Case Report

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Rare benign fibroosseous lesion in the mandibular angulus: a case presentation

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ABSTRACT

Fibro-osseous lesions are a poorly defined group of processes affecting the jaws and craniofacial bones characterized by the replacement of normal bone with fibrous tissue containing a newly formed mineralized product, and include developmental lesions, reactive or dysplastic lesions and neoplasms. Fibro-osseous lesions of the jaws frequently include fibrous dysplasia, cemento osseous dysplasia and ossifying fibroma. Although the histological appearance and clinical and radiographic features of most of these lesions are similar, they show a wide range of biological behaviours. Therefore, the treatment varies. The case described in this article presents a 50-year-old male patient with a fibroosseous lesion located in the right mandibular angulus. Based on the histologic findings, fibroosseous the lesion was diagnosed. The patient was referred to surgery. No invasive procedure was performed for treatment and regular clinical and radiological follow-up was recommended. Fibroosseous lesions in this region is very rare in the literature. This situation makes the case valuable.

Keywords: Fibroosseous lesion, cone-beam computed tomography, mandibular angulus

INTRODUCTION

Because different disease processes can be seen similarly, imaging lesions in the maxilla and mandible can be challenging. Primary bone lesions or odontogenic origins are the main sources of lesions.[1]

In benign fibro-osseous lesions of the jaws, fibrous connective tissue develops variable amounts of osteoid, bone, or cement-like calcifications replaces normal bone. Benign fibroosseous lesions fall into three disease categories: developmental (fibrous dysplasia), neoplastic (ossifying fibromas), and perhaps periodontal ligament dysplastic lesions of (osseous dysplasia).[2] The two most prevalent fibro-osseous lesions of the jaw are peripical and localised cemento-osseous dysplasias. Florid cemento-osseous dysplasia (FCOD) is a condition that occurs when lesions with comparable microscopic and radiological characteristics appear in two or more quadrants of the jaw.[3]

In the literature, fibroosseous lesions have been categorised in a variety of ways. The World Health Organisation (WHO) released the most recent categorisation in 2017.[4] For oral pathologists, fibro-osseous lesions of the jaws frequently present a diagnostic conundrum. Therefore, histopathological findings alone cannot be used to provide a definitive diagnosis. A combination of patient age, sex, location of the lesion, duration of symptoms, imaging features, radiographic and histological factors should be taken into account to reach the correct diagnosis.[5,6] In dentistry, panoramic radiography (PAN) is the most widely utilised diagnostic imaging method. For the diagnosis of a number of clinical and physiological disorders affecting the oral and maxillofacial regions, panoramic radiography is recommended. However, because of its three-dimensional structure, cone-beam computed tomography (CBCT) is superior to two-dimensional PAN. In addition to visualising anatomical structures in the axial, coronal, and sagittal planes, these techniques which include multi-planar reconstruction, minimum/maximum intensity projection , and volume rendering can also precisely depict the location, size, shape, and relationship of lesions to surrounding tissues, which aids in the diagnostic process.[7-9] Therefore, the patient's cbct images were analysed for more detailed imaging.

In this case report, we present a case of benign fibroosseous lesion located in the angulus region of the mandible in a 50-year-old male patient who presented to our clinic.

CASE

A 50-year-old male patient was admitted to the Department of Oral and Maxillofacial Radiology, İnönü University in 2024

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Dicle Dent J. 2024;25(4):121-125.

due to persistent pain in the right maxillary and mandibular region for three years. Medical anamnesis revealed no systemic disease and no history of drug use. No extraoral findings were observed. Intraoral examination revealed only left first premolar tooth in the maxillary region, right lateral and canine teeth in the mandibular region, lateral, first and second premolar teeth on the left side. Palpation revealed no tenderness, paresthesia, dental pain, luxation, or mucosal discoloration. Digital panoramic radiographic images did not reveal any different findings (Figure 1). CBCT was requested for more detailed imaging. CBCT examination of the right mandibular in the angulus region, a mixed lesion area with hypodense surroundings and hyperdense contents was observed (Figure 2). Its widest dimension was measured as 9.7x5.5 mm in sagittal section (Figure 3).

