

FREQUENCY OF CLINICAL FEATURES AND RADIOGRAPHIC APPEARANCE OF ODONTOGENIC KERATOCYST

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ABSTRACT

Introduction: Odontogenic keratocyst (OKC) is a developmental cyst of epithelial origin. It has three histological variants: a parakeratinized variant, an orthokeratinized variant and combination of two. Clinically, they are usually asymptomatic, but may be associated with pain, swelling, displacement of teeth and root resorption in teeth neighboring to the tumor. **Objective:** To determine the frequency of clinical features and radiographic appearance of odontogenic keratocyst. **Patients and methods:** A total of 108 patients of both genders with biopsy proven odontogenic keratocysts were included in this study from Oral and Maxillofacial Surgery Department, Nishtar Institute of Dentistry, Multan from June 2016 to May 2018. Patients with features of basal cell naevous syndrome and treated cases of odontogenic keratocysts were excluded from the study. The demographic details of all patients, clinical features and radiographic appearance of odontogenic keratocysts were noted in a structured proforma. **Results:** Age range in the current study was 10 to 50 years with mean age of 29.63 ± 3.87 years. Mean duration of complaints was 8.55 ± 2.49 months and mean pain score was 5.29 ± 1.85 . Majority of patients (61.1%) belong to 20-30 years age group. Male patients were 56.9% while female were 43.1%. Pain was seen in 52.8% patients, facial disfigurement in 69.4% and root resorption in 9.3% patients. **Conclusion:** It is recommended to have an overview of whole stomatognathic system even if a patient comes for a single tooth problem and have a routine radiographic checkup of stomatognathic system, especially for patients in 2nd and 3rd decades of life.

KEYWORDS: Basal cell naevous syndrome, odontogenic keratocyst, ortho keratinized variant, radiographic appearance, stomatognathic system.

INTRODUCTION

Odontogenic keratocysts (OKCs) are developmental cysts of epithelial origin, first described in 1876 and further characterized by Phillipson in 1956.^[1] Pindborg and Hansen suggested histological criteria to diagnose OKC in 1962.^[2] In 1992, World Health Organization (WHO) histological typing of odontogenic tumors listed "odontogenic keratocyst" as the preferred terminology for such cysts with a keratinized lining.^[3] Three histological variants were recognized initially: a parakeratinized variant, an orthokeratinized variant and

combination of two.^[4] Clinically, they are usually asymptomatic but may be associated with pain, swelling and displacement of teeth. They often involve impacted teeth.^[5] Peripheral odontogenic keratocysts may occur in gingival soft tissues or in parotid gland but very rarely.^[6,7] On radiographic examination, they demonstrate a well-defined unilocular or multilocular radiolucency with smooth, scalloped and corticated margins which may simulate that of a dentigerous cyst or ameloblastoma (Fig 1).^[8] It is common to find tooth

displacement and root resorption in the teeth neighboring the tumor.^[9,10]

Histopathologically, odontogenic keratocyst has a thin and constant layer of stratified parakeratinized epithelium with a thickness of six to ten cellular layers.^[10,11] Small satellite cysts, cords or islands of odontogenic epithelium may be seen in fibrous wall in 7-26% of cases.^[6,9,12] Khan MT and his associates has found in a study that pain was 50%, facial disfigurement 75% and root resorption 7.5% in patients with odontogenic keratocysts.^[13] Sánchez-Burgos R and his

associates has found that pain was 62%, facial disfigurement 9% and infection 15% in patients with odontogenic keratocysts.^[14]

There are a few studies available on this topic in our general population. Moreover, different studies produced different results in different populations.^[13,14] Such information will be valuable to clinicians in formulation of working diagnosis, management decisions and approach to treatment in patients with radiolucent lesions of the jaws.

