Gorlin–Goltz syndrome: A rare case report

ABSTRACT

Aims: To emphasize the need to consider draining sinuses in peri-apical and periodontal regions of the tooth as potential cyst or tumors of the jaws, with underlying association with some fatal syndromes like Gorlin-Goltz.

Presentation of case: A 17 year old male patient reported to a dental clinic in Jabalpur, India. He presented with complaint of foul fluid discharge from peri-apical region of an over retained, mobile deciduous maxillary left canine tooth. Panoramic radiograph revealed presence of multiple Keratocystic odontogenic tumor (KCOT) in both the jaws. Patient’s general physical examination revealed macrocephaly, wide nasal bridge, ocular hypertelorism, numerous nevi and a sebaceous cyst. CT examinations of head and neck demonstrated bridging of Sella turcica, patchy calcifications of falx-cerebri and tentorium cerebelli. Based on history, clinical, radiographic and microscopic data, diagnosis of Gorlin-Goltz syndrome was established.

Discussion: Gorlin–Goltz syndrome is a rare hereditary condition characterized by a wide range of developmental anomalies and pre-dispositions to neoplasm. The most common findings include multiple KCOT’S of the jaws and basal cell nevus on the skin. Early establishment of the diagnosis is of utmost importance to prevent secondary morbidities. We hereby report an extremely rare case from central India.

Conclusion: In the routine dental examination of a patient with draining oral sinuses and associated radiolucency’s, Gorlin –Goltz syndrome should be considered. Radiographic images play vital role in its diagnosis. Multi-disciplinary approach is mandatory in the management of this syndrome.
1. INTRODUCTION

Gorlin–Goltz syndrome also known as Nevoid basal cell carcinoma syndrome (NBCCS) is a rare hereditary condition characterized by a wide range of developmental anomalies and has predispositions to neoplasm.[1] Multiple Keratocystic odontogenic tumors (KCOT), Basal cell carcinomas (BCC), Palmar/plantar pits, Ectopic calcifications of the Falx cerebri, bridging of Sella-turcica are some of the pathognomonic major criteria. Additionally, more than 100 minor criteria like Hypertelorism, Syndactyly and Dermoid cysts have been described.[1] Recent genetic studies have suggested the markers such as PTCH1, PTCH2 and SUFU to be responsible for this syndrome. Mutation in specifically, PTCH1 gene has been established as primary etiologic factor for this syndrome.[2]

Incidence of Gorlin-Goltz syndrome is estimated at 1 in 50,000 to 1,50,000 in the general population worldwide.[3] This syndrome has been reported in all the ethnic groups. Only few cases are reported from India till now.[2] We are hereby, reporting one such case of Gorlin-Goltz syndrome, which was diagnosed and managed by multidisciplinary approach. This case demonstrated interesting and variety of clinical, radiographic and microscopic features.

2. PRESENTATION OF CASE

A 17 year old male patient reported to one of the author’s private dental clinic in Jabalpur, (M.P) India (see Fig. 1A). He presented with chief complaint of foul fluid discharge from upper anterior teeth region since one month with a symptom of moderate pain since 7 days. Past medical history and family history were non-contributory. Clinical examination revealed over retained deciduous maxillary left canine tooth with grade I mobility and it was also suspected to be the source of infection. Maxillary left canine (see Fig. 1B) and Mandibular right canine teeth (see Fig. 1C) were missing on clinical examination. Retained Maxillary left deciduous canine tooth was extracted under local anesthesia. In addition, both Mandibular third molars were also missing. For further evaluation both, periapical and panoramic radiographs were advised. Panoramic radiograph revealed presence of multiple cystic lesions in both the jaws (see Fig. 2). Permanent Maxillary left canine tooth was found to be impacted...
and lying very high in the cystic cavity involving left Maxillary sinus. Mandibular permanent right
canine tooth was also found to be impacted and lying in the cystic cavity which crossed the midline.
Oral radiologist opinioned in favor of Gorlin-Goltz syndrome and advised few more radiographic
examinations along with CT examination of head and neck.

Fig.1. A. Frontal view of the patient. B. Maxillary arch with a missing left canine tooth. C. Mandibular arch with a missing right canine tooth.
Patient’s general physical examination revealed Macrocephaly, wide nasal bridge and Ocular Hypertelorism (Fig. 1A). Dermatologist confirmed the presence of numerous nevi on the chest (see Fig. 3A) and sun exposed areas of face (see Fig. 3B). Additionally, skin tags were also present around the neck (see Fig. 3C). Otolaryngologist confirmed the presence of single well defined sebaceous cyst over left pinna (see Fig. 3D).
Fig. 3. A. Multiple Nevi on the chest. B. Multiple Nevi on face. C. Sebaceous cyst on Pinna. D. Skin tags on the neck

Conventional radiography and imaging science revealed presence of five (multiple) well circumscribed, unilocular, corticated KCOTs of various sizes with impacted teeth in both the jaw bones. Furthermore, CT images also demonstrated bridging of Sella turcica (see Fig. 4A), patchy calcifications of Falx-cerebri and tentorium cerebelli (Fig. 4B).

