Cholesterol granuloma of the maxillary sinus. A case report*

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SUMMARY *A patient with cholesterol granuloma of the maxillary sinus with hypercholesterolemia is presented.*

Keywords: maxillary sinus, hypercholesterolemia, cholesterol granuloma

INTRODUCTION

Cholesterol granuloma originating from the paranasal sinus is an uncommon entity and diagnosis depends on the radiological findings (CT and MRI) and its characteristic histological appearance. It is generally assumed considered that poor ventilation and impaired drainage are the aetiological cause. A patient with cholesterol granuloma of the maxillary sinus with hypercholesterolemia is presented.

CASE REPORT

A 37-year-old male presented with a 3-to-4-year history of recurrent headaches and nasal obstruction. Previous antibiotics failed to improve the symptoms. Sinus X-rays showed an opaque left antrum. (MRI was not performed.) The patient's serum cholesterol was 457 mg/dl at the first visit and 357 mg/dl, one month later. A Caldwell-Luc operation was performed on the left maxillary sinus and this revealed a polypoid mass, which had a grayish-orange appearance due to its lipid content. Histopathological examination demonstrated a granulomatous reaction in the presence of typical needle-shaped cholesterol clefts and haemorrhage, consistent with cholesterol granuloma (Figure 1).

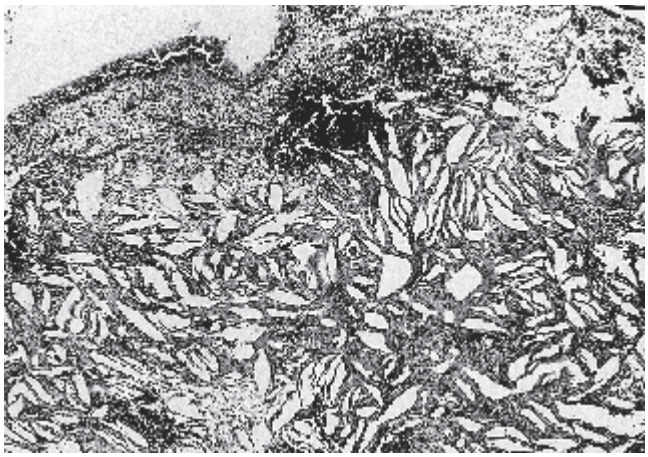

Figure 1. Histopathological examination of our case shows cholesterol clefts surrounded by scanty foreign-body giant cells, an inflammatory infiltrate and haemorrhage underneath the respiratory epithelium.

DISCUSSION

Cholesterol granuloma is a histopathological entity, with lesions frequently found in association with chronic middle ear disease. In contrast, they have been uncommonly reported in the maxillary antrum, and there are only some isolated case reports on cholesterol granuloma in the paranasal sinus system (Wyler et al., 1974; Milton and Bickerton, 1986; Aker Güneş et al., 1988; Bütler and Grossenbacher, 1989; Wolfson et al., 1993).

It has been described as a foreign-body reaction to cholesterol crystals in the tissue. Such a reaction has been demonstrated in animal tissues by injecting sterile cholesterol. Cholesterol crystals are a powerful stimulus provoking a foreign-body reaction in tissues (Hellquist et al., 1984).

Various clinical observations and experimental findings suggest that the pathogenesis of paranasal cholesterol granuloma is probably due to such factors as obstruction of ventilation and drainage, and also to haemorrhage. The key factor is the presence of a closed cavity containing exudate and blood. The lack of drainage leads to degradation of the blood components, producing an accumulation of haemosiderin and cholesterol crystals (Wyler et al., 1974; Milton and Bickerton, 1986; Aker Güneş et al., 1988; Bütler and Grossenbacher, 1989; Wolfson et al., 1993). Hellquist et al. (1984) have reported that the closed cavities of the paranasal sinuses provide favourable conditions for cholesterol to dissociate from the lipoprotein complex, to precipitate and to give rise to a ganulomatous reaction. On the other hand, cholesterol deposits are thought to be the product of fatty dege-

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neration of connective tissue, in which ventilation is observed by the products of inflammatory lesions (Hiraide et al., 1982; Sadé and Teitz, 1982). However, a definitive answer as regards the presence of cholesterol and its exact source still has not been given (Hiraide et al., 1982; Sadé and Teitz, 1982; Aker Güneş al., 1988; Bütler and Grossenbacher, 1989).

