https://doi.org/10.3329/cbmj.v12i1.64288

Site-Specific Clinical Behavior of the Lesions in Patients with Odontogenic Keratocyst in the Jawbone

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Abstract

A cross-sectional, observational study was conducted in the Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh, from 2014 to 2015, to assess the site-specific clinical behaviour of the lesion in patients with odontogenic keratocyst in the jawbone. The study was conducted on 25 patients who were clinically diagnosed with Odontogenic keratocyst of the jaw. Samples were selected by convenient sampling technique. Data were collected through pretested semi-structured questionnaire & analyzed by using the statistical packages of social science (SPSS) version 25.0. The mean age of the total 25 patients was 23.56± SD years and ranges from 10 to 50 years. The highest proportions of patients (44%) were from less than 20 years of age and a few (8%) of them were from more than 41 years. The study showed that 80% were male and 20% were female. In most of the cases (64%), the tooth was present in the series. Among the patients, the majority (84%) had an absence of syndrome, history of absence of tooth displacement was found 66% and absence of root resorption was 80%. Most of the keratocyts (36%) were in body and angle of the mandible, second most (24%) site was in the body of the Mandible. The knowledge about the clinical presentation of odontogenic keratocyst is needed for accurate diagnosis and prognostic assessment.

CBMJ 2023 January: vol. 12 no. 01 P: 48- 52

Keywords: Odontogenic keratocyst, Clinical behavior, Site-specific

Introduction

In 1876, the odontogenic keratocyst (OKC) was first described and it was named by Philipsen.[1] Odontogenic keratocystic is well known for its rapid growth and tends to invade the adjacent tissues including bone. Although it has benign characteristics, it is more aggressive locally than any other lesions of the jaw. It is seen most as solitary lesions in the jaws of healthy individuals showing a high incidence of recurrence if not appropriately removed. OKC may occur in any part of the maxilla along with the mandible but generally it occurs in the mandible most commonly in the angles of the mandible.[2] Under the microscope, OKC is usually composed by an outer connective tissue wall and an inner stratified squamous epithelium that contains 8–10 cell layers in thickness along with a prominent, palisading, polarised basal cell layer as well as a

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corrugated keratinised surface thoroughly.[3] The term was first popularized by Robinson in 1945. Primordial cyst arising from primordial odontogenic epithelium like dental lamina/ remnants of it, odontogenic basal cell/ enamel organ.[4] People of the age ranging from 5 to 80 years have been reported to suffer. The average age of males was 9.7 years older than that of females which reflects that men are more commonly affected by cysts.[5] Evidence showed that 70-80% of keratocysts are commonly placed in the lower jaw, at the angle between jaw and mandibular branch along with the maxilla in the area of the molar tooth.[5] OKC may differ from radicular and follicular cysts distinguishable by the typical alveolar bulge caused by extensive growth in that the developing OKC are long sheltered, once & again without clinical symptoms and discovered during diagnostic x-ray test.[6] Although they have often in common features with ameloblastoma but radiographically they look quite variable as well as clinically aggressive.[7] In comparison with the other types of the odontogenic cyst, odontogenic keratocyst (OKC) have a relatively high recurrence rate[8] The clinical identification of OKC has some importance as their recurrence rate are more repeatedly occurs prior to the treatment of the primordial origin type related to the clinical syndrome. This study was aimed to assess the site-specific clinical behaviour of the lesion in patients with odontogenic keratocyst in the jawbone.

Methods

This observational type of cross-sectional study was conducted in the Department of Oral and Maxillofacial Surgery, Dhaka Dental College Hospital, Dhaka, Bangladesh, from 2014 to 2015. Patients were histologically diagnosed as a case of Odontogenic keratocyst, attending OPD and indoor of Oral and Maxillofacial Department of the same hospital during this study period, irrespective of age and sex. The study was conducted on 25 patients who were clinically diagnosed with Odontogenic keratocyst of the jawbone. Samples were selected by convenient sampling technique. Data were collected through pretested semi structured questionnaire. All patients diagnosed with odontogenic keratocyst reported at the Oral and Maxillofacial Surgery Department of the same hospital during the study period were included in this study. Patients whose clinical presentation was like but histologically Odontogenic keratocyst not confirmed were excluded from the study. Since this is a cross-sectional observational study, there was no physical risk to the patients throughout the study period. All patients had a case number to maintain their confidentiality. No information was withheld from the patient. Informed written consent was taken from every patient explaining the nature and objectives of the study. Under local anesthesia incisional biopsy was done. The surgical specimen was fixed in 10% formalin and sent for histopathological typing. Data were analyzed by using the statistical packages social science (SPSS) version 25.0, and Microsoft Excel and the overall findings are presented in this chapter through tables and figures. The Ethical Review Committee of Dhaka Dental College, Dhaka, Bangladesh, approved the protocol for this study.