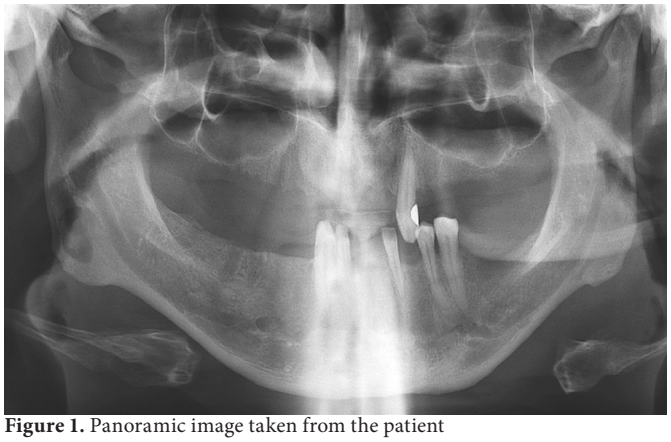

Figure 1. Panoramic image taken from the patient

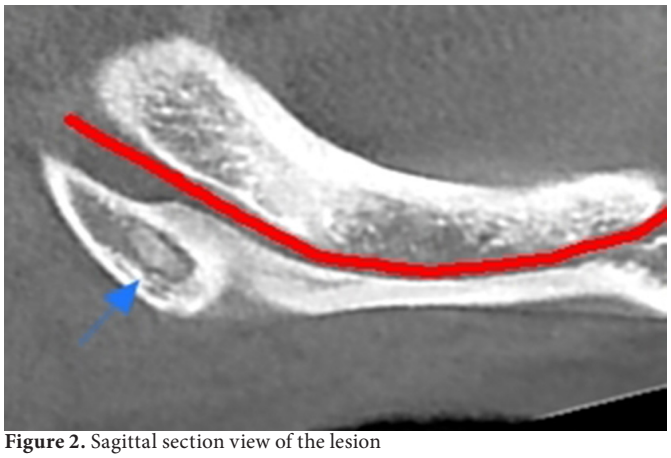

Figure 2. Sagittal section view of the lesion

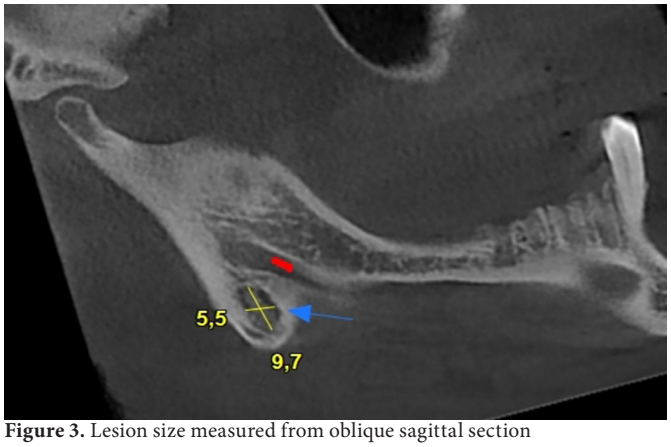

Figure 3. Lesion size measured from oblique sagittal section

The lesion is not associated with the mandibular canal and perforation and expansion of the lingual cortical bone was observed (Figure 4). No perforation was observed in the buccal cortical bone. Because of the patient's complaint of persistent pain and mixed radiologic appearance, the preliminary diagnosis of osteoblastoma or osteid osteoma was considered. Aspirin was therefore prescribed. However, it was learnt that the patient did not use the medication regularly. The patient was referred to oral and maxillofacial surgery. A biopsy was taken from that area and sent to pathology.

