Prevalence, Treatment and Recurrence of Odontogenic Keratocyst in Central India

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Abstract

Objective The present study aimed to evaluate the prevalence, sex predilection and treatment modalities of OKC in Central India.

Materials and Methods Total 2900 patients were screened from various hospitals and centers. Age of patients and site of lesion was recorded. OKC was classified into initial, moderate and advanced depending on the radiological involvement and treatment modalities given with respect to the extent of the OKC.

Result Total 49 patients were diagnosed with the presence of OKC. It was found that mostly it is common in 3rd and 4th decades, with the mean age 28 years in males and 31 years in females. The most common site of occurrence was angle of mandible and the ramus region. The treatment of OKC, on the basis of the radiographic classification, gives excellent results with minimum recurrences.

Conclusion The most common age and site occurrence was relevant with that of previous studies (Browne, Br Dent J 128(5):225–231, 1970, Chen and Lin, Gaoxiong Yi Xue Ke Xue Za Zhi 2(9):601–607, 1986). This study concluded by considering multicentric incidence, prevalence of OKC in Central India, that the population should be screened for OKC. The screening should be done by clinical, radiological and histopathological. While screening all the parameters should be considered to diagnose and treat the patients for the prevention of morbidity.

Keywords Odontogenic keratocyst (OKC) prevalence · Treatment · Recurrence and Central India

Introduction

The odontogenic keratocyst (OKC) was first described and named by Phillipsen in 1956. It is one of the most aggressive odontogenic cysts of the oral cavity. OKC is known for its rapid growth and its tendency to invade the adjacent tissues including bone. It has a high recurrence rate of 16 to 30%. Odontogenic keratocysts are generally thought to be derived from either the epithelial remnants of the tooth germ or the basal cell layer of the surface epithelium. Odontogenic keratocysts are commonly seen in the mandible with the majority occurring in the angle of the mandible and ramus. OKC can be classified on the basis of locularity namely Unilocular and multilocular. Unilocular is isolated but not necessarily while multilocular is mostly associated with Naevus Basal Cell Carcinoma syndrome (Gorlin Syndrome). In this study we determined the mode of treatment depending upon the radiographic extent of the OKC. This type of study was carried out first time in central India for prevalence, treatment and recurrence of Odontogenic Keratocyst (Tables 1, 2).

Materials and Methods

The study was carried out in Department of Oral and Maxillofacial Surgery, Sw.Dadasaheb Kalmegh Smruti Dental College and Hospital, Nagpur and various private Hospitals in Nagpur from the period of August 2004 to July 2009 in Central India. The patients ranging from age group 15–60 years. Total 49 patients were diagnosed with OKC

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Table 1 Showing analysis of patients with OKC

SN	Gender		Site				Treatment				Follow-up			
	Male	Female	Maxilla		Mandible		Both		Enucleation	Segmental resection	6 M	1 Y	2 Y	3 Y
2	N	%	N	%	N	%	N	%	N	%	N	N	N	N
3	33	67.34	16	32.66	03	06.13	45	91.83	1	2.4	37	75.51	12	24.49

N number of patients, *M* month, *Y* year

Table 2 Distribution of cases according to their occurrence at various sites

Mandible				Maxilla	
Angle	Ramus	Body	Symphysis	Anterior	Posterior
18	20 ^a	05	03	02	02 ^a

^a 01 case had OKC both in maxilla and mandible

on the histological basis, out of that 33 patients were males and 16 patients were female. The patients were thoroughly examined with emphasis on the site and the size of lesion the extent of bony involvement on OPG and CT scan.

Procedure

As per treatment of OKC: All the patients after confirming diagnosis by incisional biopsy and on the basis of radiological involvement on OPG and CT scan and considering unilocularity and multilocularity treatment was planned same for both the variation were classified as:

1. *Initial involvement:* OKC which were involving mostly dento-alveolar region of size 1 cm × 2 cm (approx) on OPG (Figs. 1 and 3).

