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Osteoblastoma of the nasal cavity

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Abstract
The clinicopathological features of a rare case of osteoblastoma of the nasal cavity arising from the nasal turbinate are reported and compared with four reported cases of osteoblastoma with nasal cavity involvement. Two of the five tumours involved the nasal cavity and paranasal sinuses. The remaining three tumours were confined in the nasal cavity; one arose from nasal bone and two from nasal turbinate periosteum. Four tumours were successfully treated with local excision. One tumour recurred locally after excision; the recurrence was apparently controlled by further local excision.

Key words: Osteoblastoma; Nose

Introduction

Osteoblastoma, an infrequent benign tumour of the bone, usually occurs in the vertebrae and long tubular bones. It occasionally occurs in the head especially the jaw bones. Only four cases with nasal cavity involvement have been reported in the literature (Fu and Perzin, 1974; Som *et al.*, 1979; Ducastelle *et al.*, 1985; Sooknundun *et al.*, 1986). We report a new case in which the tumour is intranasal, apparently arising from the periosteum of the nasal turbinate.

Case report

A 19-year-old man presented with recurrent right-sided epistaxis which began six months previously following a minor incidence of trauma. It had become more frequent and severe in the past three months. He had also noticed a bulging of the external nose in the right nasal bone area. Physical examination showed fullness, convexity and lateral displacement of the right nasal bone, and an erythematous right intranasal mass arising from the anterior aspect of the middle turbinate. Medially the mass impinged upon the nasal septum. The paranasal sinus X-rays were normal. Computerized tomography showed a large soft tissue mass in the anterior aspect of right nasal cavity, deviating the nasal septum to the left (Figure 1). The largest dimension of the mass was the anterior–posterior dimension which measured 3 cm.

A biopsy was carried out following endoscopic examination. Multiple punch biopsies eventuated in brisk bleeding which was easily controlled by placement of an anterior nasal pack. The biopsy was interpreted as an osteoblastic tumour suggestive of osteoblastoma. Definitive surgical extirpation of this lesion was carried out using a lateral rhinotomy approach. It was noted that the nasal bone was markedly thinned and bowed laterally. The tumour appeared to be arising from the right middle turbinate. It extended to the roof of the nose and impinged against the nasal septum, but a clean plane of cleavage could be found between the septum and the tumour. In addition, the tumour extended superiorly and a nearly clean plane of cleavage could be seen between it and the roof of the nasal cavity. The tumour was removed for the most part en bloc, but some piecemeal removal with cup forceps from the nasal roof was necessary. The right nasal cavity was splinted with silastic sheeting to prevent adhesions between the raw areas of the nasal septum and lateral nasal wall, as well as to prevent webbing superiorly in the nasal cavity. The thin nasal bone was sutured in the anatomical position. The intranasal splinting was ultimately removed three weeks post-operatively, and examination three months post-operatively demonstrated some minimal residual convexity of the right nasal bone, but no significant external deformity and no evidence of intranasal synechia formation. He remained well three years after surgery.

Pathological findings

The specimen consisted of multiple fragments of dark red, gritty tissue weighing 4 gm in aggregate. The largest fragment measured 2 × 1.5 × 1.5 cm. Histologically the lesion was composed of interconnecting osteoid islands and highly vascularized stroma (Figures 2 and 3). The osteoid tissue was rimmed by osteoblasts (Figure 3). The osteoblasts showed neither significant nuclear atypia nor mitotic activity. Scattered osteoclasts and small bony trabeculae were seen. The mucosal epithelium overlying the tumour showed squamous metaplasia. The lesion was diagnosed as an osteoblastoma.

Discussion

Osteoblastomas represent only 3 per cent of all benign tumours of bone (Barnes, 1985): histological features are identical to those of an osteoid osteoma. However these two entities can be separated from each other on the basis of size, radiographical appearance, location, and differences in pain characteristics (Barnes, 1985). The major differential diagnostic features separating osteoblastoma from osteoid osteoma are the larger size (>2 cm) and the absence of a nidus in the X-rays.

An osteoblastoma usually occurs in vertebrae, long tubular bones and small bones of the hands and feet. Ninety per cent of osteoblastomas occur in individuals under the age of 30 years with a peak incidence in the second decade and a range of 3–78 years (Mirra *et al.*, 1980; Huvos, 1991). It infrequently occurs in the head and neck structures: of the head and neck osteoblastomas, 75 per cent occur in the cervical vertebrae and jaw bones (Barnes, 1985).