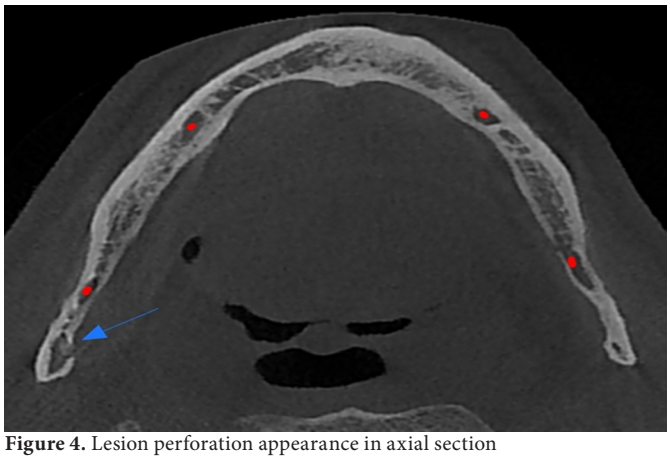

Figure 4. Lesion perforation appearance in axial section

MICROSCOPIC FINDINGS

In the pathology report, off-white colored hard tissue fragments measuring 0.9x0.6x0.2 cm in size that it was written. Histopathologic diagnosis was fibroosseous lesion. As a result of the examinations performed in the department of oral and maxillofacial surgery, no surgical procedure related to the lesion was found to be necessary. Therefore, the patient was recommended regular clinical and radiological follow-up.

DISCUSSION

Benign fibro-osseous lesions are a broad set of pathological disorders that have similar microscopic characteristics but differ in their clinical behaviour. They are characterised by the replacement of normal bone with fibrous tissue that then experiences aberrant mineralisation.

As a result, their care is quite individualised. Clinical biological behaviour must always be documented through long-term follow-up.[10,11] The internal structure of every benign fibrooseous lesion (BFOL) evolves in three stages. In essence, these radiological alterations start off as a radiolucent stage, develop into a more mature mixed stage with interior structures that are both radiolucent and radiopaque, and then finally become a radiopaque stage.[12]

Florid cemento-osseous dysplasia (FCOD) might show up on radiographs as very opaque masses, mixed lesions, or patches of radiolucency. The lesions have a tendency to become more radiopaque with time. In toothed areas, lesions are present in more than one quadrant.[13]

A localised change in normal bone metabolism known as periapical osseous dysplasia (POD) causes normal spongious bone to resorb and be replaced by fibrous tissue, amorphous

bone, aberrant bone trabeculae, or a combination of these. The lesion is situated around the apex of the tooth.[14]

Both monostotic and polyostotic forms of fibrous dysplasia (FD), a common benign bone disease, are present. It is a part of the Mazabraud and McCune-Albright syndromes and is occasionally linked to aneurysmal bone cysts. Imaging characteristics rely on the underlying histology of a particular lesion and are distinctive but not specific. Unevenly woven bone spindles dispersed within a fibrocellular matrix-which is typically not mineralized-are typical microscopic observations. Additionally, there may be cartilage foci, which occasionally have the potential to cause a destructive misdiagnosis of chondrosarcoma.[15] Early FD of the craniofacial bones is radiolucent, can be unilocular or multilocular, and has borders that are either well or poorly defined. The built-in FD has mottled radiopaque patterns, typically resembling frosted glass, orange peel, or fingerprints, with poorly defined borders that blend into the surrounding normal bone as the lesions mature and bone defects are mixed, giving it a radiolucent/radiopaque appearance.[16]

Ossifying fibroma (OF) is classified as a benign bone neoplasm. Both the maxilla and the mandible may be impacted. The mandibular posterior area is where it is most frequently observed. This bone tumour is composed of fibrous, highly cellular tissue with variable levels of calcified tissue that resembles cementum, bone, or both. The lesion has a heterogeneous density. A combination of radiopaque and radiolucent tissue could make up the interior structure. Tumour growth may result in mandibular canal or tooth displacement. It should be totally removed since it will keep growing if treatment is not received.[6,17]

Rarely does osteoblastoma, a bone-forming tumour, affect the maxilla and mandible, particularly the posterior jaw. The tumor's rarity, ambiguous clinical-radiologic presentation, and histopathologic characteristics that can mimic osteosarcoma can make differential diagnosis challenging.Histologically and clinically, the differential diagnosis of osteoblastoma ranges from benign and malignant tumors such as cementoblastoma, osteoid osteoma, fibrous dysplasia, ossifying fibroma, focal cemento-osseous dysplasia and low-grade osteosarcoma.[18]

