ORIGINAL RESEARCH PAPER

Dentistry

MULTIPLE ODONTOGENIC KERATOCYSTS IN NONSYNDROMIC PATIENT-A CASE REPORT

KEY WORDS: Gorlin-Goltz Syndrome, Multiple Odontogenic Keratocyst, Non-Syndromic

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ABSTRACT

Aim: This case report emphasizes the significant findings and presentation of a rare case of non-syndromic multiple jaw cysts (NSMJCs). **Background:** Odontogenic keratocysts (OKCs) may occur either as solitary (non-syndromic OKCs) or as multiple OKCs (syndromic OKCs). Multiple OKCs are usually linked with Gorlin–Goltz syndrome with features like skin carcinomas and bifid ribs, eye, and neurologic abnormalities. **Case Description:** A non-syndromic 27-year-old male patient presented with pain in his upper right back teeth region for 1 year, extraoral examination revealed swelling on the right side of the face. No other relevant findings were detected in the patient. Based on the clinical and radiological evaluation which revealed multiple OKCs. Enucleation was planned in all two quadrants and histopathological evaluation was performed. The patient was followed up multiple times for the duration of six months. **Conclusion:** Although our case fulfills only one of the major and none of the minor criteria of the syndrome, considering the reported literature and clinical presentation, early age, multiple OKC, involvement of both the jaws along with histological correlation, we propose our case to be a fractional expression of NBCCS. **Clinical significance:** Any case associated with single or multiple OKCs should be meticulously investigated locally and systemically for any other signs of NBCCS or other syndrome followed by a distinct treatment protocol depending on the patient's age, number, and size of the lesion, remaining subsequent growth, and proximity to adjacent vital structures, to provide a better quality of life with a minimal amount of morbidity and kept on strict regular follow-up.

INTRODUCTION:

Odontogenic keratocysts (OKCs) are cysts of developmental origin arising from remnants of the dental lamina.[1]Due to its locally aggressive nature and recurrent behavior of the cyst, this was formerly designated as an odontogenic cyst and further reclassified by the World Health Organization as a tumor in 2005.[2] However the term "tumor" has been somewhat controversial, and finally, in the newly revised classification by the WHO in 2017 [3] OKC was again included in the odontogenic cyst category as it lacks evidence of its neoplastic nature and its management as a cyst. OKC is well known for its high recurrence rate (HRR) and in patients with multiple OKC, a significant HRR of 30% has been reported compared to a solitary keratocyst.[4] As per Brannon et al. [5] out of 312 cases of OKCs examined, 5.1% of the cases were associated with NBCCS and 5.8% of cases of multiple OKCs were non-syndromic. We hereby present a case of non-syndromic multiple jaw cysts (NSMJCs) which was treated successfully by early detection and intervention.

Case Description:

A 27-year-old male patient reported to the Dental College with a chief complaint of pain in his upper right back teeth region for 1 year. There was a history of removal of a dentigerous cyst from the body of the mandible, right maxillary, and mandibular alveolar region and no relevant medical history. Extra orally a diffuse swelling measuring about 3X 2 cm was noticed on the right side of the face on the angle of the mandible region extending from the lower border of the mandible to the tragus of the ear superior-inferiorly and 2-3 cm away from the corner of the mouth to the posterior border of the ramus anteroposteriorly (Figure 1). 4 submandibular lymph nodes and 2 submental were palpable on the right side roughly oval in shape, mobile, and firm measuring approximately 0.5X0.5cm. On intraoral examination 33 was mobile. On radiographic examination, no abnormality was detected on the chest X-ray (Figure 2).

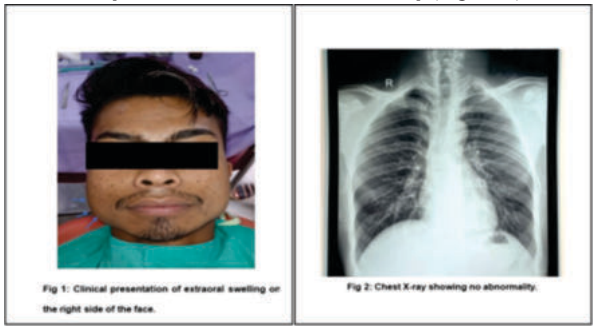

Fig 1: Clinical presentation of extraoral swelling on the right side of the face.

Fig 2: Chest X-ray showing no abnormality.

An orthopantomogram (Figure 3A) and Computed Tomography scan (Figure 3B) revealed a lytic well-defined, oval-shaped lesion with a mildly scalloped margin seen in the mandible in the left parasymphysis corresponding to the roots of 31 and 33, an elongated mild irregular lesion was also noticed on the right hemimandible at the angle extending up

to the ramus and also at the root of the upper 2nd molar along the maxillary sinus floor. A provisional diagnosis of multiple odontogenic cysts was made and enucleation of the cysts was performed under local anesthesia.

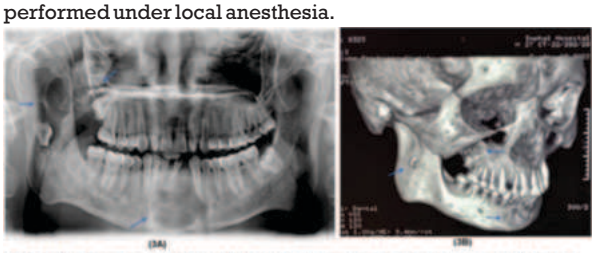

Fig 3A and 3B: Orthopantomogram and Computed Tomography scan showing a lytic oval-shaped lesion with a mild scalloped margin in the mandible in the left parasymphysis corresponding to the roots of 31 and 33, an elongated mild irregular lesion was also noticed on the right hemimandible at the angle extending up to the ramus and also at the root of the upper 2nd molar along the maxillary sinus floor.