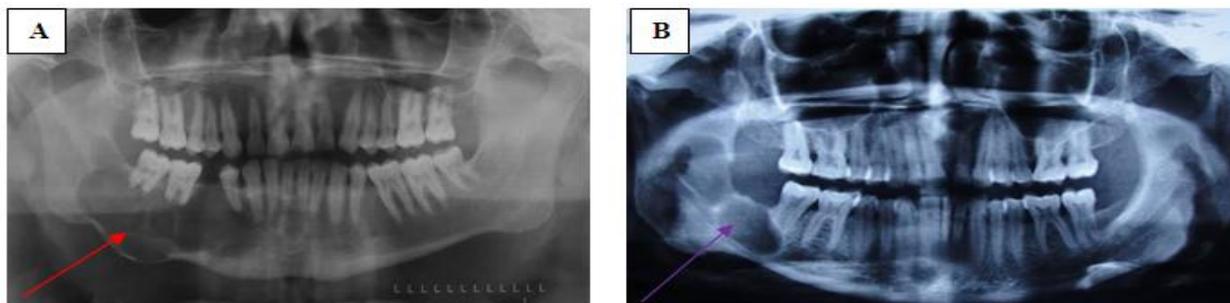


Fig. 1: Radiographs of odontogenic keratocyst. A. Well defined radiolucent lesion with bone destruction. B. Well defined multilocular radiolucent lesion with root resorption.

MATERIAL AND METHODS

This cross sectional study was conducted at Oral & Maxillofacial Surgery Department, Nishtar Institute of Dentistry, Multan from June 2016 to May 2018. During one year period all patients with age range 10-50 years and of both genders with histologically proven odontogenic keratocysts were included in this study. Informed consent was taken from each patient, ensuring confidentiality and fact that there was no risk involved to the patient while taking part in this study. The assessment of patients was done by detailed relevant history, clinical and radiographic examination. Panoramic view was taken for the assessment of radiographic features of the lesions. The sample size was 108 and the sampling technique was non-probability consecutive sampling. The demographic details of all patients, clinical features and radiographic appearance of odontogenic keratocysts were noted under the

supervision of a consultant with five years post fellowship experience. All the data were collected in a preformed structured proforma. Data were analyzed with statistical analysis program IBM-SPSS version 21. Frequency and percentage was computed for age groups, gender, pain, facial disfigurement and root resorption. Effect modifiers like age, gender, BMI and duration of complain were controlled by stratification. Post stratification chi square test was applied and p value ≤ 0.05 was considered statistically significant.

RESULTS

Age range of patients in this study was from 10 to 50 years with mean age of 29.63 ± 3.87 years, mean duration of complain 8.55 ± 2.49 months and mean pain score was 5.29 ± 1.85 . Majority of the patients (61.1%) belongs to 10-30 years age groups (Fig.2).

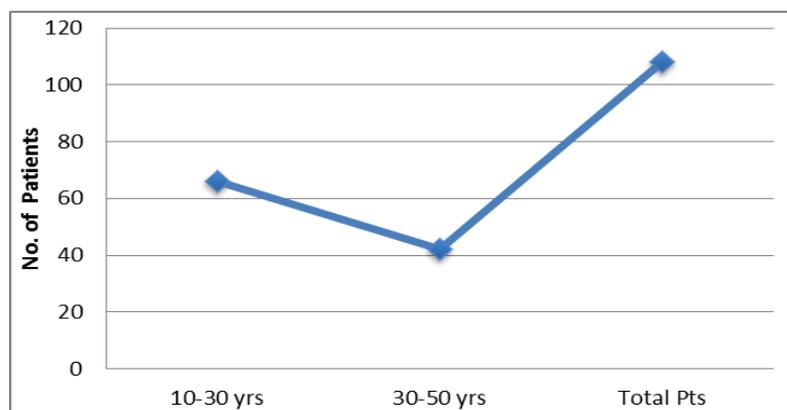


Fig. 2: Frequency and percentage of patients according to age groups.

The male patients were 56.9% as compare to females 43.1%. Pain was seen in 52.8% patients (Table I), facial disfigurement 69.4% (Fig. 3) and root resorption 9.3% (Fig. 4).