Radiographically the osteoblastoma usually presents as a cor-

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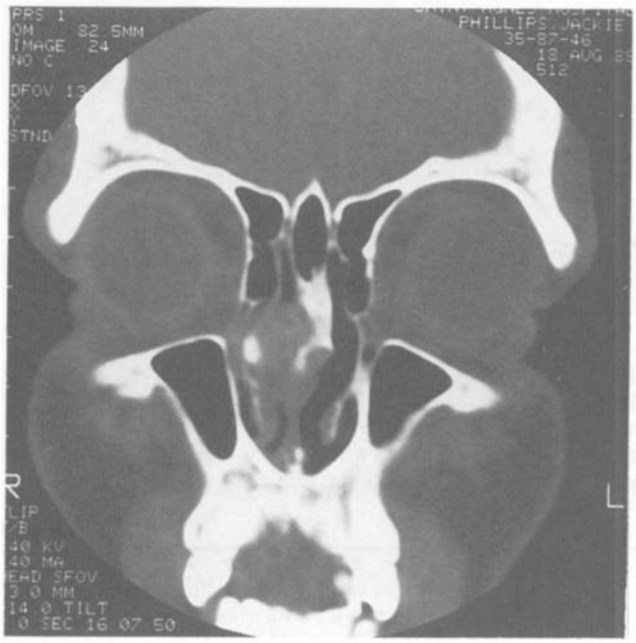

FIG. 1
Computerized tomography showing a right nasal mass deviating the nasal septum.

tical or medullary, diaphyseal or metaphyseal, round, oval or elongated, with well-defined radiolucency and variable mineralization (Pochaczevsky *et al.*, 1960; McLeod *et al.*, 1976). On rare occasions, it may arise from the periosteum rather than bone (Goldman, 1971; Farman *et al.*, 1976).

The case reported here represents a rare case of intranasal osteoblastoma. Its attachment to the nasal turbinate and the lack of radiographical evidence of bone involvement indicated that it arose from the periosteum of the nasal turbinate bone. A review of the literature revealed only four cases of osteoblastoma with nasal cavity involvement (Fu and Perzin, 1979; Som *et al.*, 1979; Ducastelle *et al.*, 1985; Sooknundun *et al.*, 1986). The clinicopathological features of these four cases and our case are summarized in Table I. In two of these cases the tumour also involved paranasal sinuses (Fu and Perzin, 1974; Som *et al.*, 1979). The tumour arose from the nasal bone in one of the two cases with nasal involvement only (Sooknundun *et al.*, 1986). In the remaining case, the tumour was thought to have arisen, as in our case, from middle turbinate periosteum (Ducastelle *et al.*, 1985). All five nasal osteoblastomas were greater than 2.5 cm in size. All five patients were treated with local excision. The tumour was apparently eradicated by local excision in four cases. Local recurrence developed in one case in which the primary tumour was locally aggressive with intracranial extension. The local-recurrence was treated with further local excision and the patient remained well nine months later.

Osteoblastomas involving paranasal sinuses are also very rare. Besides the two cases with concomitant nasal and paranasal sinus involvement (Fu and Perzin, 1974; Som *et al.*, 1979), only a few cases of osteoblastoma of the paranasal sinus have been reported (Freedman, 1975; Szlezak *et al.*, 1975; Tom *et al.*, 1980; Osguthorpe and Hungerford, 1983). The histological appearance, biological behaviour and treatment of choice of paranasal sinus osteoblastomas parallel that of nasal osteoblastomas.

Because of their unusual locations, the sinonasal osteoblastomas possess a potential for being misinterpreted as malignant

