



Case Report

Management of Mandibular Cholesterol Granuloma by Surgical Enucleation with Packing: A Rare Case Report

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Abstract

Cholesterol granuloma is a rare clinical entity described as inflammatory granulation in response to the deposit of cholesterol crystals. It can develop in any portion of air cells within the temporal bone as a result of a lack of aeration and adequate drainage. Here, we report a 65-year-old edentulous male with a painless slight expansion on the lower right body of the mandible, with a history of previous multiple lower denture constructions. A panoramic radiograph showed a well-defined unilocular radiolucency on the right body region of the mandibular bone. An incisional biopsy was done, then the lesion was completely enucleated surgically with packing, and the final diagnosis was confirmed by a histopathological examination report.

Keywords: Cholesterol granuloma, Enucleation, Maxillofacial surgery.

أزالة ورم الكوليسترول الفكي الحبيبي عن طريق الاستئصال الجراحي مع تعبئة مكان الأستئصال: تقرير حالة نادرة

الخلاصة

الورم الحبيبي للكوليسترول هو حالة سريرية نادرة توصف بأنها تحبيبات النهائية استجابة لترسيب بلورات الكوليسترول. يمكن أن يتطور في أي جزء من الخلايا الهوائية داخل العظم الصدغي نتيجة نقص التهوية والتصريف الكافي. هنا، نبلغ عن ذكر يبلغ من العمر 65 عاماً يعاني من تمدد طفيف غير مؤلم في الجزء السفلي الأيمن من الفك السفلي، ولديه تاريخ من عدة تركيبات سابقة لأطقم الأسنان السفلية. أظهر التصوير البانورامي الشعاعي وضوح إشعاعي أحادي الحوض محدداً بشكل جيد في منطقة الجسم اليمنى من عظم الفك السفلي. أجريت خزعة شق، ثم تم استئصال الأفة بالكامل جراحياً مع تعبئة مكان الأستئصال، وتم تأكيد التشخيص النهائي بتقرير فحص نسيجي مرضي.

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INTRODUCTION

Cholesterol granuloma (CG) is a histopathological entity with a cystic appearance [1]. Cholesterol granulomas form as the result of a foreign body reaction to precipitated cholesterol crystals within an area of tissue where previous bleeding occurred. While the pathogenesis of this bleeding is still debated, the result is a mix of cholesterol clefts, hemosiderin pigment, and multi-nucleated giant cells with no epithelial lining [2]. This lesion can be found inside the mastoid antrum and air cells, frequently related to chronic middle ear diseases; however, it is extremely rare in paranasal sinuses and even rarer in the mandible [3], which gives us a reason to report this rare occurrence of this lesion in the mandible.

Case Presentation

We report a case of a sixty-five-year-old male patient who is referred to the oral and maxillofacial department in Al-Kadhimiya Medical City in Baghdad. The patient is edentulous, and the lesion is discovered by panoramic radiograph after the complaint of an ill-fitting denture by slight buccal bone expansion on the right body area of the mandible. The panoramic radiograph reveals a well-defined unilocular radiolucent lesion on the right

mandibular area clinically, a 3 cm painless lesion with a slight buccal bone expansion covered with normal oral mucosa (Figure 1).

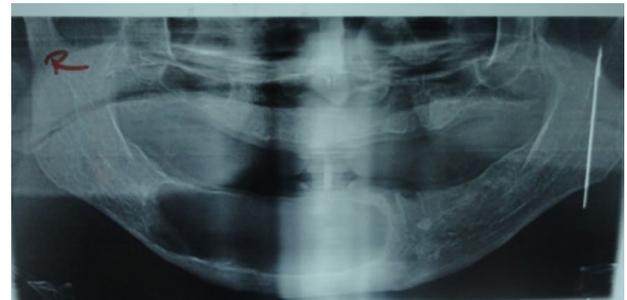


Figure 1: Panoramic radiograph showing well-defined unilocular radiolucent lesion (cholesterol granuloma) on the right mandibular part of 65-year patient.

Aspiration from the lesion was negative. The decision is to take an incisional biopsy under local anesthesia, and the histopathological examination reports characteristic pointed clefts containing crystals of cholesterol esters surrounded by foreign body granulomatous tissue reaction with a foreign body giant cell population. The patient was prepared for surgical operation under general anesthesia, and complete excision of the lesion and

iodoform packing was inserted into the bony cavity to eliminate dead space formation (Figure 2).