Table I: Frequency and percentage of patients according to pain

Pain	No of Patients(108)	%age
Yes	57	52.8%
No	51	47.2%
Total	108	100%

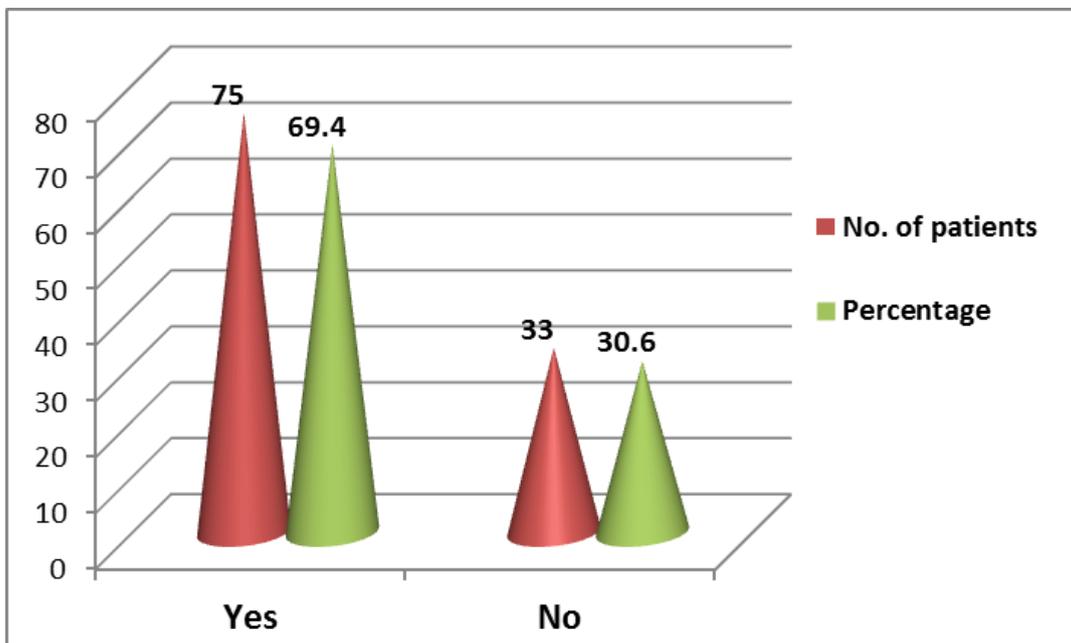


Fig. 3: Frequency and percentage of patients according to facial disfigurement.

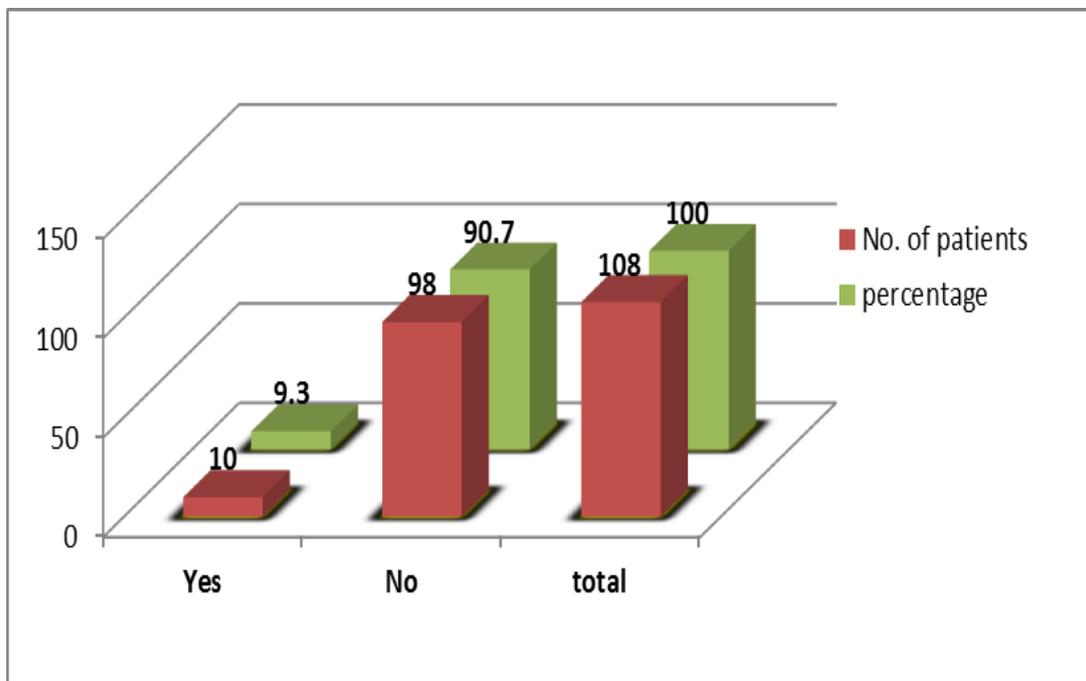


Fig. 4: Frequency and percentage of patients according to root resorption.

