ETIOLOGY AND PATTERN OF RADICULAR CYST AMONG PATIENTS REPORTING TO KHYBER COLLEGE OF DENTISTRY PESHAWAR A CROSS-SECTIONAL STUDY

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Abstract

Objectives: *To determine the etiology and pattern of radicular cyst among the patients reporting to the department of oral and maxillofacial surgery Khyber college of dentistry Peshawar.*

Materials & Methods: *This cross sectional descriptive study was performed in the Oral and Maxillofacial surgery department, Khyber College of Dentistry, Peshawar from August 2016 to jan 2018. A total of 100 patients with radicular cyst were selected through consecutive sampling. History, clinical examination, radiographic examination and histopathologic examination of lesion were carried out for each patient. A proforma was filled for each patient for all relevant information, presentation and pattern. Diagnosis was confirmed by histopathology . The data was analyzed using SPSS version 20.*

Results: *Out of 100 patients, 65 were females and 35 were males. The age range was from 10 to 70 years with a mean age of 34±3.42 years. The common age group affected was 30 to40 years of life. Females(65%) were more affected than males(35%).Maxilla n=65(65%) was affected more than mandible n=35(35%).Anterior maxilla was the commonest site affected n=37(37%) and posterior mandible was the least affected n=11(11%).Dental caries n=56(56%) were more common among the etiological factors of radicular cyst than trauma n=44(44%).*

Conclusion: *This study demonstrate that Radicular cyst is the more common cyst of anterior maxilla and is more common in females than males .Dental caries and trauma are the two main causes of radicular cysts.*

Key Words: *Periapical cyst, Radicular cyst,*

Introduction

Cyst is a pathological,epithelial-lined cavity containing luid or semi-luid [1]. Jaw cysts may be odontogenic or nonodontogenic.Odontogenic cysts are those which arises from the epithelial remnants of tooth formation. Amongodontogenic cysts radicular cyst is the commonest (54.6%) in maxillofacial region[2]. Radicular cyst is an Inflammatory odontogenic cyst lined by epithelial cells derived from rests of Malassez which is derived from Hertwig's epithelial root sheath present within the periodontal ligament.[3] There are three stages involved in the pathogenesis of radicular cyst, initiation usually carried out by inlammatory mediators such as cytokines and growth factors, followed by proliferation of cystic wall and expansion by increase in the contents of cystic cavity[4]. Lissete et al also reported radicular cyst as the

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commonest cyst of the human jaws[5]. Dental trauma and caries are often followed by pulpal necrosis, microbial infection crosses the apex and results in periapical lesions including granuloma, periapical cyst or periapical scar tissue. Most of radicular cysts are asymptomatic and discovered during routine radiographs. Symptoms like pain, swelling,tooth mobility/displacement may appear when the cyst is secondarily infected or become very large. The affected tooth is nonvital and non responsive to thermal and electrical pulp tests[6]. Anterior maxilla is the most common site affected by radicular cyst[7]. The treatment of radicular cysts may range from conventional non surgical root canal therapy when lesion is localized or surgical treatment like enucleation, marsupalization/decompression when lesion is large[8].

Controversies exist about the etiology and pattern of radicular cyst in the literature due to ethnical,-cultural and environmental difference in different communities. So this study was carried out to ill this gap of bias in our community.

Materials and Methods

This cross sectional descriptive study was performed in the Oral and Maxillofacial surgery department, Khyber College of Dentistry, Peshawar from August 2016 to Jan 2018. A total of 100 patients were selected through consecutive sampling for this study. Appropriate ethical approval was obtained from the hospital authorities. Pakistan origin patients aged 10-70 years of both gender were included in the study. Smokers and Patients with any other systemic illness were excluded from the study. Verbal consent was obtained from all patients. Clinical and radiological (periapical and OPG) examination of the lesion was carried out. Well circumscribed periapical lesions larger than 2cm in greater dimensions were considered radicular cyst. The lesions were also confirmed through histopathology after enucleation. Data were analyzed using SPSS Version 20.Descriptive statistics like frequency and percentages were calculated for age, gender, site and etiology.

Results

Out of one hundred patients, n=65(65%) were females and n= 35(35%) were females.

The age range was from 10 to 70 years with a mean age of 34 ±3.42 years. The common age group affected was 4th decade of life. 0In our study we noted that Maxilla was more affected n=65(65%) than the mandible n=35(35%). Anterior maxilla was the commonest site affected n=37(37%) and posterior mandible was the least affected n=11(11%). Regarding etiology, Dental caries n=56(56%) were noted to be more common in causing radicular cyst than trauma n=44(44%).

