TREATMENT OF GIANT CELL GRANULOMA WITH INTRALESIONAL CORTICOSTEROID INJECTIONS: A CASE REPORT

Dev Hücreli Reparatif Granulomanın İntralezyonel Kortikosteroid Enjeksiyonu ile Tedavisi: Olgu sunumu

Özlem Filiz BAYAR, Gülşüm AK

Received: 13/05/2014
Accepted: 04/07/2014

ABSTRACT

Giant cell granuloma is rare in the head and neck region and most commonly affects the maxilla and mandible. Giant cell granulomas are benign but occasionally aggressive lesions that are traditionally treated with surgery. Because it is a benign process, less radical and non-surgical treatment alternatives are required. Corticosteroid injection is a viable alternative in the treatment of central giant cell granuloma to avoid surgery. We aim to present a case which was successfully treated with intralesional corticosteroid injection in the maxilla.

Keywords: Giant cell granuloma; intralesional corticosteroid injection; maxilla; nonsurgical treatment; surgical treatment

ÖZ

Dev Hücreli Reparatif Granuloma (DHRG) baş boyun bölgesinde nadir görülmekle birlikte birlikte genellikle maksilla ve mandibulayı etkiler. DHRG selim bir lezyondur ancak genellikle agresif olup tedavisi geleneksel olarak cerrahıdır. Lezyonun selim karakteri nedeniyle daha az radikal olan ve cerrahi olmayan tedavi şekilleri tercih edilmektedir. DHRG tedavisinde cerrahiden kaçınıldığı durumlarda kortikosteroid enjeksiyonu alternatif bir tedavi olarak düşünülebilir. Bu yayında amacımız; maksilla ile intralezyonel kortikosteroid enjeksiyonu ile başarılı tedavi ettiğimiz bir olgumuzu sunmaktır.

Anahtar kelimeler: Dev hücreli granuloma; intralesyonel kortikosteroid enjeksiyonu; üst çene; cerrahi olmayan tedavi; cerrahi tedavi
Introduction

The giant cell granuloma (GCG) is an uncommon benign bony lesion which is usually located in the mandible or maxilla (1). It accounts for less than 7% of all benign lesions of the jaws in tooth-bearing areas (2). World Health Organization defines GCG as an intraosseous lesion consisting of cellular fibrous tissue that contains multiple foci of hemorrhage, aggregations of multinucleated giant cells and occasionally trabeculae of woven bone (3). The etiology of GCG still remains controversial. However, it is thought to be a reactive, inflammatory, infective, or neoplastic process (4). Histologically, multinucleated giant cells, in a cellular vascular stroma, and often new bone formations are detected like Brown tumor. GCG lesions are similar to those found in hyperparathyroidism, neurofibromatosis type 1, Noonan syndrome and Cherubism (5). GCG affects both children and adults. 75% of GCG patients are younger than 30 years. It is twice as frequent in females than males. It usually occurs in the anterior maxilla but may also be seen in the anterior or posterior mandible (6). The lesion may appear as an unilocular or multilocular radiolucency with well- or ill-defined margins; varying degrees of expansion and erosion of the cortical plates. Root resorption has been reported (7). GCG is divided into two categories according to its clinical behavior: aggressive and nonaggressive. The nonaggressive form is more commonly seen with characteristic slow-growth pattern and painless swelling. The aggressive form is characterized by one or more of the following features: pain, paresthesia, root resorption, rapid expansion, cortical resorption and high recurrence rates after surgical curettage. The aggressive form is mostly found in younger patients. There is no histological difference between aggressive and nonaggressive type. Size and number of giant cells may influence clinical behaviour of the lesions (7, 8). The common treatment of GCG is surgery. Simple curettage, curettage with peripheral osteotomy, en bloc resection and cryosurgery are surgical treatment options. 5 mm surgical margins that extend to healthy tissues are recommended to avoid recurrences. Aggressive lesions with cortical perforations have high recurrence rates. En bloc resection might provide the greatest certainty of a cure in aggressive GCG (9). Various authors proposed excision via curettage and reported overall recurrence rates that range from 16% to 49%. Recurrence rates have been associated with surgical technique and lesion characteristics (7, 10). Recently non-surgical treatments have been described and their benefits may be worthy of consideration. These are; subcutaneous alpha interferon, systemic and nasal spray calcitonin, corticosteroid injection and radiation exposure. Particularly in children, surgical approach may result in tooth loss, facial deformity including discontinuity defects, or sensory nerve deficits. In such cases non-surgical treatments would be more preferable (11). The aim of this report is to present a case with GCG in the maxilla who has been treated successfully with intralesional corticostroid injections.

