Original Research

Prevalence and Pattern of Mandibular Condensing Osteitis Lesions in Saudi Population at Qassim Region

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ABSTRACT

Background: Condensing osteitis (CO) is a common radiopaque lesion observed in the jaws, often detected incidentally on panoramic radiographs. Understanding the prevalence and characteristics of CO is essential for early detection and appropriate management. **Objective:** To determine the prevalence and characteristics of condensing osteitis among the Saudi population in the Qassim region. **Methods:** A retrospective study was conducted using 876 digital panoramic radiographs. The presence of CO was identified based on specific radiographic features, and data were collected regarding gender, age, lesion localization, lesion shape, and associated dental status. **Results:** The prevalence of CO was found to be 2.3% (n = 20) in the study population, with a higher predilection in females (1.4%) compared to males (0.9%). The most commonly affected age group was 30–39 years for males and 10–19 and 30–39 years for females. The mandibular molar region was predominantly affected (90%), with a 'U' shape observed in 55% of the lesions. Root canal treatment was the most commonly associated dental status (75%), followed by deep caries (20%) and large restorations (5%). **Conclusion:** The study highlights a 2.3% prevalence of CO in the Saudi population of the Qassim region, with a higher predilection in females and a predominant localization in the mandibular molar region. Dental practitioners should be vigilant in identifying CO, especially in at-risk populations, to facilitate timely diagnosis and appropriate management.

KEYWORDS: *Condensing osteitis, mandibular lesions, panoramic radiographs, prevalence, Qassim region*

INTRODUCTION

Panoramic radiographs are essential diagnostic tools in dentistry, providing a comprehensive view of the maxillofacial region and aiding in identifying various oral and maxillofacial pathologies.[1] Condensing osteitis (CO) is one of the most prevalent radiopaque lesions of the jaws, affecting approximately 4% to 7% of the general population.[2] Primarily a bone response to chronic mild irritation, CO often results from trauma from occlusion, pulpal disease, or other local irritants.[3] Despite being asymptomatic, diagnosing CO is crucial due to potential complications and the underlying chronic inflammatory processes.[4] Radiographically, CO appears as a dense radiopaque zone adjacent to the apex of the involved tooth, with clear margins and an unclear transition to surrounding bone. Apical loss of lamina dura and widening of the periodontal ligament space are commonly associated features.[4,5] CO is predominantly found in the mandible, particularly the mandibular first molar, with a higher prevalence among females.[6,7] Despite its significance, there is limited research on the prevalence and pattern of mandibular CO in specific populations, including the Saudi Arabian demographic of the Qassim region. This study aims to investigate the frequency and radiographic pattern of mandibular CO in this population, considering age, gender, and lesion localization.

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Materials and Methods

This retrospective cross-sectional study investigated the prevalence and radiographic pattern of mandibular CO in the Saudi population of the Qassim region. Conducted at Qassim University, College of Dentistry, the study analyzed 800 digital panoramic radiographs spanning 24 months [Figure 1 and 2]. Inclusion criteria comprised panoramic radiographs of Saudi patients aged 18 or older, with CO defined by chronic inflammation associated with the tooth apex, deep caries, large restorations, or root canal treatment. Exclusion criteria included insufficient clinical or radiographic data, non-Saudi individuals under 18, and patients with certain bone metabolic disorders or syndromes. Data on gender, age, lesion location, shape, and border were recorded in Microsoft Excel. Data analysis was performed using SPSS, presenting results as frequencies and percentages. The study maintained strict data confidentiality and ethical guidelines, ensuring participant anonymity and confidentiality.

Results

Frequency of CO according to gender

A total of 876 panoramic radiographs were examined, revealing a prevalence of CO in 20 cases, accounting for 2.3% of the total sample. Among these, 454 cases were female, with 12 (1.4%) exhibiting CO, and 422 cases were male, with 8 (0.9%) exhibiting the condition [Table 1].

Frequency of CO according to age groups

The distribution of CO varied across different age groups. In the female population, the highest prevalence was observed in the 10–19 and 30–39 age groups, each accounting for 25% (3 cases) of the affected individuals. In contrast, males showed the highest prevalence in the 30–39 age group, representing 50% (4 cases) of the affected individuals [Table 2].

Frequency of CO with respect to region, lesion quantity, shape of lesions, and side of jaw

The mandibular molar region was predominantly affected by CO, accounting for 90% (18 cases) of the total cases. The most common shape of the lesions was 'U', observed in 55% (11 cases) of the patients, followed by irregular shapes in 45% (9 cases). In terms of lesion quantity, a single lesion was more frequent, accounting for 85% (17 cases) of the total. Regarding the side of the jaw, the distribution was equal between the right and left sides [Table 3].

