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Treatment With Steroids of a Giant Cell Granuloma of the Maxilla

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This case report of giant cell granuloma involving the maxilla is of particular interest for two reasons: the locally aggressive clinical course contrasting with the diagnosis of a benign disease and the spectacular, although transient, response under steroid treatment. Corticotherapy should be further tested in cases of invasive or recurring giant cell granuloma.

Key words: giant cell granuloma, maxillary tumors, steroids

INTRODUCTION

The clinico-pathological entity of "giant cell reparative granuloma" was first described by JAFFE in 1953 [1]. The term "reparative" grew obsolete and is seldom used by pathologists today. The mandibular bone, particularly its horizontal branch, is more frequently involved than the maxilla.

Presenting symptoms of maxillary lesions are often nasal obstruction and epistaxis. Women are more frequently affected than men; the majority of patients are young adults and children [2]. Giant cell granuloma may be consequent to a trauma. Because surgical curetting of such lesions achieves cure in most cases, the role of radiation therapy is not established [3–5], and no information is available about hormone action or chemotherapy.

The present case is of particular interest because of its unusual recurrence after extensive surgery and its dramatic, although short-lasting, response to steroid treatment.

CASE REPORT

A 37-year-old man presented with complaints of discomfort and fulness in the left nasogenian region and a left suborbital hypoesthesia. Soon thereafter the patient exper-

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ienced obstruction of the left nasal fossa and progressive exophthalmos. Skull laminograms showed a densified left maxillary sinus, with erosion of the floor of the orbit and invasion of the left nasal fossa, sphenoid sinus, and ethmoid cells (Fig. 1). On CAT scan, the pterygoid fossa was also shown to be invaded through the posterior wall of the antrum (Fig. 2). A biopsy was obtained from a Caldwell-Luc procedure and provided the diagnosis of giant cell granuloma. Fibroblasts made up the stroma cells and usually were spindle shaped; giant cells were sparse but diffusely and irregularly distributed throughout the lesion; mitotic figures were occasionally found in fibroblasts but not in giant cells; the stroma was collagenous with abundant interstitial thin-walled vascular channels. There was no evidence of malignancy on cell or tissue features (Fig. 3). The patient underwent a radical subtotal left maxillectomy, saving the eye thanks to a skin graft reconstruction of the orbital floor. On surgical specimen, the tumor was measured 7 X 6 X 5 cm and appeared pink in color, fibromatous when sectioned, and firmly anchored in the maxillary arcade. Pathological diagnosis was unchanged. Slides were further sent to two independent committees of pathologists (the Belgian Committee for maxillo-facial bone lesions and the Dutch Bone Tumor Committee), which confirmed the diagnosis of giant cell granuloma. A recurrence became visible within four weeks as a large invasive tumor process filling the entire maxillectomy site (Fig. 4).

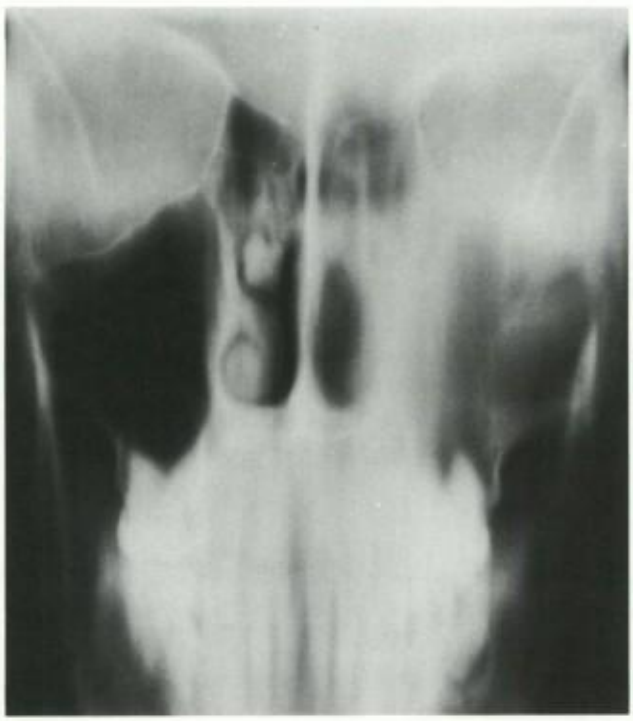


Fig. 1. Skull laminogram with left maxillary tumor process invading nasal fossa and ethmoid cells. Floor of orbit is destroyed medially.