Case report

A 42-year-old male patient admitted to our department with complaint of swelling in the left maxilla. There was no history of previous trauma or dental problems. The results of blood count and routine laboratory tests were normal. There was no systemic disease. Clinical evaluation revealed no evidence of cervical lymphadenopathy. The intraoral evaluation revealed a non-ulcerated, firm, elastic vestibular swelling in his left edentulous maxilla. Panoramic radiograph was non-contributory. The patient underwent computed tomography (CT) that revealed a hypodense, oval-shaped, unilocular, 1.5 cm in diameter, non-mineralized osteolytic lesion in the left maxilla (Figure 1). A preoperative intra-oral biopsy of the lesion revealed a morphology consistent with giant cell granuloma (Istanbul University Medical Faculty Department of Pathology No: 18240/2013). Brown tumours are identical to GCG both histologically and radiographically, but they were ruled out on the basis of normal serum levels of calcium, phosphorus, alkaline phosphatase and good renal function. Considering the size of the lesion, it was decided that surgical curettage would create a large defect that could hamper the use of removable prosthesis. Therefore, intra-lesional corticostroid injection was presented as an alternative treatment. Patient was informed about the procedure and signed informed consent form was obtained.
1 ml of lidocaine without epinephrine (Jetokain Simplex, Adeka İlaç San. ve Tic. A.Ş, İstanbul, Turkey) and 1 ml of triamcinolone acetenoide (Kenacort-A 40 mg, Bristol-Myers-Squibb Pty Ltd., New York, NY, USA) were mixed and intra-lesional injection was performed in different areas of lesion once a week (Figure 2) for six weeks duration. Two weeks later, lesion’s dimensions were observed to decrease and at the end of 6 weeks, lesion in the oral mucosa was not visible to naked-eye observation (Figure 3). At four month control no lesion was found in CT examination and new bone formation was apparent (Fig 4). Panoramic radiography obtained at one year follow-up revealed no recurrence of the lesion (Figure 5).

Discussion

The conventional therapy of GCG is enucleation or resection. This approach, however, is often associated with recurrences rates that range from 19% to 49% (10). Aggressive curettage and en bloc resection may decrease this ratio but, in case of large lesions, it also results in large tissue defects. Loss of teeth and/or germs in young patients are often unavoidable consequences. Therefore, non-surgical
Treatment of giant cell granuloma

extracelular production of lysosomal proteases (which mediate osteoclastic bone resorption) and steroidal apoptotic action on the osteoclast-like cells (MNGCs).

Kurtz et al. (26), have injected a mixture that consists of equal amount of triamcinolone acetonide (10 mg/mL) and a local anesthetic (bupivacaine 0.5% with epinephrine 1:200,000). The suggested dosage is 2 mL per 2 cm of radiolucency and the injections should be administered in multiple locations once a week, for at least 6 weeks. In other studies concerning the use of corticosteroid injections, authors suggested that 6 month to 3 years of treatment period is required for giant cell granuloma (11). Presence of calcified tissue has been reported after 2 years of treatment (12).

Our protocol was similar to those of Terry and Jacoway (12), Kermer et al. (24), and Rajeevan et al. (27) who had suggested weekly injections for 6 weeks duration for the treatment of giant cell granuloma. At the end of 6 weeks, the lesion in our case was found to disappear, at least, in the intra-oral examination. At 4 month follow-up CT, the area previously occupied by the lesion was observed to be filled with mineralized tissue. Moreover, there were no signs of recurrence at 1 year follow-up. Suppression of adrenal hormone production occurs when sufficient amount of corticosteroid is administered daily; however, our patient received weekly low dose of steroid therapy that did not alter adrenal gland functions. Our patient did not experience any side effects related to the steroid treatment. Before the treatment, biopsy must be obtained to establish the diagnosis. Blood levels of parathyroid hormone, calcium, and phosphorus should be determined to rule out hyperparathyroidism (28).

Conclusion

The treatment of GCG with intra-lesional injections of corticosteroids can be used as an alternative to surgery, especially in large lesions which may compromise vital structures. This technique is well-tolerated and non-invasive. However, the lack of well-established protocols, especially in terms of drug dosage and treatment duration, warrants further controlled clinical trials which focus on long term follow-up and recurrence rates.

Source of funding
None declared

Conflict of interest
None declared
References

1. Jaffe HL. Giant-cell reparative granuloma, traumatic bone cyst, and fibrous (fibro-osseous) dysplasia of the jawbones. Oral Surg Oral Med Oral Pathol 1953;6(1):159-175.

2. Regezi JA. Comments on pathogenesis and medical treatment of central giant cell granulomas. J Oral Maxillofac Surg 2004;62(1):116-118.

3. Barnes L, Eveson JW, Reichart P, Sidransky D (eds), Pathology and genetics of head and neck tumours. In: Kleihues P, Sobin LH (eds), World Health Organization classification of tumours. Lyon, France: IARC Press, 2005.

4. Cawson RA, Odell EW, Porter S. Cawson’s Essentials of Oral Pathology and Oral Medicine. Edinburg:Churchill Livingstone;Seventh edition.2002;139-141.

5. Miloro M, Quinn PD. Synchronous central giant cell lesions of the jaws: report of a case and review of the literature. J Oral Maxillofac Surg 1995;53(11):1350-1355.

6. Whitaker SB, Waldron CA. Central giant cell lesions of the jaws. A clinical, radiologic, and histopathologic study. Oral Surg Oral Med Oral Pathol 1993;75(2):199-208.

