over left cheek swelling. Betadine-soaked ribbon gauze packed in cavity of cheek & facial swelling. Cheesy material and Deep tissue Biopsy sent for fungal and histopathological examination. Patient was given systemic antibiotics along with oral antihistaminic analgesic and antacids and Nasal drops for 7 days. After that regular follow up with alternate day dressing. (Figure 3) Histopathology report of the patient suggested that microscopic examination showing chiefly keratinous stratified material with tiny stria of benign stratified squamous epithelium with neutrophilic exudate and abundant lamellated keratin is noted without any evidence of dysplasia/malignancy. Suggestive of Benign epithelial cyst/ keratocyst / benign keratinous cyst.

Patient sent for genetic screening where he was diagnosed as Gorlin-Goltz syndrome as patient has positive sprengel deformity, calcification of falx cerebri, pectus deformity, bifid ribs and keratocyst as per histopathology report.

Figure 1: Showing facial swelling with multiple sinus openings

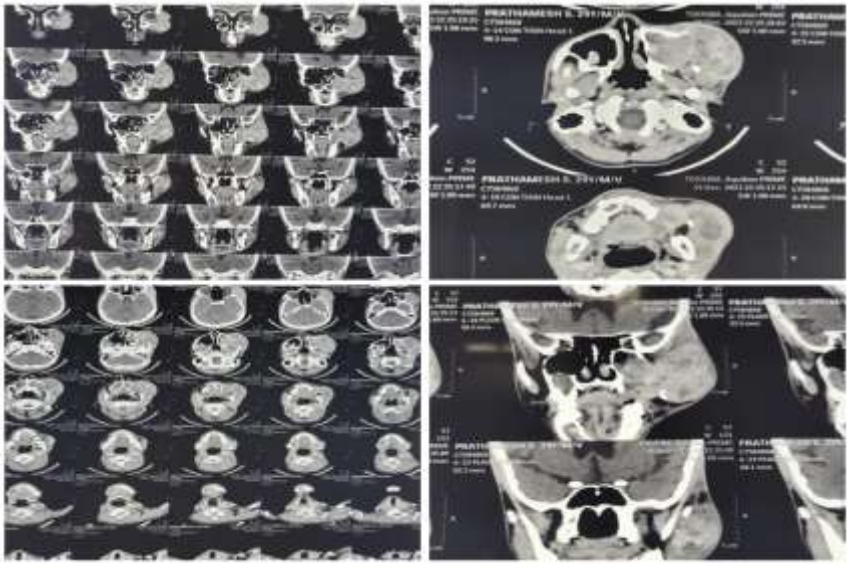

Figure 2: Computed Tomography showing heterogenous enhancing multiple odontogenic keratocyst in maxilla and mandible with bony distruction.

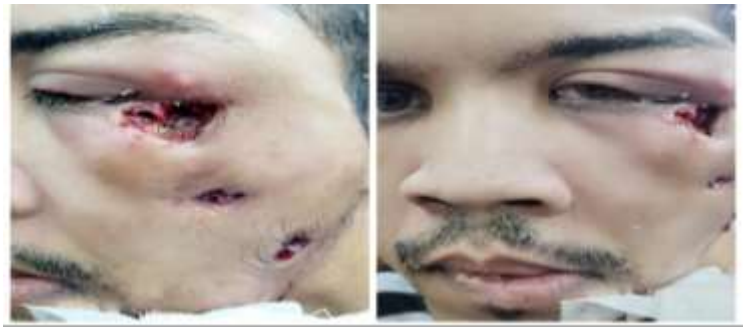

Figure 3: Post debridement picture showing multiple sinuses after removing cheesy material from keratocyst

DISCUSSION

Various systems show evidence of abnormal changes in NBCCS comprising of the stomatologic system, skeletal system, ectopic calcification of the central nervous system (CNS), ocular system, genitor-urinary system, mesenteric cysts, skin, genitor-urinary system and cardiovascular system.[8,11] Reported other anomalies associated with this syndrome in 2004 and they are bifid ribs, splayed/fused ribs, rudimentary ribs, scoliosis, polydactyly, syndactyly, shortened 4th metacarpal, spina bifida, frontal bossing, temporal bossing, macrocephaly, falx cerebri calcification, bridged sella turcica, congenital hydrocephalus, mental retardation, medulloblastoma, cleft lip and/or palate, OKC, mandibular hyperplasia, ectopic position of tooth/teeth, impacted teeth, BCC, benign dermal cysts, calcified ovarian cysts, hypertelorism, ptosis, internal strabismus, glaucoma, cardiac fibroma, palmar and/or plantar pits.[2,6,10]

Even though the incidence of BCC is usually seen between second to third decades of life, some cases have been seen much earlier.[3,12,10] More than 50% of NBCCS patients have

shown to develop keratocysts, mostly in the first decade of life.[11] Male and females are equally affected.[4] In our case patient is of third decade male.