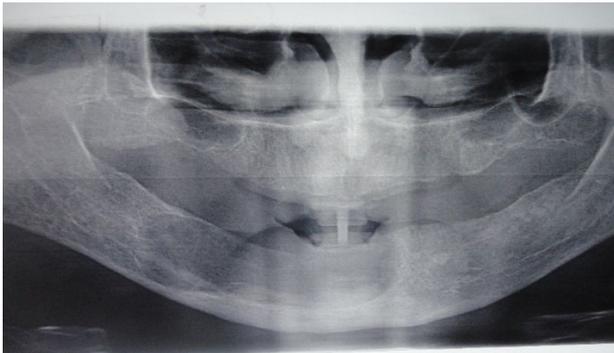


Figure 2: Post-operative panoramic radiographic image for the patient 6 weeks after the enucleation of cholesterol granuloma.

Table 1: Cases diagnosed with mandibular cholesterol granuloma

Authors	No. of cases	Publication year	location	Patient age (year)	Reference
Hirschberg <i>et al.</i> [11]	1	1988	mandible	55	11
Kim <i>et al.</i> [12]	1	2007	mandible	68	12
Shin <i>et al.</i> [6]	3	2007	mandible	68, 47, and 19	6
Lee <i>et al.</i> [3]	1	2010	mandible	68	3
Alkan <i>et al.</i> [1]	2	2014	mandible	57 and 67	1
Kamboj <i>et al.</i> [4]	3	2016	mandible	38, 45, and 47	4
Fernandez-Olarte <i>et al.</i> [2]	1	2017	mandible	31	2
Saruhan <i>et al.</i> [10]	1	2018	mandible	58	10
Gosnell <i>et al.</i> [7]	1	2022	mandible	6	7

Cholesterol granulomas occur commonly in any of the air cells of cranial bones, such as in the middle ear cavity, mastoid process, and frontal and maxillary sinus. Cholesterol granulomas that are found generally in the mandible usually appear as a small apical lesion in a panoramic radiograph. There are few cases in which cholesterol granulomas appear as an independent and extensive lesion [6]. In our case the panoramic radiograph reveals a large, well-defined unilocular lesion in the body area of the edentulous mandible. There are two major theories of pathogenesis for cholesterol granulomas: 1) exposed marrow theory and 2) obstruction-vacuum theory [7], so that the occurrence of this lesion in edentulous areas may be due to trauma from ill-fitting dentures or previous extraction in the area, and this conclusion coincides with the opinion of Hellquist *et al.* in 1984 [8], and more recently, Ko *et al.* [9] suggested that CG develops when hematomas are confined to close compartments as a consequence of poor drainage. Considering that, exodontia of the inferior right first molar could be the traumatic factor that caused the lesion. Till now, the cholesterol granuloma doesn't represent an independent pathological entity since its pathogenesis is yet unknown [6]. There is no specific radiographic presentation for CG, and it could occur in both jaws with and without odontogenic cysts [10], as the diagnosis made will be based on histopathological examination. However, the treatment of the CG in the oral cavity is mainly surgical excision, usually by enucleation, and recurrence is quite rare [2].

Conclusion

It is very important to consider cholesterol granuloma in the differential diagnosis of mandibular cystic (unilocular, multilocular) lesion, as its clinical and radiographic characteristics are nonspecific. Although cholesterol

Postoperatively, there were no complications mentioned regarding nerve injury or hematoma formation. The patient was hospitalized only on the day of operation and discharged the next day. The pack was removed gradually as an outpatient, and the patient was followed for several months until signs of bone formation occurred.

DISCUSSION

We report this case as a rare clinical entity since there are 14 previously reported cases of cholesterol granulomas that presented within the mandible till 2022 [4,5] (Table 1).

granuloma isn't considered an independent pathological entity, it's necessary to report the general characteristic nature of this rare pathological entity when it occurs in the oral cavity, especially the jaws. We need more studies on maxillary and mandibular cholesterol granuloma cases to learn more about the unique nature of this intra-bony lesion and better understand this rare condition.

Conflict of interests

The author declares no conflict of interest.

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Data sharing statement

N/A.

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