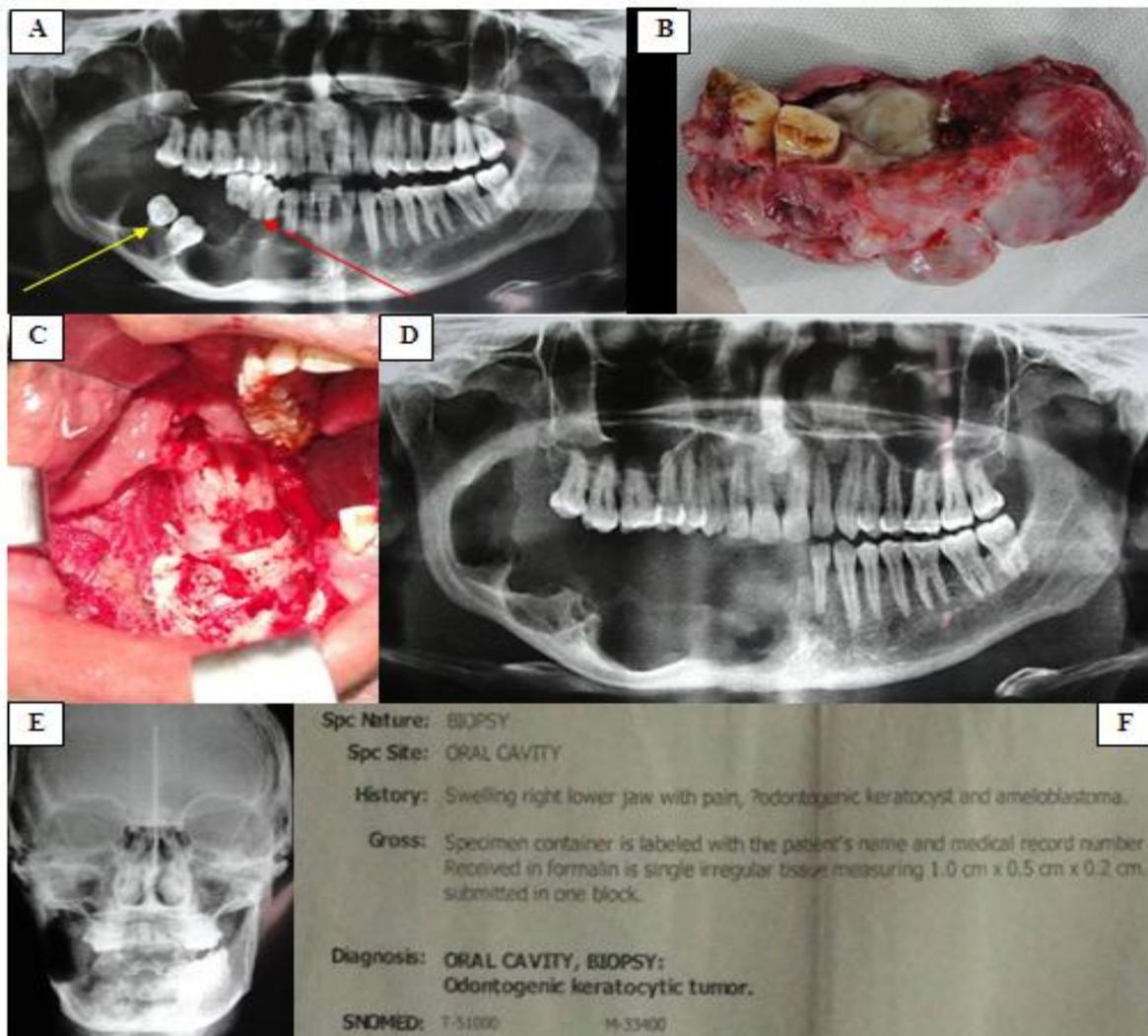


Fig. 5: A. Pre-op radiograph (OPG) of a patient with biopsy proven odontogenic keratocyst showing scalloped and well corticated margins, teeth displacement (yellow arrow) and root resorption (red arrow). B. Whole lesion removed in toto. C. Surgical area after removal of lesion. D. Post-op radiograph (OPG). E. Post-op radiograph (Frontal view). F. Final biopsy report.

DISCUSSION

The term “odontogenic keratocyst” was first proposed by Phillipsen in 1956. In 1962, Pindborg et al established the histopathologic criteria for diagnosis of OKC, in which parakeratinization was particularly emphasized. Odontogenic keratocyst comprises approximately 11% of the all cysts of the jaws. Approximately 65% of OKCs occur in the mandible with prevalence (73.2%) in the mandibular ramus and angle.^[10] In 2005, the World Health Organization (WHO) reclassified OKC to keratocystic odontogenic tumor (KCOT) based on its clinical behaviors including potential aggression, infiltrative growth and a high rate of recurrence up to 62.5%.^[8,12]

Occurrence of odontogenic keratocyst varies over a wide age range. In this study, the age range was 10-50 years, with a mean age of 29.629 ± 3.87 years. In terms of age distribution, it presents its highest prevalence in the second and third decade of life.^[7,10] These findings of the

current study do not coincide with that done on 60 patients of OKCs in 1988 at Ohio State University, which was 5–78 years, with a mean age of 40 years.^[15] The mean age coincides with that of a retrospective study done in Singapore and Malaysian population, which was 26.98 years.^[16,17] The small difference may be due to the time of presentation of the patients to hospital and racial differences. Still another retrospective study done by Maxine Patridge on 60 patients of OKC at St. George’s hospital, showed a mean age of 38 years (age range 11 – 81).^[18] The difference in the value of mean age may be due to racial differences. It is also possible that with the passage of time, the OKC is diagnosed earlier due to patient awareness or some likely phenomena. This study showed the maximum number of patients in the second decade, which is in accordance with the values in other international studies.^[16-19]