The conclusion of NBCCS may be arrived when two major criteria or one major and two minor criteria are present for these patients.[13] Initially Evans et al. formulated the diagnostic criteria based on frequent and/or specific features of the syndrome, which was later modified by Kimonis et al. in 1997.[14]

The major criteria are:

- Multiple BCC or one occurring under the age of 20 years
- Histologically proven OKCs of the jaws
- Palmar or plantar pits (three or more)
- Bilamellar calcification of the falx cerebri
- Bifid, fused or markedly splayed ribs
- First-degree relative with NBCCS.

The minor criteria are:

- Macrocephaly (adjusted for height)
- Congenital malformation: Cleft lip or palate, frontal bossing, coarse face, moderate or severe hypertelorism
- Other skeletal abnormalities: Sprengel deformity, marked pectus deformity, marked syndactily of the digits
- Radiological abnormalities: Bridging of the Sella turcica, vertebral anomalies such as hemivertebrae, fusion or elongation of the vertebral bodies, modeling defects of the hands and feet or flame shaped hands or feet
- Ovarian fibroma
- Medulloblastoma.

Table 1: Diagnostic protocol chart

Diagnostic protocols in NBCCS	
• **Family history:** • Past medical and dental history • **Clinical examinations** • Oral, Skin	**Genetic testing**
• Central nervous system • Head circumference • Interpupillary distance • Eyes • Genitourinary system • Cardiovascular system • Respiratory system • Skeletal system	**X-ray** • Chest • A.P. and lateral skull • Panoramic radiograph • Cervical and thoracic spine • Hands (for pseudocysts) • Pelvic (female) Ovarian ultrasound (female) for ovarian fibroma. Echocardiogram (children) for cardiac fibroma.

Abbreviations: NBCCS: Nevoid Basal Cell Carcinoma Syndrome.

In our case major manifestation such as multiple OKCs, calcification of falx cerebri, bifid ribs, sprengel deformity and pectus deformity so diagnosed as Gorlin-Goltz syndrome. A multidisciplinary approach (ENT surgeon, Dentist, Dermatologist, Neurologist, Plastic Surgeon) is required for diagnosis and management. In this syndrome management is about adequate treatment of cyst and removal of tumo.[15] Keratocysts Odontogenic Tumor (KCOT) is the first appearing sign of the syndrome. It is usually an incidental radiographic finding.[16] The major problem with syndromic $KCOT_s$ is that they have a high rate of recurrence than non-syndromic cyst. It is also suggested that NBCCS patients should have dermatological examination every 3-6 months with removal of basal cell nevus showing evidence of growth, ulceration or hemorrhage. Exposure to UV light to these patients should be decreased. The children with NBCCS must have neurological examination every 6 months as they are at a higher level of susceptibility to develop medulloblastoma.[17] The long-term complication of this syndrome includes the malignancy, Oro-maxillofacial deformation and destruction, which may be reduced if the diagnosis and treatment are made feasible at the earliest. OKCs, which are relatively common in GGS, are diagnosed with dental panoramic radiography.

Keratocysts may show a uni or multilocular pattern and the cystic spaces may have a smooth or scalloped borde.[3,8] Woolgar et al. Dominguez et al. found significant differences between syndrome keratocysts and non-syndromic keratocysts.[18,19] Syndrome keratocysts were found to have a markedly increased number of satellite cysts, solid islands of epithelial proliferation, odontogenic rests within the capsule, and mitotic figures in the epithelial lining of the main cavity. In our patient, microscopic examination showing chiefly kerationous stratified material with tiny stria of benign stratified squamous epithelium with neutrophilic exudate and abundant lamellated keratin is noted without any evidence of dysplasia/malignancy. Suggestive of Benign epithelial cyst / keratocyst / benign kerationous cyst. Thus, indicating the association with Gorlin-Glotz syndrome.

