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Pathology in Focus

Plasma cell granuloma: maxillary sinuses

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Abstract

Inflammatory pseudotumours or plasma cell granulomas are space-occupying, rounded masses appearing in various locations usually as an aftermath of recurrent infections.

Recurrent pain and mass have been the most common presentations (Durst *et al.*, 1977). These have been confused with tumours but radical surgical treatment is unnecessary, in the absence of life-threatening complications. The prognosis is excellent after excision. The nature and pathogenesis of the inflammatory pseudotumours, their presentation as fever and anaemia in some cases, are unknown.

This report is probably the first case of a plasma cell granuloma involving the maxillary sinus causing focal erosion of the orbital wall, simulating a malignant tumour clinically.

Key words: Granuloma, plasma cell; Maxillary sinus

Case report

A 32-year-old woman presented with an 18-month history of intermittent pain on the right side of the face and fullness of the right cheek. The pain radiated to the right eye and right side of the head.

Examination revealed a soft swelling in the anterolateral part of the right cheek. Examination of the rest of the ear, nose and throat revealed no relevant abnormality. X-ray of the paranasal sinus showed erosion of the anterolateral wall of the right maxillary sinus. CT scan showed a destructive mass arising from the cavity of the maxillary antrum, eroding its lateral wall mostly along the infero-anterior aspect and extending into the adjacent tissues of the cheek. The medial wall of the sinus was thinned out. The impression of the radiologist was of a 'growth' in the right maxillary sinus.

A Caldwell–Luc operation was performed under general anaesthesia and the mass removed *in toto* through the antrostomy. The resected mass was fixed in 10 per cent formal saline and sent for histopathological examination.

Grossly, the mass measured 3 × 1 × 3 cm. The cut surface was homogeneous and grey-white. Representative slices (2 mm thick) were taken after 24 hours fixation embedded in paraffin and sectioned (4–5 μm). The sections were stained with haematoxylin and eosin, PAS and Congo red.

Microscopic examination revealed that the mass was made up of a polymorphous cell population in a fibrotic stroma. The cells consisted mostly of mature plasma cells, some of which were binucleated, a few foamy histiocytes, spindle-shaped fibroblasts and eosinophils in varying numbers. The collagenous stroma was birefringent on polarized microscopy. Congo red staining did not show amyloid. The plasma cell population in the infiltrate was polyclonal and did not show light chain restriction.

Serum electrophoresis did not reveal a monoclonal band and the test for Benc-Jones proteins in urine was negative. Follow-up after 15 months did not reveal any mass in the paranasal sinuses on repeat X-ray and the patient was symptom-free.

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Discussion

Inflammatory pseudotumours have been reported to occur in widely varied anatomical locations being most frequent in the lungs and abdomen. Plasma cell granuloma of the lungs is the commonest mass occurring in the lungs of children under the age of 16 years (Bahadori and Liebow, 1973). The sexes are affected equally. These have also been reported in other sites such as the liver (Tada *et al.*, 1984; Larson, 1987) kidney, ovary, retroperitoneum, spinal cord, meninges and brain (West *et al.*, 1980).

Inflammatory pseudotumours in the orbit, may produce proptosis over months or years. There may be bony destruction and extension to the intracranial cavity (Frohman *et al.*, 1986). Similar tumours have been reported in the oesophagus (Frohman *et al.*, 1986), stomach (Wolfe *et al.*, 1988), lymph nodes (Soga *et al.*, 1970) and spleen (Cotelingam and Jaffe, 1984; Perrone *et al.*, 1988).

These tumours may present as mass lesions, hence may be mistaken for malignancy clinically. Therefore it is important to recognize their true nature to avoid unnecessary surgery or radiotherapy.

A pre-operative diagnosis is difficult because of the diverse clinical settings in which they arise. The diagnosis is established with certainty only on pathological examination. Antecedent conditions include trauma, a previous surgical procedure and recurrent regional infection. Spencer (1984) proposed that lesions in the lung start as chronic interstitial pneumonia of viral origin.

