Condensing Osteitis Lesions in Eastern Anatolian Turkish Population

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Abstract Objectives: The aim of this study was to determine the prevalence of condensing osteitis lesions in Eastern Anatolian Turkish population. About condensing osteitis lesions, these were evaluated; sex, localization, side, age, shape and status of involved teeth (caries, restoration etc.). **Methods:** This retrospective study was carried out using panoramic radiographs of 962 patients who came to for some dental problems to Inonu University Faculty of Dentistry. Status of involved teeth (caries, restoration etc.), sex, age, shape, localization and side were evaluated. **Results:** The evaluated of 962 patients, 539 female and 423 were male. 29 condensing osteitis lesions were found in 26 patients; 7 males and 19 females had once or two condensing osteitis lesion in apical or interradiculer area detected by radiographic evaluation. Most condensing osteitis lesion were in the mandibular molar region 82,8%; mandibular first molar (n=21) was the most frequent condensing osteitis involved tooth (72,4%). Of these 29 condensing osteitis lesions, 15 (51,7%) were detected in the teeth that involved deep caries. **Conclusion:** Condensing osteitis lesions had a prevalence of 2.7%, with mandibular molar region was the most included region. Deep cariesly teeth were the most common related to COL and mandibular first molars were the most involved teeth in the Eastern Anatolian Turkish population.

Keywords: condensing osteitis lesion, first molar, deep cariesly tooth

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1. Introduction

Asymptomatic sclerotic bone images of the jaw bones are often encountered in radiographic examination. These lesions are seen in periapical, periradicular, interseptal and edentulous areas. Some of these lesions are associated with low level root inflammation, while others etiologies are unknown [1]. Unexplained increases in radiodensity of the the jaws is called idiopathic osteosclerosis. These lesions are usually asymptomatic and detected on routine radiographic examination [2].

Radiopaque lesions in periapical area associated with low level root inflammation are called chronic sclerosing osteomyelitis or condensing osteitis [2,3]. Condensing ostetis is usually seen in the mandible and molar teeth region [2]. However, the exact etiology is unknown and it is thought to be caused by the increase in osteoblastic activity. The lesion is characterized by excessive bone and develops as a result of dental pulp inflammation, radiopaque image returns to normal after a successful root canal treatment [4]. The aim of this study was to determine the prevalance of condensing osteitis in Malatya population evaluating according to gender, age, tooth number and dental status of the teeth involving condensing osteitis, location, shape of condensing osteitis and presence of antagonist teeth.

2. Material and Methods

This retrospective study was performed using 962 digital panoramic radiographs of patients who were referred to Department of Oral and Maxillofacial Radiology, Faculty of Dentistry at the Inonu University in 2011. The evaluated radiographs were obtained using orthopantomography device (Planmeca Proline XC-Helsinki, Finland). Condensing osteitis lesions (COL) is defined as formation of sclerotic bone from low grade chronic inflamation around the teeth root apices with widening periodontal space. The lesions with the following properties around the apical region were omitted from study; bening fibroosseous lesions, radiopacities around the healthy teeth, increased thickening of the lamina dura around a teeth. The gender, age, side, location, region, shape and teeth number involved with condensing osteitis were recorded for each patient. Dental status of COL involved teeth was classified deep caries, large restoration, treated root canal and crowned. Side of the lesion was classified left and right, location of the lesion was classified first according to the related jaw e.g. mandibular or maxillary, and secondly according to the related region of the jaw e.g. molar, premolar and anterior. The shape of the lesion was classified as either round or irregular, the relationship to

teeth was defined as apical only and, apical and interradicular. The variables were analyzed using the SPSS 17 stastical program. The pearson chi-square test was used to determine for gender differences.

3. Results

Among the 962 digital panoramic radiographs evaluated, 539 belonged to female patients and 423 belonged to males. Patients ranged in age from 13 to 72 and were subjected to different dental problems. 29 COL were found in 26 of all the patients (2,7%). 19 of the patients were female (3,53%) and 7 were male (1,65%) ranging in age from 13 to 51 (Table 1). The pearson chisquare test indicated no significant gender differences. Of the patients with lesions, 23 patients had 1 COL and 3 patients had 2 COL (Figure 1). 10 COL were found in the

second decade of life (34,5%). Distribution according to tooth number of lesions were detected: 21 lesions in mandibular first molar (72,4%), 4 lesions in mandibular first premolar (13,8%), 3 lesions in mandibular third molar (10,3%) and 1 lesion in mandibular second premolar (3,4%) (Table 2). Dental status of COL involved teeth was also detected: 15 lesions between deep caries (51,7%), 8 lesions between large restorations (27,6%), 5 lesions between treated root canal (17,2%) and 1 lesion between crowned tooth (3,4%). Side of the lesions were found to be 17 in right (58,6%) and 12 in left side (41,4%). All of COL were found in mandible and most of them involved the molar region (82,8%). 28 teeth between COL had antagonist teeth (96,55%). 24 lesions had irregular shape (82,8%) and 5 had round shape (17,2%) (Figure 2). 20 COL were in relationship with apical only (69%) and 9 COL were apical and interradicular (31%) (Figure 3).