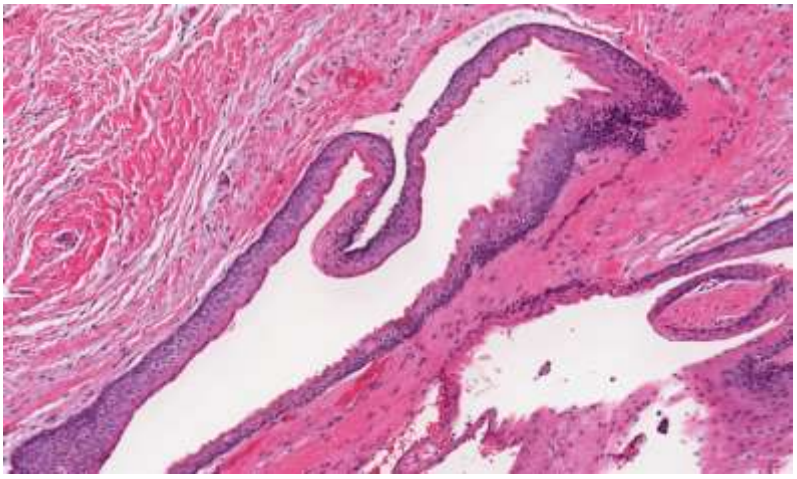

Figure 4: Microscopic picture of keratocyst showing keratinous stratified material with tiny benign stratified squamous epithelium.

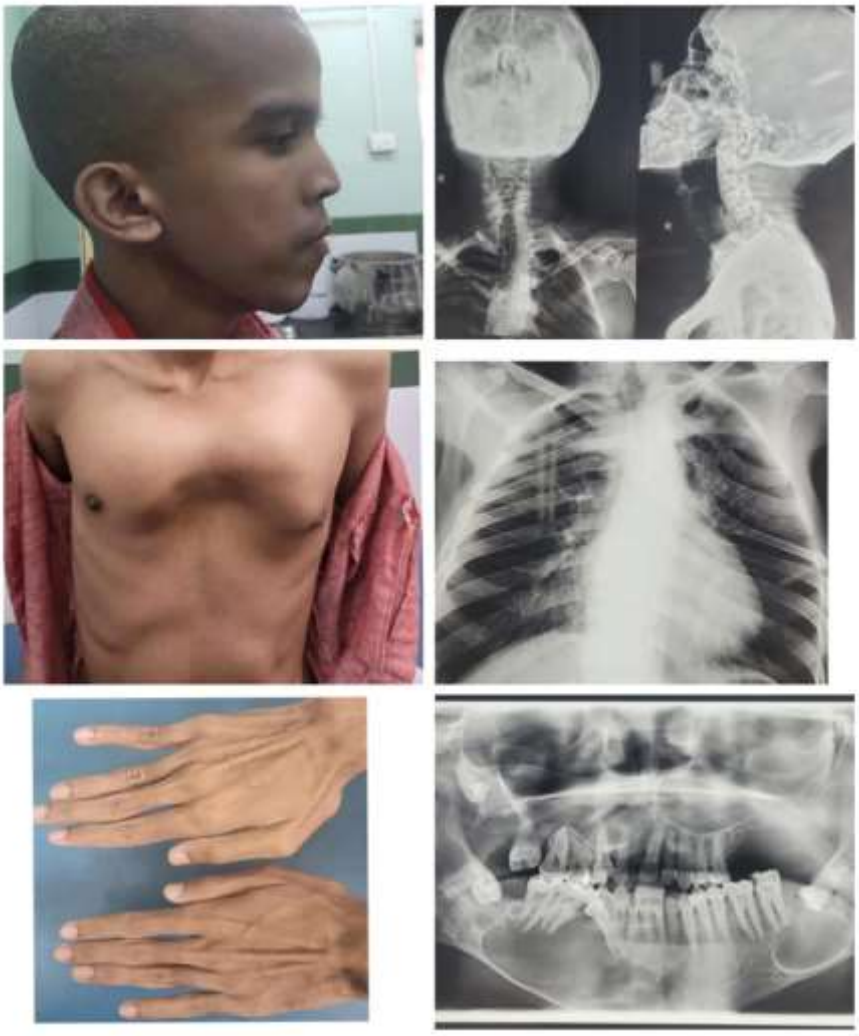

Figure 5: Clinical features associated with Gorlin-goltz syndrome

CONCLUSION

This paper emphasizes the importance of ENT and maxillofacial health professionals in the early diagnosis of nevoid basal cell carcinoma syndrome (Garlin-Goltz syndrome) which needs to be considered as one of the diagnoses in facial swelling with multiple sinus openings apart from fungal infection. Complete systemic examination of the patient along with local ENT examination should be done. There are many ENT diseases which could be the part of some syndrome associated with it. Hence multidisciplinary approach along with genetic screening provides a better prognosis to such patient.

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