Results

The mean± SD age of total 25 patients was 23.56± years and ranges from 10 to 50 years. The highest proportions of patients (44.0%) were from less than 20 years of age and a few (8.0%) of them were from more than 41 years. The study

showed that, 20 (80%) were male and 5(20%) were female. It was found that male patients were found more than female patients (Table-I). In most of the cases 16 (64%), the tooth was present in the series. Among the patients, majority 21 (84%) had absence of syndrome, history of absence of tooth displacement was found 17 (66%) and root resorption was found 20 (80%) (Table-II). Most of the keratocysts (36%) were in the body and angle of the mandible. The second most common site (24%) was in the body of the Mandible. Rest 20% were the angle of the mandible and ramus of the mandible (Table-III).

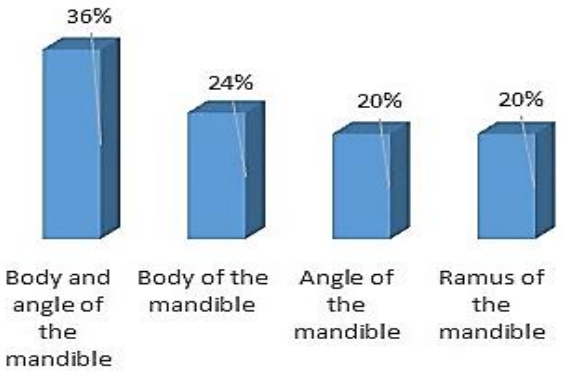
Table-I: Socio-demographic characteristics of the respondents (n=25)

Socio-demographic characteristics	
Age	
Less than 20 years	44.0%
more than 41 years	8.0%
Mean±SD	23.56±SD (10-50)
Sex	
Male	20 (80%)
Female	5 (20%)

Table-II: Distribution of different characteristics of the study population (n=25)

Characteristics	N (%)
Presence of tooth	
Present	16 (64%)
Absent	9 (36%)
Presence of syndrome	
Present	4 (16%)
Absent	21 (84%)
Tooth displacement	
Present	8 (32%)
Absent	17 (66%)
Root resorption	
Present	5 (20%)
Absent	20 (80%)

Fig. 1: Location of the cyst in the mandible



Discussion

The odontogenic keratocyst of the jaws refers to an uncommon benign origin from dental primordial. The odontogenic keratocyst was first described as a distinct entity by Shear in 1960. Philipson originally applied the name “odontogenic keratocyst” to these lesions.[1,6,9] The development of odontogenic cysts occurs rarely in the jawbones as compared to inflammatory cysts. However, the odontogenic keratocyst is one of the most common jawbone cysts (22.1%). This finding is higher than conducted by Shear and Morgan *et al.*[10,11] The present study was conducted on 25 patients, a study found an average age of 41 years at the time of diagnosis done by Ahlfors *et al.,*[12] while another study reported that most of the patients were 21 to 30 years of age as conducted by Chye & Singh.[13] In this study, there was harmony with our series in which half of their patients were young. The highest proportions of patients (44.0%) were less than 20 years of age and a few (8.0%) of them were more than 41 years. Moreover, a study done by Neville *et al.* conducted on 18 cases of odontogenic keratocyst with a mean age of 69.9 years, which is much higher than for odontogenic keratocyst.[14] Concerning the sex distribution, the present investigation showed that males were

affected more than females. This study showed that 20(80%) were male and 5(20%) were female. It was found that male patients were higher than female patients. The male-female ratio in the study was 4:1. A similar male predominance were observed by Neville *et al.* and Nohl & Gulabivala.[14,15] Regarding the site distribution, the mandible is the most frequent site for the odontogenic keratocyst. About 50% occurs at or near the angles they may be present anywhere in the jaw.[9] The molar regions of either the mandible or maxilla were the principal primary location, the maxillary antrum was also a common site.[16] This study showed that most of the keratocysts 9(36%) were in the body and angles of the mandible. The second most 6(24%) site was in the body of the mandible. Less frequent 3(12%) site was the angle of the mandible and ramus of the mandible. Clinically an odontogenic keratocyst is characterized by aggressive, local growth. The lesions may manifest with pain swelling discharge and occasionally paresthesia or displacement of teeth.[10] The clinical significance of the odontogenic keratocyst is the potential for morbidity extensive expansion and recurrence after surgery.[17] Most of the patients have a history of absence of tooth displacement 17(68%) and root resorption 20 (80%). Some findings revealed that the root resorption by odontogenic keratocyst appears to be very rare in comparison with the associated with dentigerous cyst.[18]

This was a single hospital-based observational study which might not reflect the actual clinic-pathological scenario of this type of cyst all over the country. Moreover, the cross-sectional study design could not establish the causal relationship with the factors studied.

Conclusion

The purpose of this study was to find and correlate the incidence, and clinical features of odontogenic keratocyst. Some information was valuable to clinicians as it might help in the formulation of a working diagnosis and timing management decisions and approach to treatment. Further study of long duration with a large sample size is recommended along with a representative multicentered study.

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