Regarding gender, it has a higher incidence in males, reaching a ratio of 2:1 compared to females.^[20,21] This

study showed that male patients were 56.9% as compared to females 43.1%. Gender distribution showed the percentage of male patients as 57.4% in a study done on patients with Gorlin syndrome and 56.7% in a study by Harin and 64% in the study done by Patridge.^[15,16,17,18] Overall, this study showed a male preponderance of patients with OKCs, which correlate with the international values. Somehow, the small statistical difference of male to female ratio, as compared to the rest of the world, may be due to the reason that females are more concerned for jaw swellings than males, and also because the male patients in this area tolerate mild pain associated with these lesions due to their comparatively higher pain threshold.

History and clinical examination of the patients showed that 52.8% of the patients experienced pain, while the remaining lesions were quite painless.^[13,22,23] In 69.4% of patients, there was facial disfigurement. Despite these high figures for the facial disfigurement,^[24] the patients ignored the problem and by the time of diagnosis of lesion, it had caused a great destruction of bone.^[24] Root resorption was seen in 9.3% of cases. As the OKC is the cyst least commonly associated with root resorption as compared to dentigerous and radicular cysts. Root resorption in Haring's study was 5%, 11% in Maxine Patridge's study, while it was 4.4% in Browne's study.^[15,18,23] In 50% of cases, the cystic lesion was associated with an impacted or unerupted tooth, the condition called "OKC in a dentigerous relationship". These findings correlate very well with other international studies like 48.6% in Haring's study, and 49.4% in Browne's study.^[15,20]

CONCLUSION

It is recommended to the general dental practitioners and other clinicians to have an overview of whole of the stomatognathic system even if a patient comes for a single tooth problem. It is also recommended to have a routine radiographic check-up of the stomatognathic system, especially in patients with 2nd and 3rd decades of life.

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