Fig. 1 Showing Intra-operative OKC

2. *Moderate involvement:* OKC involving dento-alveolar bone and basal bone with 1 cm of normal basal bone in mandible/ normal maxillary sinus in maxilla.
3. *Advanced involvement:* OKC involving dento-alveolar as well as entire mandibular basal bone/maxillary sinus.

Initial and moderate involvement of OKC was treated with enucleation and advanced cases were treated with segmental resection (Fig. 2).

Follow up

In 3 years follow-up (after 6 month, after 1 year, after 2 years, after 3 years) recurrence was seen in 2 cases. The recurrence rate in this study is relatively less as compared to other studies as proper screening of OKC was done before treatment. Advanced OKC in 12 cases (24.49%) were treated with segmental resection and initial and moderate OKC cases 37 (75.51%) were treated with enucleation and curettage (Figs. 3 and 4).

As per gender: Out of 49 cases there were 33(67.34%) males and 16(32.66%) females, there was predominance in males than females.

Fig. 2 Showing postoperative specimen after enucleation

Fig. 3 Photograph showing OPG of OKC

Fig. 4 Photograph showing postoperative healing of OKC

As per age group: Total 49 patients were diagnosed with presence of OKC. It was seen in 3rd and 4th with mean age of 28 years in male and 31 years in female.

Discussion

The data reported here constitutes one of the largest published studies of odontogenic keratocysts.

The rationale behind this study is to relate the clinical presentation of OKC in the multicentric patients with prevalence, treatment and recurrence with follow-up of 3 years. This incidence is slightly higher (49 out of 2900 biopsies) than in some reports, but very similar to that of Daley [38] who reported 335 cases in 40,000 biopsies. Incidence of OKC also seems to be increasing with time. El-Hajj [41] made the same observation which he attributed to “competence and knowledge of the morphologic characteristics of odontogenic keratocysts have increased among oral pathologists.” It is also noteworthy that the rate

of accumulation of cases varies widely in different reports [10–12, 22, 24, 25, 35]. This may reflect regional factors such as race distribution, diet, or environmental exposures. The series of 430 cases from 393 patients seen over a period of 15 years is the most rapid collection rate in the USA and the second most rapid in the world literature other than Woolgar [24–26]. In this study we have small number and period but we have close relationship between the prevalence, treatment and recurrence in various centers of Central India population as per clinical and radiological we have classified and treated as advanced OKC (24.49%) with segmental resection and initial and moderate OKC (75.51%) with enucleation and curettage with no recurrences seen in 3 year follow-up.

Conclusion

The most common age and site of occurrence was relevant with that of previous studies [6, 23]. Although the literature contains many reports regarding management of OKC, debate still exists as to most effective treatment for this lesion. According to Ghali [43] as with any odontogenic lesion initial evaluation include a thorough history and physical examination, radiographic studies and the development of probable differential diagnosis. Depending on size, location and behaviour the clinician should decide on an incisional versus excisional biopsy in patients with multiple OKC. Evaluation for the presence of basal cell naevus syndrome should be undertaken. Larger OKC with possible perforation deserves CT scan in addition to OPG. Treatment of OKC varies from enucleation and curettage to segmental resection. Various factors that should be considered in the selection of the appropriate treatment include size, location, unilocularity or multilocularity on OPG, presence of perforation or soft tissue involvement, age of individual, long term follow-up is suggested because OKC have been known to have late recurrence. Recent factors support emerging molecular evidence that the OKC is more likely to be a benign cystic neoplasm than a simple odontogenic cyst. Our article suggests to bring out the importance of clinical awareness of OKC. It also emphasizes the importance of careful histological examination and the necessity of obtaining biopsy from various areas to prevent misdiagnosis of the large lesions. It may be concluded that the treatment of OKC, the basis of the radiographic classification, gives excellent results with minimum recurrences. Although the number of cases in the study was small, this study suggests by considering multicentric incidence, prevalence of OKC in central India, the population should be screened for OKC. While screening all the parameters should be considered to diagnose and treat the patients for the prevention of morbidity.

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