Innovations

Radicular cyst mimicking a Keratocyst – a case report

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Abstract

Inflammatory cyst arises as a result of epithelial proliferation within an inflammatory focus due to numerous causes. Radicular cyst is one among the most common inflammatory cyst. They are found mostly at the apices of tooth (periapical cyst), lateral surface of roots (lateral radicular cyst) and remains in the jaw after removal of offending tooth (residual cyst). These cysts are small and very rarely cross the midline. Whereas, Odontogenic keratocyst is a developmental, non inflammatory cyst that may be unilocular or multilocular. They show unusual growth patterns clinically and pathologically and have high recurrence rate. This paper reports an unusual presentation of radicular cyst in anterior mandibular region in a 26-year-old male patient, who presented with increasing swelling in his lower anterior region for the past one month. The size of the lesion was clinically misleading but on histological examination with biopsy was confirmed as a radicular cyst.

Keywords: *1.Radicular cyst, 2.OKC, 3.cyst, 4.mimicking lesions, 5.dentistry.*

Introduction

Cyst are pathological fluid-filled cavities lined by epithelium[1]. They are the most common cause of chronic swelling of the jaws and they are presented as functional disturbances caused by the bone remodelling and abating or after a secondary infection[2]. A cyst comprises a central lumen and a wall of fibrous tissue, or space, lined by epithelium. They are more commonly seen in jaws. Jawbones are host to diverse odontogenic and nonodontogenic cysts and neoplasms [2,3]. Both odontogenic and nonodontogenic cyst, can exhibit a biologically aggressive behaviour and often pose a diagnostic challenge.

Several types of odontogenic cysts may occur, depending on the stages of odontogenesis[4] .Inflammatory cyst occurs as the result of inflammation. One of the most common inflammatory cyst is a radicular cyst. They occur as a consequence to pulpal necrosis following caries, with an associated periapical inflammatory response. Other causes include tooth fracture, improper restorations. The appearance of these cysts occurs from the pre-existence of a periapical granuloma or by the induction of epithelial rests of Malassez[5]. The majority of cases of radicular cyst are asymptomatic. The tooth is seldom painful or even sensitive to percussion. It represents a chronic inflammatory process and develops only over a prolonged period of time. Because of its smaller size, this cyst is usually discovered as an incidental finding in radiographs.

Correct treatment relies on correct diagnosis. Differentiating radicular cysts from other cysts might be difficult if the clinical and radiographic appearance are uncommon. This makes the medical diagnosis important. This cyst may imitate benign neoplasm or other developmental cysts that will pose a diagnostic dilemma to the clinician.

The purpose of this paper is to report a case of an infected radicular cyst, simulating KCOT thus posing a diagnostic dilemma. This case report serves a dual purpose: firstly it's a documentation of an oversized radicular cyst which is rare in literature, secondly it implies the importance of mimicking lesions which might severely alter our treatment planning.

Case presentation:

A 26-year-old male patient reported to the Department of Oral Medicine and Radiology, with the chief complaint of pain and swelling in his lower front teeth and gums region for the past one month. Patient give a history of pricking intermittent pain on chewing and increase in size swelling over the past one month. The patient consulted a private dentist, who prescribed him antibiotic and analgesic medications which proved to be ineffective.

On intra-oral examination, presence of single localized irregular swelling extending from 34 to 45 region which was approximately 5 x 5 cm antero posteriorly and extending to the inferior border of the mandible superio inferiorly with regular margins. Overlying skin was smooth and shiny.

On palpation inspectory findings regarding size, shape, color and extension was confirmed. The swelling was warm tender on palpation and fluctuant (figure). There was no evidence of extra-oral swelling.

Figure 1 : intra oral swelling in lower anterior region

Figure 2: Pre-operative clinical view

Investigations:

The Orthopantomogram (OPG) shows a large well defined radioluency seen in lower anterior region of the mandible approximately 10 x 4 cm, extending supero inferiorly form periapical region of 43,42,41,31,32,33 to 0.5 cm above lower border of the mandible and antero posteriorly form mesial aspect of 45 to distal aspect of 35 with scalloped margins causing root resorption with 44,43 (FIGURE 3).

Figure 3: Orthopantomogram showing large well defined radiolucency seen in lower anterior region of the mandible

Differential diagnosis

The general differential diagnosis of periapical radiolucencies includes radicular cyst, residual cyst, fissural cyst, dentigerous cyst and tumour-like ameloblastoma. But in our case, there was no history of tooth extraction or previous surgery which excluded the possibility of a residual cyst. Location of the cyst and absence of impacted-tooth ruled out the other differential diagnosis like fissural cyst and dentigerous cyst, respectively. With regard to the size and location of the lesion ameloblastoma, OKC and radicular cyst were considered in the differential diagnosis.