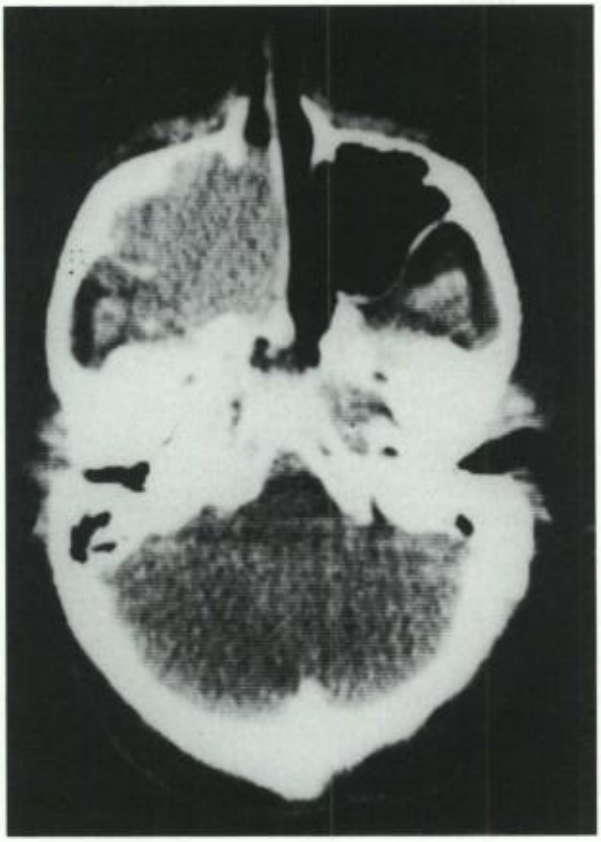


Fig. 2. CAT-scan taken at the basilar process level and showing the antrum filled by tumor, which secondarily invaded the pterygoid fossa through the posterior sinus wall.

Repeated laminograms confirmed findings mentioned above and showed exophthalmos due to orbit involvement and progression of the disease into the temporal fossa (Fig. 5). The diagnosis of giant cell granuloma was confirmed with supplemental biopsy of recurring tumor.

The patient had his left external carotid artery ligated for an intraoral hemorrhage and underwent radiation therapy (Cobalt 60), up to a total dose of 4,500 rads without any tumor regression. Thereafter, the patient received two consecutive courses of high-dose methotrexate (1,5000 mg, six hour infusions, followed by Leucovorin rescue 12 mg every six hours X three days) at ten day intervals, again without tumor regression. Further treatment with CYVADIC* [6] combination chemotherapy was also ineffective. By that time, the tumor had grown to a large, hard, erythematous mass expanding 5 cm beyond the frontal plane, and inside the oral cavity 2 cm below the level of the hard palate. It reached

*ADM 50 mg/m^2 IV day 1; DTIC 250 mg/m^2 IV days 1 to 5; CPA 500 mg/m^2 IV day 1; VCR 1.5 mg/m^2 IV day 1.