Table 1: Age

No.of patients	100
Missing	0
Mean	34
SD	3.42

Table 2: Patterns and etiology of redicular cyst

	Frequency	Percent
Female	65	65.0
Male	35	35.0
Maxilla	65	65.0
Mandible	35	35.0
Ant.maxilla	37	37.0
Post.maxilla	30	30.0
Ant.mandible	22	22.0
Post.mandibl	11	11.0
Caries	56	44.0
Trauma	44	56.0

Discussion

Radicular cyst is the common cyst that occurs in the tooth bearing regions of the oral cavity. Both mandible and maxilla can be involved. it can occupy the anterior or posterior segment of the jaw bones. This study focuses on the exact etiology and pattern of radicular cyst in patients presented to Khyber college of dentistry Peshawar Pakistan.

Radicular Cyst usually presents as anexpansile swelling of the jaw bone that have an internal cavity lined by epithelium(9). Its origin resides in the epithe lium of dental origin(10).Dental caries and trauma are the two main etiological factors presented in the

literature(11).

This cyst can affect any age. The average age affected in our study is 34 years which is almost similar to the study by Pechalova PF where this was 35 years(12).The reason for late presentation is probably due to slow progression of this cyst.

The percentage of men with radicular cysts was higher compared to that of women in a study by Tsvetanov et al (13) which is in contrast to our study where the incidence is higher in female population. This difference is due to lack of awareness in females about dental hygiene in our society and are more vulnerable to dental caries and hence cysts.

Anterior maxilla is more affected than any other site which is different to the study by Tsvetanov et al 13 where posterior segments have more cystic lesions.

Trauma is the most common inciting factor in causing radicular cyst in a study conducted by Iyogun CAet al14 on Nygerian population which is in contrary to our study where dental caries is the most common etiological factor. This difference is due to the lack of dental education in our society which results in more tooth decay and its consequences.

Conclusion

1. Radicular cyst is the common inflammatory odontogenic cyst of the anterior maxilla.
2. This cyst is most common in 4th decade of life.
3. Affect mostly females
4. Untreated dental caries is the most common cause and dental trauma is 2nd to it.

References

1. Nayyer V N, Macluskey M and Keys W.Odontogenic Cysts - An Overview.Dental Update 2015; 42(3):548–555.
2. Johnson R N, Gannon O, Savage W N.Frequency of odontogenic cysts and tumors: a systematic review. Journal of investigative and clinical dentistry 2013; 5(1):139-140.
3. Morrison A, Kelly R, Magliocca.Mandible-Maxilla - OdontogeniccystsPeriapical (radicular) cyst.JInt Oral Health 2014;5(6):79-80.
4. Weber M et al. Macrophage polarization differs between apical granulomas, radicular cysts, and dentigerous cysts.Clin Oral Investig. 2018; 22(1):385-394.
5. LisetteH.C,MartinP M,Speight.Odontogenic cysts: an update.Diagnostic Histopathology.2017;23(6):260-265.
6. Lagares D T, Segura-Egea J J, Caballero A R, Llamas-Carreras J M, Gutiérrez-Pérez L J. Treatment of a Large Maxillary Cyst with Marsupialization, Decompression, Surgical Endodontic Therapy and Enucleation. j can dent assoc 2011;77(9):87-88.
7. Nilesh K, Dadhich A S, Chandrappa P R.unusually large radicular cysts of maxilla : steps in diagnosis & review of management.J.Bio.Innov2015;4(1):01-11
8. Kadam S N, Ataide DND, Raghava P, Fernandes M, HedeR. Management of Large Radicular Cyst by Conservative Surgical Approach: A Case Report.JClinDiagn Res. 2014; 8(2): 239–241.
9. Kamrujjaman M etal.Clinicopathological Evaluation of Odontogenic Jaw Cysts.Dental College Journal 2015;5(2):5-6.
10. Prakash R et al. Comparison of components of odontogenic cyst luids: A review.Journal of Medicine, Radiology, Pathology & Surgery 2016;2(2): 15–17.
11. Tandon S, Phull K, Tandon P. Pathogenesis of keratocysticodontogenic tumor - A review. TMUJ 2014;3(1):100-5.
12. Pechalova PF, Bakardjiev AG. Cysts of the Jaws: a clinical study of 621 cases. ActaStomatologicaCroatica 2009;43(3):215–24.
13. Tsvetanovetal.Residual cysts: A brief literature review. IJMDS 2016;5(2):1342.
14. Iyogun CA, Sule AA, and OmitolaOG. Relative Prevalence of Odontogenic Cysts and Tumours in Kano; Northern Nigeria. J Dent Oral Health2017;3(4):2-4.