Fig. 4. A. CT scan showing bridging of sella turcica and calcifications of medulla. B. CT scan showing calcification of falx cerebri (arrow) and tentorium cerebelli

Oral surgeon enucleated all the KCOTs (multiple) and specimens were subjected to histopathological examination. Oralpathologist confirmed the presence of multiple KCOTs. Histopathologic features demonstrated presence of connective tissue wall enclosing a cystic space lined by Parakeratinized stratified Squamous epithelium of uniform thickness with tall columnar Hypochromatic and Pallisaded basal cells. Surface corrugation was also evident. (see Fig 5).
Based on history, clinical, radiographic and microscopic data a diagnosis of Gorlin-Goltz syndrome was established. However imaging played a pivotal role in diagnosis of this syndrome.

3. DISCUSSION

Gorlin-Goltz syndrome was first recognized in 1894 by Jarisch and White [2]. Later on Dr. Robert Gorlin and Dr. Robert Goltz (1960) studied its clinical features [5]. This remarkable syndrome is also known by other names. The common names are Nevoid basal cell carcinoma syndrome (NBCCS), Gorlin syndrome, Gorlin-Goltz syndrome, Basal cell nevus syndrome (BCNS) and Fifth Phacomatosis [1].

Gorlin-Goltz syndrome often presents itself in an early age. Multiple basal cell carcinomas (usually on the face, beginning early in life) and multiple Kerotocystic odontogenic tumors (KCOTs) (also beginning early in life) are the main hallmarks of this syndrome; however, there are other manifestations that are grouped into the following five categories [1]. (A) Cutaneous anomalies: Basal cell Nevus, other benign dermal cysts and tumors, Palmar/plantar pitting, Palmar/ plantar keratosis and dermal calcinosis. (B) Dental and osseous anomalies: multiple Kerotocystic odontogenic tumor (KCOTs), mild Mandibular prognathism, Frontal and Temporo-parietal bossing, Kyphoscoliosis or other vertebral defects, bifurcated ribs, Spina bifida and Brachy-metacarpalism. (C) Ophthalmic anomalies: Hypertelorism, wide nasal bridge, Dystopia canthorum, congenital blindness and internal
strabismus. (D) Neurological anomalies: mental retardation, dural calcification, bridging of Sella, agenesis of Corpus callosum, Congenital hydrocephalus, occurrence of Medulloblastoma. (E) Sexual anomalies: Hypogonadism and ovarian tumor-like Fibrosarcoma [1].

Gorlin-Goltz syndrome is often diagnosed by the major and minor criteria proposed by Evans et al (1993), which were later modified by Kimonis et al (2004) [5, 6]. According to them presence of two major criteria and one minor or one minor and three major criteria are necessary to establish the diagnosis [3].

Our case presented here, matched two major criteria (Viz. histologically proven multiple KCOTs of jaws and bilamellar calcification of the Falx cerebri) and many minor criteria (viz. Macrocephaly, wide nasal bridge, Hypertelorism, multiple Nevi, Sebaceous cyst, impacted teeth, Mandibular prognathism, high arched palate, bridging of Sella turcica and calcification of Tentorium cerebelli and Meningis). There was more than adequate evidence for the diagnosis, in our case.

Gorlin-Goltz syndrome is thought be caused by mutations in a tumor suppressor gene PTCH (human homologue of a Drosophila segment polarity gene PTC) located in chromosome 9q22.3 [1]. It is transmitted in an autosomal dominant manner with high penetrance and variable expressivity. This protein can be found in the Hedgehog signaling pathway [3]. PTCH in the absence of its ligand, acts as a cell-cycle regulator, normally inhibiting expression of downstream genes that control cell fate, patterning and growth [3].

KCOTs are the most consistent and common feature of Gorlin-Goltz syndrome. They are found in 65 to 100% of the affected individuals [7]. One study observed that KCOTs are the first sign of Gorlin-Goltz syndrome in 78% of the cases [1]. Ectopic calcifications of Falx cerebri tend to occur in (70-85%) and Tentorium cerebelli in (20-40%) of the patients according to the reports worldwide [8]. Around 85% of individuals with this syndrome will demonstrate Palmar/plantar pits by the age of 20 years [9]. The case presented here, had the two major criteria however BCCs and Palmar/plantar pits were missing. BCCs are more common in the adult life; peak incidence would be third decade of life [10].

Multiple Nevi would be present in 30-50% of patients under 20 yrs of age. Presence of skin tags around the neck is also one of the features of Gorlin-Goltz syndrome. Benign dermal cysts like
Sebaceous cyst can be found around the face in 30% of the cases [1]. Macrocephaly has been reported in 5-80% of the cases [1]. Hypertelorism is usually found in 6-78% of the patients with Gorlin-Goltz syndrome [11].

Though bridging of Sella turcica (70-85%) and calcification of Tentorium cerebelli (20-40%) is frequently reported, however spotting of Meningeal calcification in such patients is very rare in literature [8]. Our case is consistent with the above mentioned clinical features along with additional dental anomalies.

4. CONCLUSION

As far as our literature search goes this is the first case ever, reported from central part of India. Genetic counseling was done and patient was advised to stay away from prolonged sun exposure. In addition, regular follow up by multi-specialists team was explained to be mandatory to prevent secondary morbidity and complications.

8. CONSENT

All authors declare that written informed consent was obtained from the patient for publication of this case report and accompanying image.

9. ETHICAL APPROVAL

The Health Research and Ethical Committee of the Hitkarini Dental College and Hospital gave approval for this report to be written. Written informed consent of the patient in question was obtained before proceeding.

10. REFERENCES