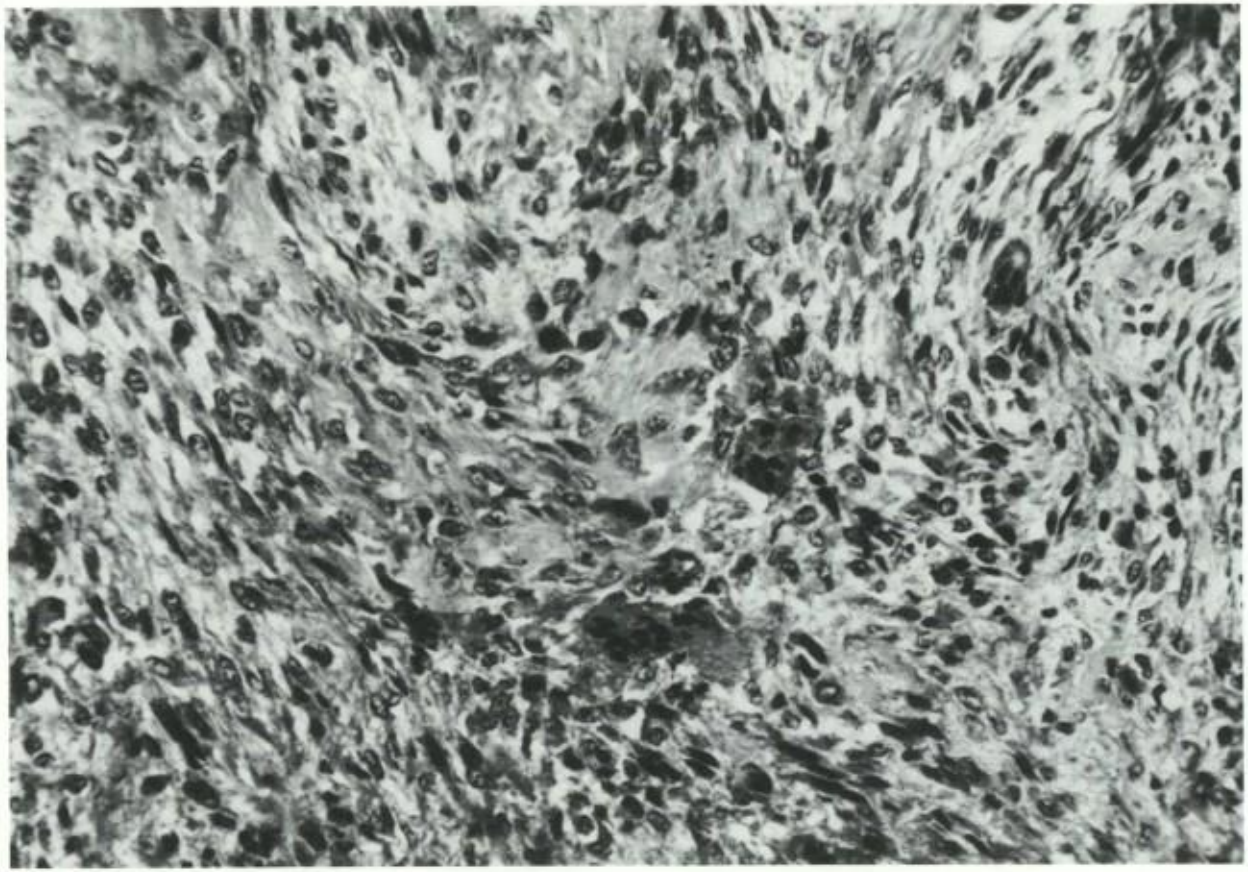


Fig. 3. General pattern of the lesion with stroma made up of fibroblasts and diffuse spreading of giant cells. No sign of neoplastic degeneration could be found (haematoxylin-eosin Safran stain; magnification × 400).

the temporal fossa posteriorly. The left eye showed exophthalmos and chemosis, and the patient complained of diplopia. The lips and left nostril were deformed and trismus was present.

Physical examination was otherwise normal. Performance status was 90% after Karnofsky index.