Table 1. Distribution of condensing osteitis lesions according to gender

		n	Patients with COL	%	X ²	P value
Gender	female	539	539 19 3,53		2.15	0,076
	male	423	7	1,65	3,13	0,070

Table 2. Distribution of condensing osteitis lesions according to teeth number and another characteristics

Tooth number	Mandibular first	Mandibular third	Mandibular second	Mandibular first	total	
1 ooth number	molar (72,4%)	molar (10,3%)	premolar (3,4%)	premolar (13,8%)	n	%
Male	7	0	1	0	8	27,6
Female	14	3	0	4	21	72,4
Deep caries	10	3	1	1	15	51,7
Large restorations	6	0	0	2	8	27,6
Treated root canal	4	0	0	1	5	17,2
Crowned	1	0	0	0	1	3,4
Right	14	1	1	1	17	58,6
Left	7	2	0	3	12	41,4
İrregular	18	3	0	3	24	82,8
Round	3	0	1	1	5	17,2
Apical	14	1	1	4	20	69
Apical-interradicular	7	2	0	0	9	31

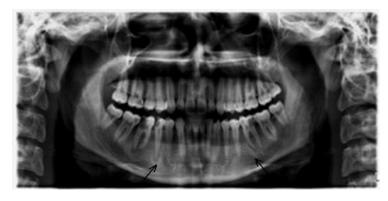


Figure 1. Panoramic radiograph showing two COLs at right mandibular second premolar and left mandibular first molar in a one patient



Figure 2. Panoramic radiograph showing an irregular shape COL at right mandibular first molar

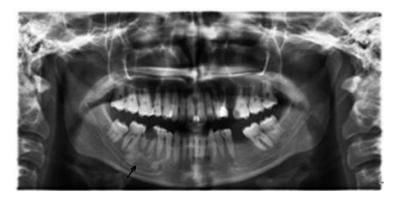


Figure 3. Panoramic radiograph showing an apical and interradiculer COL at right mandibular first molar

4. Discussion

COL frequency was found 2,7% in our study. Miloglu et al [5] observed 0,8% prevelance of COL in 6,154 panoramic radiographs. Caglayan and Tozoglu [6] detected 1% COL incidental finding from 207 CBCT images. Eliasson et al [7] observed 2% prevelance of COL in a study of 1149 roots periapical radiographs. Williams and Brooks [2] found 4.5% COL prevelance of 1585 intraoral radiographs. Marmary and Kutiner [8] found 6% prevelance of COL in a study of 889 periapical radiographs. Verzak et al [9] observed 6,7% of prevelance COL of 1200 panoramic radiographs. Miloglu et al [5] defined that panoramic radiographs caused low frequency for to observe radiopacities and to use of periapical radiographs could be caused higher prevelance. However detected Verzak et al [9] 6,7% of prevelance with panoramic radiographs and Caglayan and Tozoglu [6] detected 1% of prevelance with CBCT.

In our study there was no statistically significant gender difference in the frequency COL. This findings agrees with Verzak et al [9] and also Williams and Brooks [2]. Miloglu et al [5] and also Marmary and Kutiner [8] found COL prevalance in female higher than males. Avramidou et al [10] detected radiopaque lesions in female more than males.

COL occurs as a result of chronic low grade irritation by the presence of inflamed pulp, chronic pulpitis or microorganisms of necrotic pulp, or inadequately treated root [10]. In addition, COL case was reported involved chronic hiperplastic pulpitis [11]. Green et al [12] detected histologic alterations in specimens related to COL. They saw minimal or no inflammation and pulp damage, inflammation, and/or necrosis together with COL. Deep cariesly teeth were found most common COL involved teeth followed that large restorations, treated root canal and crowned tooth. In our study 5 teeth had root canal treatment (17,2%). Healing of radiopaque lesions in the periapical area may observe after successful root canal treatment [13]. However in our study, COL involved treated root canal teeth had inadequate endodontic treatment. About crowned tooth might partly explained by it may had a large restoration or deep caries before crowned.

Verzak Z et al [9] found mandibular first molar teeth were the most common teeth related to COL. Mandibular first molar teeth were the most common involving COL in present study. Mandibular molar region involved COL 82,8% in our study, Miloglu et al [5] found COL 96,2%

and Verzak et al [9] found COL 62% in mandibular molar region In our study 100% of COL were found in mandible. Similar to our study Miloglu et al [5] found COL 100% in mandible. Verzak Z et al [9] found most of affected jaw mandible with 91,25% from COL. Probably this condition about that bone structures superimposition is fewer in mandible than maxilla because anatomic structures in maxilla more than mandible [5]. Also, cortical bone in mandible more denser than maxilla for this stress distribute more in mandible [14]. Besides occlusal stres cause COL, increased functional stimuli induce bone sclerosis with pulpal or periodontal problems [1].

Conclusion in our study prevelance was compatible to literature and there was no significant sex difference. Deep cariesly teeth were most common frequent related to COL. All of the COL were found in mandible and majority of COL found in mandibular molar region. Mandibular first molar teet were the most common teeth involved COL.

Conflict of Interest

The authors deny any conflicts of interest related to this study.

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