Grossly, these are firm, well circumscribed masses varying in diameter from less than 1 cm up to 36 cm. Their cut surface is yellow or white in appearance. Microscopy shows a mass having polymorphous appearance with, in some areas, oval to spindle-shaped cells in a background of fibrous stroma which may have interlacing bundles with a focally storiform pattern. Homogenous, amyloid-like areas may be present.

The cellular infiltrate is composed of chronic inflammatory cells, i.e. lymphocytes, plasma cells, histiocytes, foamy cells and eosinophils are common (Figure 1). Mitoses are infrequent.

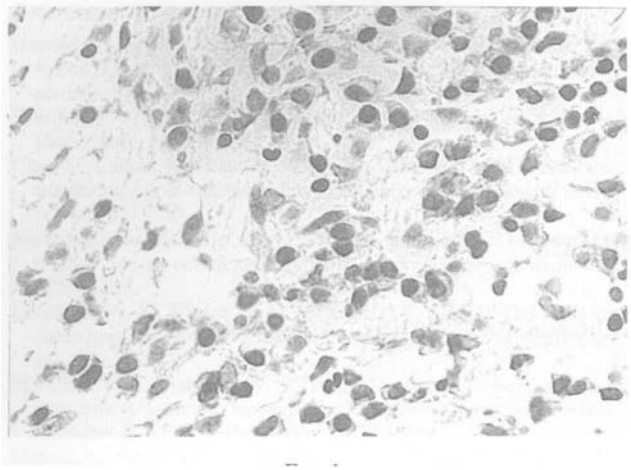

FIG. 1

Plasma cells in a background of moderate hyaline fibrous tissue. (H & E; × 266).

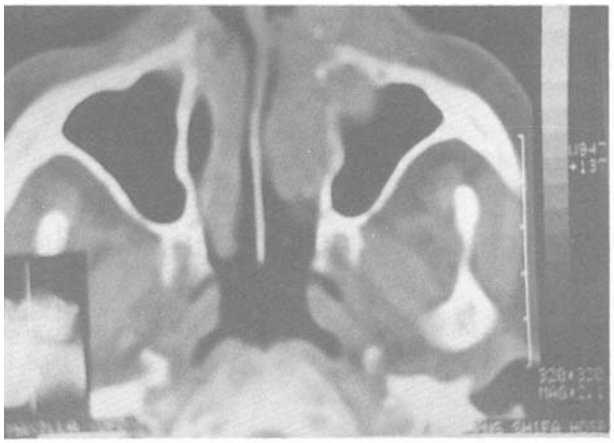

FIG. 2

CT scan showing erosion of orbital wall.

In this case the mass satisfied the gross and microscopic criteria mentioned above. Staining for amyloid was negative. Myeloma was ruled out by electrophoresis and the negative test for Bence-Jones proteins in the urine.

Follow-up of our patient at 15 months after resection, did not show any mass on X-ray of the paranasal sinuses and she was well otherwise.

In the paranasal sinuses, the important differential diagnosis is from extramedullary plasmacytomas. These may present as mass lesions and may precede the development of full-blown multiple myeloma by several years. But the plasma cells occur in sheets, with minimal or absent stroma. There are many binucleate or multinucleated cells. Mitoses are frequent. Immunocytochemistry reveals light chain restriction (monoclonality) in these neoplastic plasma cells. None of the above features were present in our case. Malignant lymphomas are less well circumscribed and appear as a more monotonous infiltrate of atypical lymphoid cells.

In most cases, plasma cell granulomas grow slowly. The majority of the lesions are resected before the diagnosis has been established. Attempts at enucleation may be followed by recurrence (Berardi *et al.*, 1988). In a recent review of 118 cases of plasma cell granuloma of the lung, no examples of malignant change were identified (Berardi *et al.*, 1988).

The importance of this case lies in its presentation as a mass lesion which showed focal erosions of the orbital wall on CT scan (Figure 2) suggesting the possibility of a malignant tumour such as a lymphoma or an extramedullary plasmacytoma.

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