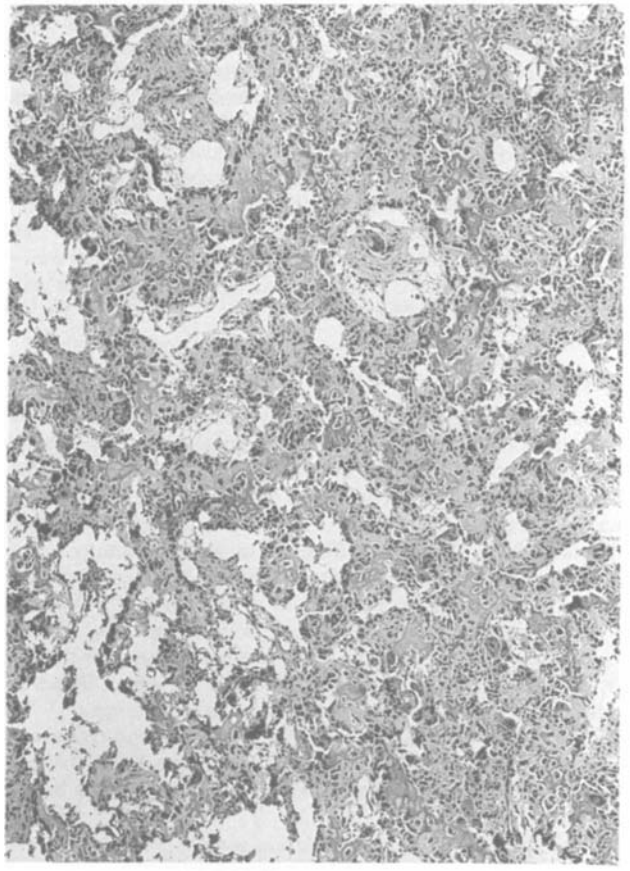

FIG. 2
Lower power view showing interconnecting islands of osteoid and vascular stroma (H&E ×100).

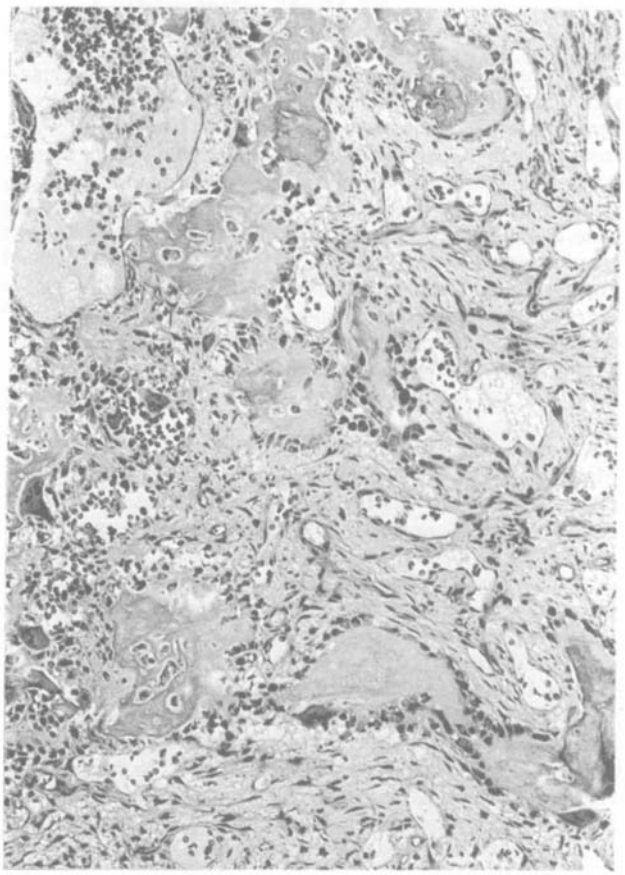

FIG. 3
Higher power view showing vascular stroma and osteoblastic rimming of the osteoid tissue (H&E ×200).

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TABLE I
THE CLINICOPATHOLOGICAL FEATURES OF FIVE CASES OF OSTEOBLASTOMA INVOLVING NASAL CAVITY

Author	Age	Sex	Presentation	X-ray findings	Size	Treatment	Follow-up
Fu and Perzin, 1974	12	F	Painless displacement of an eye	Mass in right ethmoid and nasal cavity, with dense cortical margin and radiolucent centre; thought to be osteoma	3 cm	Local excision	NED* in 2 years
Som *et al.* 1979	69	F	Proptosis of right eye; right nasal mass and anosmia for 4 months	Ossified mass involving ethmoid sinuses, right nasal cavity and right maxillary sinus with intracranial extension	>2.5 cm	Local excision	Recurred in 9 months; re-excision; NED 9 months after re-excision
Ducastelle *et al.* 1985	12	F	Epistaxis; left nasal mass	Intranasal mass without bone destruction	4.5 cm	Local excision	NED in 3½ months
Sooknundun *et al.*, 1986	14	M	Right nasal swelling for 2 years; nasal mass	Soft tissue nasal mass arising from nasal bone, with speckles of calcification	4.5 cm	Enucleation	NED in 5 months
Chen *et al.* present case	19	M	Bulging in right nasal bone area and right epistaxis, for 6 months; right nasal mass attached to right middle turbinate	Soft tissue mass in right nasal cavity, without bone destruction	3 cm	Local excision	NED in 1 year

*NED: no evidence of disease.

tumours. Therefore it is important for the otolaryngologists and pathologists to be aware of the occurrence, though rare, of sinonasal osteoblastoma in order to correctly diagnose and appropriately treat the lesions.

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