After processing (Figure 4), the tissue samples were sectioned and stained with hematoxylin and eosin (H&E). The histopathologic examination showed the presence of cystic lining supported by fibrocellular connective tissue stroma. The cystic epithelium was stratified squamous in nature having a superficial corrugated perkeratin layer and tall and columnar basal layer with a nucleus oriented away from the basement membrane. The epithelium was found to be separated from the connective tissue stroma in many areas. The presence of chronic inflammatory cells in the connective tissue stroma and areas of extravasated RBCs were also evident. (Figure 5). Based on the histopathological findings, a diagnosis of OKC was made. Finally, the removal of all the cystic lesions in both the maxillary and mandibular arch was planned followed by rehabilitation. All the procedures were performed after obtaining consent from the patient.

Fig 4: Gross specimens.

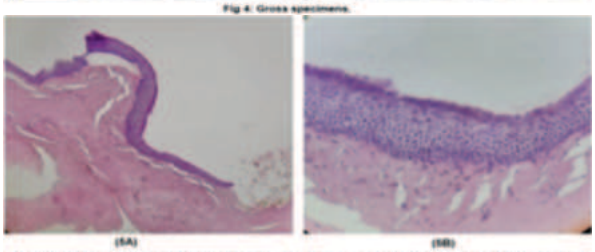

Fig 5A and 5B : Section stained with hematoxin and eosin under 10 X (5A) and 40 X (5B) showing parakeratinized corrugated stratified squamous cystic epithelium lining of and 3-4 cell thickness without any rete pegs with the basophilic palisaded arrangement of nuclei, diffuse chronic inflammatory cells are evident in the underlying connective tissue stroma.

DISCUSSION:

Odontogenic keratocysts (OKCs) are the most aggressive developmental odontogenic cysts usually seen during the 2nd to 4th decade of life [6] accounting for approximately 10-15 % of all cystic lesions, and have higher prediction in males.[7] 65-83 % of OKCs occur in the mandible, and the posterior part of the jaw is the most commonly involvedsimilar findings were seen in our case. [8] These usually occur as single or as multiple cysts associated with syndromes like Gorlin–Goltz syndrome.[9] The syndromic association of OKC was first reported by Jarish and White in 1984 whereas the characteristic features of this syndrome were documented by Gorlin and Goltz and hence called Gorlin–Goltz syndrome. Kimonis et al.[11] modified the criteria for the diagnosis as major and minor criteria. Diagnosis requires two major criteria, or one major and two minor criteria.

Major Criteria

1. More than two basal cell carcinomas or one basal cell carcinoma in patients <20 years of age.

2. Three or more palmar or plantar pits.
3. Bilamaller calcification of falxcerebri.
4. Odontokeratocyst of the jaws. (proven by histologic analysis)
5. A first-degree relative with Nevoid Basal Cell Carcinomas.
6. Bifid, fused, or markedly splayed ribs.

Minor Criteria

1. Macrocephaly.
2. Congenital malformations. (eg. severe hypertelorism, cleft lip/palate, and frontal bossing and coarse faces)
3. Other skeletal deformities. (eg. Sprengel deformity, pectus deformity noticeable syndactyly of the digits)
4. Radiological abnormalities. (eg. associating of sella turcica, vertebral anomalies, modeling defects of the hands and feet, or flame-shaped blazing of the hands and the feet)
5. Ovarian fibroma or medulloblastoma.

Initially, no direct link to Gorlin-Goltz syndrome had been established in the presented case since only one of the major criteria was fulfilled. Ahn et al. suggested that 90% of Gorlin-Goltz syndrome patients are associated with OKCs but our reported case didn't have any syndromic association not even family history positivity which can be explained by the molecular cascade associated with OKC which is attributed to the underlying genetic events.[12] PTCH gene 9q (22.3-q31) mutation is linked with sporadic OKC, as well as those associated with NBCCS.[13] About 65–75% of NBCCS patients have multiple OKCs that may be bilateral involving both the jaws and the maxillary and the mandibular canine region.[14] An almost similar distribution of the OKCs was seen in our reported case. In our reported case few inflammatory changes were observed in the lining epithelium as reported by Kang et al.[15] Inflamed OKC linings are generally hyperplastic and many areas show a characteristic loss of rete pegs. In our case, the connective tissue wall of the OKC showed infiltration of chronic inflammatory cells. In the presence of a prolonged inflammatory reaction, there can be a change in OKC epithelial lining and degree of keratinization as reported by Toller et al.[16] Choosing the therapeutic procedure for OKC depends on a minimal recurrence rate and nominal morbidity for the patient which includes conservative methods and aggressive methods.[17] Our patient being young conservative management was chosen and was managed with enucleation and curettage using Carnoy's solution.

CONCLUSION:

We can conclude that diagnosis of OKC is mostly based on clinical signs and symptoms depending on major and minor criteria and variation in the criteria may be seen in some populations due to genetic and geographical variations. Though our patient did not fulfill all the diagnostic criteria of Nevoid Basal Cell Carcinoma Syndrome (NBCCS) considering the patient's young age we cannot completely rule out the future possibilities of the development of Nevoid Basal Cell Carcinoma Syndrome (NBCCS). Considering this fact, the patient has been suggested for regular follow-up and referred to a clinical geneticist for further check-ups and counseling.

Clinical Significance:

In any patient associated with OKC, further investigations should be carried out to rule out multiple OKCs and if associated with multiple OKCs, we should thoroughly investigate locally and systemically for any other major or minor criteria of NBCCS or signs of any other syndrome as syndromic cases tend to be more aggressive, infiltrative, and recurrent. Such a patient has to be kept on a strict long-term follow-up because OKCs may be the only or the first sign of a syndrome.

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