Laboratory data were as follows: Hb, 13.3 gm%; WBC, 11,100 (85% neutrophils); platelets, 290,000; sedimentation rate, 30 mm/hour. Repeated determinations of Ca, P, and PTH were always within normal limits. Blood chemistry was normal except for liver function tests: alkaline phosphatase 187 units (N → 85), γ GT 105 units (N → 30), 5′ Nuc 19.9 units (N → 15). Protein electrophoresis showed elevated γ-globulins but no monoclonal peak. Laparoscopy and liver biopsy revealed mild cholestasis without metastases.

Treatment with dexamethasone, 20 mg each day, was initiated and resulted in a quick and dramatic response, with near-complete tumor regression, a residual suborbital "ridge" of 4 × 2 cm no longer expanded beyond the frontal plane. As a consequence of tumor necrosis inside the mouth, the patient was again able to wear his palatal prosthesis; diplopia disappeared and the lips and left nostril were no longer deformed (Fig. 6).

The remission lasted only six weeks (Table I). Regrowth of the tumor was concomitant with a reduction in the doses of dexamethasone (see Table I), necessitated by the onset of steroid complications – Cushingoid features, herpes zoster, pyoderma, and severe proximal myopathy.

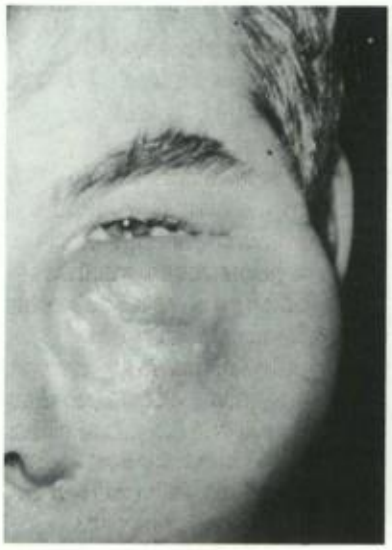
DISCUSSION

Although the present case had been diagnosed as "giant cell granuloma" by different pathologists, its clinical behaviour contrasted from the start with the usually benign course of the disease. Even in the rare cases of recurrence, giant cell granulomas have usually a much less aggressive clinical course [2, 4, 7–10]. As first treatment, extensive surgery failed to control this locally aggressive lesion, which was considered at the time as a sarcome-like malignancy, despite the pathological diagnosis. That is why high-dose methotrexate was attempted according to Jaffé's treatment schedule [11], but without any benefit. Radiation therapy was also ineffective in controlling this granuloma of particular nature.

Brown tumor of bone and giant cell granuloma have identical histologic appearance [12]. Recurring lesions are occasionally caused by primary hyperparathyroidism [4, 13, 14]; such occurrence was excluded in the present case after PTH determinations, which

TABLE I. Steroid Schedule and Response

Dose	Result
20 mg each day × 21 days	Dramatic regression
↓	
15 mg each day × 10 days	Regression
↓	
15 mg every other day × 10 days	Steady state
↓	
5 mg every other day × 15 days	Relapse
↓	
10 mg every other day × 21 days	Progression



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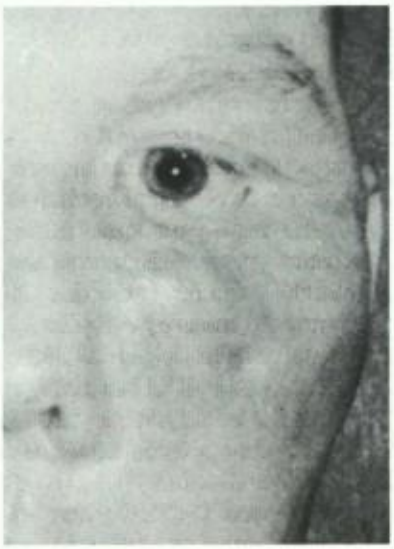

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Fig. 4. Patient aspect when tumor recurred after maxillectomy, with bulging mass occupying maxillectomy site and orbital floor.

Fig. 5. Skull laminogram evidencing a huge tumor filling the site of maxillectomy up to the nasal fossa and orbit, and fusing into the left temporal fossa.