7. Chuong R, Kaban LB, Kozakewich H, Perez-Atayde A. Central giant cell lesions of the jaws: a clinicopathologic study. J Oral Maxillofac Surg 1986;44(9):708-713.

8. Gungormus M, Akgul HM. Central giant cell granuloma of the jaws: a clinical and radiological study. J Contemp Dent Pract 2003;4(3):87-97.

9. Tosco P, Tanteri G, Iaquinta C, Fasolis M, Roccia F, Perrone S, Garzino-Demo P. Surgical treatment and reconstruction for central giant cell granuloma of the jaws: a review of 18 cases. J Cranio maxillofac Surg 2009;37(7):380-387.

10. de Lange J, van den Akker HP, Klip H. Incidence and disease-free survival after surgical therapy of central giant cell granulomas of the jaw in The Netherlands: 1990-1995. Head Neck 2004;26(9):792-795.

11. Vered M, Buchner A, Dayan D. Immunohistochemical expression of glucocorticoid and calcitonin receptors as a tool for selecting therapeutic approach in central giant cell granuloma of the jawbones. Int J Oral Maxillofac Surg 2006;35(8):756–760.

12. Terry BC, Jacoway JR. Management of central giant cell lesion: an alternative to surgical therapy. Oral Maxillofac Surg Clin North Am 1994;6:579-600.

13. Sabanas AO, Dahlin DC, Childs DS Jr, Ivins JC. Postradiation sarcoma of bone. Cancer 1956;9(3):528-542.

14. Eisenbud L, Stern M, Rothberg M, Sachs SA. Central giant cell granuloma of the jaws: experiences in the management of thirty-seven cases. J Oral Maxillofac Surg 1988;46(5):376–384.

15. Cheng YY, Huang L, Kumta SM, Lee KM, Lai FM, Tam JS. Cytochemical and ultrastructural changes in the osteoclast-like giant cells of giant cell tumor of bone following bisphosphonate administration. Ultrastruct Pathol 2003;27(6):385-391.

16. Kaban LB, Mulliken JB, Ezekowitz RA, Ebb D, Smith PS, Folkman J. Antiangiogenic therapy of a recurrent giant cell tumor of the mandible with interferon alpha-2a. Pediatrics 1999;103(6 Pt 1):1145-1149.

17. Kaban LB, Troulis MJ, Ebb D, August M, Hornek CJ, Dodson TB. Antiangiogenic therapy with interferon alpha for giant cell lesions of the jaws. J Oral Maxillofac Surg 2002; 60(10):1103-1111.

18. Harris M. Central giant cell granulomas of the jaws regress with calcitonin therapy. Br J Oral Maxillofac Surg 1993;31(2):89-94.

19. Allon DM, Anavi Y, Calderon S. Central giant cell lesion of the jaw: nonsurgical treatment with calcitonin nasal spray. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2009;107(6):811-818.

20. de Lange J, van den Akker HP, Veldhuizen van Zanten GO, Engelshove HA, van den Berg H, Klip H. Calcitonin therapy in central giant cell granuloma of the jaw: a randomized double-blind placebo-controlled study. Int J Oral Maxillofac Surg 2006;35(9):791-795.

21. Pogrel MA, Regezi JA, Harris ST, Goldring SR. Calcitonin treatment for central giant cell granulomas of the mandible: report of two cases. J Oral Maxillofacial Surg 1999;57(7):848-853.

22. Flanagan AM, Nui B, Tinkler SM, Horton MA, Williams DM, Chambers TJ. The multinucleate cells in giant cell granulomas of the jaw are osteoclasts. Cancer 1988;62(6):1139-1145.

23. Jacoway JR, Howell FV, Terry BC. Central giant cell granuloma: an alternative to surgical therapy. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1988;66:572.
24. Kermer C, Millesi W, Watzke IM. Local injection of corticosteroids for central giant cell granuloma: a case report. Int J Oral Maxillofac Surg 1994;23(6 Pt 1):366-368.
25. Carlos R, Sedano HO. Intralional corticosteroids as an alternative treatment for central giant cell granuloma. Oral Surg Oral Med Oral Pathol Orla Radiol Endod 2002;93(2):161-166.
26. Kurtz M, Mesa M, Alberto P. Treatment of a central giant cell lesion of the mandible with intralional glucocorticosteroids. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2001;91(6):636-637.
27. Rajeevan NS, Soumithran CS. Intralional corticosteroid injection for central giant cell granuloma. A case report. Int J Oral Maxillofac Surg 1998;27(4):303-304.
28. Sezer B, Koyuncu B, Gomel M, Gunbay T. Intralional corticosteroid injection for central giant cell granuloma: a case report and review of the literature. Turk J Pediatr 2005;47(1):75-81.

Corresponding Author: 
Özlem Filiz BAYAR 
Department of oral and Maxillofacial Surgery 
Faculty of Dentistry Istanbul University 
34093-Capa-Fatih-Istanbul/ TURKEY 
Phone: +90 530 208 39 98 
e-mail: ozlemflz@gmail.com