Cholesterol crystal deposits usually do not appear in patients with hypercholesterolemia (Wyler et al., 1974; Hiraide et al., 1982; Milton and Bickerton, 1986). Astonishingly, our patient's serum cholesterol level was high. To our knowledge, only one other case report on cholesterol granuloma associated with hypercholesterolemia has been reported in the literature (Wyler et al., 1974) and the present study is the second case report. However, it cannot be excluded that this association may be coincidental.

There were no specific X-ray findings of antral cholesterol granuloma. But the lesions arise from the mucosa and can be recognized on plain films and CT scans of the sinus as opacifications. MRI is more specific and a well-circumscribed mass with high signal intensity due to cholesterol crystals and/or haemoglobin degradation products is present (Sadé and Teitz, 1982). In the radiological differential diagnosis one has to consider mucoceles, cysts, degenerative disease and neoplasms (Wyler et al., 1974; Milton and Bickerton, 1986; Bütler and Grossenbacher, 1989).

The clinical symptomatology is non-specific and depends on the localization and extent in each individual case. Bone erosion may be seen in cholesterol granuloma showing expansive growth (Wyler et al., 1974; Milton and Bickerton, 1986; Bütler and Grossenbacher, 1989; Wolfson et al., 1993). Treatment consists of removal of the cholesterol granuloma and restoration of drainage of the affected sinus cavity. Full excision of the lesion is not required in all cases (Sadé and Teitz, 1982; Bütler and Grossenbacher, 1989; Raveau et al., 1992). Drainage and permanent aeration may be sufficient. MRI is useful for follow-up of treatment (Raveau et al., 1992; Marks and Smith, 1995). It should be possible to achieve adequate therapy by using an endoscopic approach through an enlarged natural ostium of the maxillary sinus (Marks and Smith, 1995).

REFERENCES

1. Aker Güneş H, Almaç A, Canbay E (1988) Cholesterol granuloma of the maxillary antrum. J Laryngol Otol 102: 630-632.
2. Bütler S, Grossenbacher R (1989) Cholesterol granuloma of the paranasal sinus. J Laryngol Otoly 103: 776-779.
3. Hellquist H, Lundgren J, Olofsson J (1984) Cholesterol granuloma of the maxillary and frontal sinuses. J Otorhinolaryngol Relat Spec 46: 153-158.
4. Hiraide F, Inouye T, Miyakagava N (1982) Experimental cholesterol granuloma: Histopathological and histochemical studies. J Laryngol Otol 96: 491-501.
5. Marks SC, Smith DM (1995) Endoscopic treatment of maxillary sinus cholesterol granuloma. Laryngoscope 105: 555-552.
6. Milton M, Bickerton RC (1986) A review of maxillary sinus cholesterol granuloma. Brit J Oral Maxillofac Surg 24: 293-299.
7. Raveau V, Vignaux O, Marsot-Dupuch K (1992) Cholesterol granuloma: Review of the literature. Ann Radiol 35: 81-84.
8. Sadé J, Teitz A (1982) Cholesterol in cholesteatoma and in the otitis media syndrome. Amer J Otol 3: 203-208.
9. Wolfson LR, Talmi YP, Halpern M, Levit I, Zohar Y, Gal R (1993) Cholesterol granulomas of the maxillary sinus presenting with nasal obstruction. Otolaryngol Head Neck Surg 109: 956-957.
10. Wyler AR, Leech RW, Reynolds AF, Ojemann GA, Mead C (1974) Cholesterol granuloma of the petrous apex. J Neurosurg 41: 765-768.

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