Cytology and histopathology report:

Fine-needle aspiration cytology was performed, which revealed amber coloured fluid and sent for cytological examination. Cytology report showed predominantly neutrophils, lymphocytes and few

foamy macrophages along with a few squames, it gave a cytopathological diagnosis of Odontogenic cyst and advised to refer histopathology report for final diagnosis.

The histopathology report showed odontogenic epithelial lining and connective tissue wall. The epithelium was non-keratinized stratified squamous epithelium appeared hyperplastic along with an arcading pattern in few areas. The underlying dense connective tissue wall shows intense chronic inflammatory cells infiltrate predominantly plasma cells and lymphocytes along with foamy macrophages, intense vascularity and areas of haemorrhage. Skeletal muscle and peripheral resorbing bone were also evident. Based on these findings, the histopathological diagnosis given as periapical cyst.

Figure 4 biopsy specimen

Figure 5 Fine needle aspiration

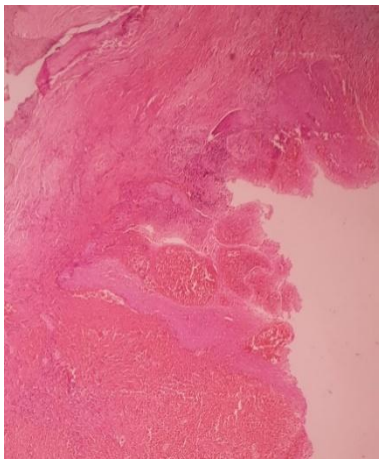

Figure 6 : Histopathology picture of the cyst

Management

The affected tooth were endodontically treated. Then the patient was referred to the department of oral surgery for surgical enucleation of the cyst. The surgical area was treated with Carnoy's solution for 1 min and closed with 3 interrupted sutures for complete hemostasis.

Figure 7 : Surgical enucleation of the cyst

Discussion

In 1974, Kramer defined a "Cyst" as a pathological-lined cavity that contains fluid, semifluid or gaseous contents and which is not contained with accumulation of pus. In this case report, the size of the cyst was very large and hence it was confused for the final diagnosis[2].

An apical or pocket or true cyst is classified as an inflammatory cyst. These inflammatory cysts are due to infections of pulpal, periodontal or peri coronal gateway of low virulence, which persists for weeks to proliferate[6]. They arise from the remaining epithelial Malassez or from a preexisting periapical granuloma. The main reason for the spread of infection will be necrotic pulp or periodontal pocket [4,7]. The basal cells of an inflammatory apical cyst were not subjected to self-proliferation without any external stimulation such as production of proinflammatory cytokines, inflammatory mediators and growth factors released by innate and adaptive immune cells during apical periodontitis [8,9]. It is not a neoplastic lesion in the WHO Histological Typing of Odontogenic Tumors, Allied lesions and Jaw cysts, whereas Odontogenic Keratocyst is classified under developmental origin [10,11].

Radicular cysts are common in the third and fifth decade of life. They are slow-growing and mostly asymptomatic. Final diagnosis of radicular cyst will be given if there is an existence of non-vital pulp or presence of a sinus tract in its vicinity.

In this case there was no apparent cause that was evident for the formation of the radicular cyst. The inflammation might have begun with mandibular anterior teeth. Apical periodontitis is a local reaction of bone around the apex of the tooth which occurred after the pulpal necrosis or periodontal disease [12,13]. This theory may present the large size of the cyst. Anachoresis is a phenomenon that explains the presence of microorganisms in unexposed dental pulps and it also states that when bacteria gets entry into the gingival sulcus or bloodstream, it can be recovered in teeth with pulpal inflammation[14]. It attributes to the increased vascular permeability and destruction of pulpal vessels resulting from inflammation [15].

Radiographically, radicular cyst appears as unilocular radiolucency surrounded by thin sclerotic border, extending from the lamina dura of the involved tooth and it may cause displacement of adjacent teeth or very rarely causes mild root resorption. Other lesions, such as granulomas, neoplasms of various origin can also present a similar radiolucent periapical appearance. Therefore, a periapical radiolucency cannot be automatically assumed to be a cyst. Most of the studies indicated that it was not possible to rely

on the radiographic size of a periapical radiolucency to establish the diagnosis. If the lesion is smaller than 2 cm, then it is more likely to a granuloma[16].

There are various treatment options available for treating radicular cyst such as enucleation of the cyst, marsupialization followed by extraction of the affected tooth or endodontic management of the affected teeth[17]. They are based on various factors such as size and anatomical location of the lesion, proximity to the vital structures, clinical characteristics of the lesion and systemic condition of the patient [18].

Conclusion:

As said earlier correct treatment is based on correct diagnosis and it requires skill, knowledge and art. There are many conditions, which have similar symptoms, therefore the clinician must be confident enough in determining the correct diagnosis. Dilemma arises when one mimics the other. Since large radicular cyst is uncommon, caution is required in the establishment of the diagnosis to avoid complications like extraction of teeth and unnecessary bone cutting.

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