Fig. 6. As patient appeared on the twentieth day of steroid therapy after dramatic regression of all tumor parameters.

always were found within normal limits. Other giant cell lesions like giant cell tumors [12] were also considered for diagnosis and were excluded by the histological features.

Hayward [15] pointed out in 1959 how hazardous it was to correlate histopathological changes in giant cell lesions with their clinical course. Richter also insists on the importance of the clinical course in the final interpretation of diagnosis [16].

The response to treatments applied in the present case is another point of interest when we consider the spectacular effect induced by steroids, used as an ultimate therapeutic attempt and by analogy with their use in the orbital pseudotumor [17] To the best of our

knowledge, the use of steroids has never been published in cases of giant cell granuloma. This dramatic response, with massive slough of the lesion achieved at the fourth day of therapy, raises the question of their sensitivity to steroids. The short duration of remission could be due in part to the necessity of reducing dosage and schedule in order to avoid more severe complications from chronic steroid therapy.

A discontinued high-dose steroid schedule, such as for lymphomas, might be better tolerated and permit a longer treatment. Therefore, we would propose further studies on steroid therapy prior to surgery for invasive giant cell granulomas and for recurring lesions.

REFERENCES

1. Jaffé HL: Giant cell reparative granuloma, traumatic bone cyst and fibrous (fibro-osseous) dysplasia of the jawbones. Oral Surg Oral Med Oral Pathol 6:159–175, 1953.
2. Waldron CA, Shafer WG: The central giant cell reparative granuloma of the jaws. An analysis of 38 cases. Am J Clin Pathol 45:437–447, 1966.
3. Lichtenstein L: Giant cell tumor of bone. J Bone Joint Surg 33:143–150, 1951.
4. Hamlin WB, Lund PK: "Giant cell tumors" of the mandible and facial bones. Arch Otolaryngol 86:76–83, 1967.
5. Krausen AS, Pullon PA: Giant cell lesions of the jaws in children: A time for circumspection. Trans Am Acad Ophthalmol Otol 82:452–459, 1976.
6. Wilbur JR, Sutow WW, Sullivan MP, Gottlieb JA: Chemotherapy of sarcomas. Cancer 36:765–769, 1975.
7. Leban SG, Lepow H, Stratings GT, Chu F: The giant cell lesions of jaws: Neoplastic or reparative? J Oral Surg 29:398–404, 1971.
8. Austin LT, Dahlin DC, Rayer RQ: Giant cell reparative granuloma and similar conditions affecting the jawbones. Oral Surg 12:1285–1295, 1959.
9. Dehner LP: Tumors of the mandible and maxilla in children. 1. Clinicopathologic study of 46 histologically benign lesions. Cancer 31:364–384, 1973.
10. Wolfowitz BL, Schumaman A: Giant cell lesions of the temporal bone. With a case report. S Afr Med J 47:1397–1399, 1973.
11. Jaffé N, Paed D: Recent advances in the chemotherapy of metastatic osteogenic sarcoma. Cancer 30:1627–1631, 1972.
12. Ray JW, Arthur JE: Giant cell lesions of the face and mouth. Laryngoscope 76:1984–1990, 1966.
13. Blach BK, Ackerman LV: Tumors of the parathyroid. Cancer 3:415–444, 1950.
14. Springer J, Thanik KD: Central giant cell reparative granuloma of mandible. Oral Surg Oral Med Oral Pathol 28:785–790, 1969.
15. Hayward JR: Malignant giant cell tumor of the mandible. J Oral Surg 17:75–80, 1959.
16. Richter KJ, Grammer FC, Boies L: Central giant cell lesion in the angle of the mandible: Review of the literature and report of a case. J Oral Surg 31:26–30, 1973.
17. Heersink B, Rodrigues MR, Flanagan JC: Inflammatory pseudo-tumor of the orbit. Ann Ophthalmol 9:17–29, 1977.