The benign tumour known as osteoid osteoma (OO) is distinguished by an overabundance of non-mineralized bone matrix. Although it can occur in unusual places, it is most frequently found in the spine or the long bones of the lower limbs. This lesion is characterised by pain and vasomotor abnormalities that manifest long before the distinctive histologic and radiographic features do. Anti-inflammatory medications are used to reduce pain after using aspirin or other non-steroidal medications. It is difficult to differentiate radiographically from ossifying fibroma, cementoma, and osteoid osteoma. The lesion has histological similarities to osteoblastoma.[19-22]

In the case described here, due to the persistent pain complaint and mixed radiologic appearance initially suggested the possibility of osteoblastoma and osteid osteoma. Histopathology revealed a benign fibroosseous lesion. All BFOLs are divided into three phases according to their internal structure. Essentially, these radiological changes begin with a radiolucent phase and then go into a more mature mixed phase with interior structures that are both radiopaque and radiolucent, and ultimately end with a radiopaque phase. Some may also be accompanied by a simple bone cyst.[23]

When the studies on fibroosseous lesions in the literature are examined, radiographic features vary according to the stage of the lesion. As the lesion matures, its internal structure has a more mixed appearance.[24-28] This case also exhibits a mixed appearance. Crane et al.[29] examined the clinical and radiological features of fibroosseous lesions of the jaws and showed that the lesions seen in cemento-osseous dysplasia have a classic mixed radiolucent and radiopaque appearance. Makkad et al.[30] presented a case of ossifying fibroma with mixed appearance located in the mandible. Mainville et al.[2] described the radiological and clinical features of various benign fibroosseous lesions. Their internal structure varies according to the maturation stage and it is stated that they generally exhibit a mixed appearance at the mature stage. Considering all BFOLs, the diagnosed patients were predominantly female.[25]

When we look at the gender distribution of fibroosseous lesions in the literature, Soluk-Tekkesin et al.[23] In their study of 276 cases, the patients were predominantly female. Similarly, Worawongvasu et al.[6] In their study of 122 cases in Thailand, the patients were predominantly female. De Oliveira et al.[25] In 383 cases, 82% of patients women were predominantly observed. In their study, Akashi et al.[31] fibroosseous lesions were more common in women. Our current case is was a male patient.

Looking at the regions where fibroosseous lesions are seen in the literature, Suarez-Soto et al.[32] in a study of 19 cases in the craniofacial region found that the most common fibroosseous lesion was found in the mandibular region, followed by the maxillary and malar regions, respectively. Periapical cemento-osseous dysplasia is most commonly seen in the anterior mandibular teeth. The involvement of these lesions in more than one quadrant is known as fluorid cemento-osseous dysplasia.[1] Phattarataratip et al.[33] in a study of 207 patients found that most of the fibrous dysplasia and juvenile ossifying fibroma affected the maxilla and most of the ossifying fibroma and ossifying dysplasia affected the mandible. In the case described in this article, the lesion was located in the angulus mandibular region. When the literature is examined, there are different cases affecting the central nervous system.

Fibro-osseous lesions are rarely seen in the CNS. Qian et al.[34] described 4 cases affecting the central nervous system in their study.Similarly, in the study of Albu et al.[35] in a 53-year-old woman, the lesion was consistent with a fibro-osseous lesion of the central nervous system. Panoramic radiography is an extraoral radiography method that provides two-dimensional information about the teeth and maxillofacial region. Because it makes it easier to see all of the teeth, the mandible, the maxilla, including the majority of the maxillary sinus, the hard palate, and the temporomandibular joints (TMJs) at once, it is useful for diagnosis and treatment planning.[8] With the development of CBCT, three-dimensional images are increasingly being used in dentistry to visualise teeth and

adjacent surrounding structures.[36] Compared to panoramic imaging, cone beam computed tomography (CBCT) provides high resolution and clarity, allows three-dimensional imaging and has become a radiographic modality used in many areas of dentistry.[37] CBCT, in the jaws high spatial resolution images of lesions that occur or involve the jaws can be used wherever it is desired to be displayed.[38] CBCT was preferred in this case because it gives detailed information about the relationship of the lesion with the surrounding anatomical structures without any superposition.

CONCLUSION

The fibroosseous lesion described in this case is located in the right angulus region. In the literature, the possibility of fibroosseous lesions in the angulus region is very rare. This makes the case described here valuable.

ETHICAL DECLARATIONS

Informed Consent

The patient signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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