Frequency of related dental status associated with CO

The majority of the patients with CO had undergone root canal treatment (RCT), accounting for 75% (15 cases) of the total. Deep caries was observed in 20% (4 cases) of the patients, and a large restoration was noted in 5% (1 case) of the patients [Table 4].

Table 1: Frequencies (percentages) of CO according to gender

	Total (*n*=20)	Female (*n*=12)	Male (*n*=8)
CO	60%	40%	-

Table 2: Frequencies (percentages) of CO according to age groups

Age (year)	Female (*n*=12)	Male (*n*=8)
10–19	3 (25%)	0
20–29	2 (16.67%)	3 (37.5%)
30–39	3 (25%)	4 (50%)
40–49	3 (25%)	1 (12.5%)
50–59	1 (8.33%)	0

Table 3: Frequencies (percentages) of CO with respect to region, lesions quantity, shape of lesions, and side of jaw

	CO (*n*=20)
Region	
Premolar	2 (10%)
Molar	18 (90%)
Shape	
U	11 (55%)
Irregular	9 (45%)
Lesion quantity	
1	17 (85%)
2	3 (15%)

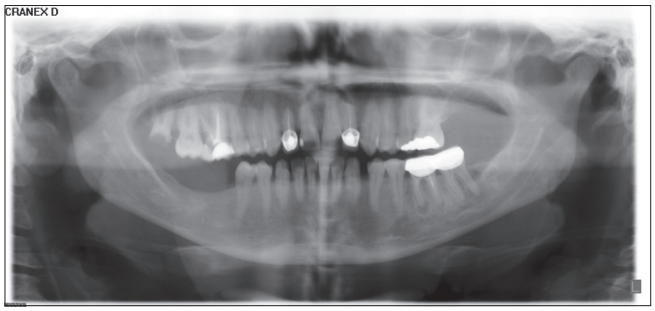

Figure 1: Mandibular CO [male]

Figure 2: Mandibular CO [female]

Table 4: Frequencies (percentages) of related dental status associated with CO

Dental status	CO (*n*=20)
RCT	15 (75%)
Deep caries	4 (20%)
Large restoration	1 (5%)

Discussion

The present study provides valuable insights into the prevalence and characteristics of CO among the Saudi population in the Qassim region. The overall prevalence of CO was found to be 2.3% in the study sample, which is consistent with the existing literature reporting a prevalence ranging from 1.4% to 8% in different populations.[6]

Gender distribution and age variations

Current findings revealed a higher prevalence of CO in females (1.4%) compared to males (0.9%). This gender-based disparity is in agreement with previous studies which have suggested a predilection for CO in females. The agewise distribution showed that the 30–39 age group was predominantly affected among males, while females exhibited a bimodal distribution with peaks in the 10–19 and 30–39 age groups. These findings indicate that females may be more susceptible to CO at a younger age compared to males, which might be related to hormonal or anatomical differences between genders.[7,8]

Localization and characteristics of CO lesions

The mandibular molar region was the most commonly affected site, consistent with previous studies that have reported a predilection of CO for the mandibular first molar.[2] Furthermore, the majority of the lesions presented a 'U' shape, and most patients had a single lesion. These characteristic features of CO lesions corroborate with the existing literature, which describes CO as a dense, radiopaque lesion typically associated with the apex of the involved tooth.[4] The presence of a single, well-defined lesion predominantly in the mandibular molar region further supports the notion that CO is often a localized response to chronic irritation, such as trauma from occlusion or pulpal inflammation.[3]

Association with dental status

Root canal treatment (RCT) was the most commonly associated dental status in patients with CO, observed in 75% of the cases. This association underscores the potential role of chronic pulpal inflammation or infection as a triggering factor for CO.[1] Additionally, deep caries and large restorations were observed in a minority of cases, suggesting that these factors might also contribute to the development of CO, albeit less frequently.

Implications and clinical relevance

Understanding the prevalence and characteristics of CO is crucial for dental practitioners to ensure early detection and appropriate management. Given the asymptomatic nature of CO, it often remains undiagnosed until identified incidentally on radiographs. Early detection is essential to prevent potential complications and to initiate timely interventions, which may include monitoring, conservative management, or surgical intervention depending on the severity and associated symptoms.[5,9,10]

Conclusion

The present study highlights a 2.3% prevalence of CO in the Saudi population of the Qassim region, with a higher predilection in females and a predominant localization in the mandibular molar region. The association of CO with root canal treatment and deep caries emphasizes the importance of considering chronic pulpal inflammation or infection as potential etiological factors. Dental practitioners should be vigilant in identifying CO, especially in at-risk populations, to facilitate timely diagnosis and appropriate management.

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Conflicts of interest

There are no conflicts of interest.

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