Case 626

Solitary plasmacytoma of the clivus.
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Section: Head & neck imaging
Imaging Technique: CT
Imaging Technique: MR
Case Type: Clinical Cases
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Patient: 74 years, female

Clinical History:
A 74 years old female presented with a history of a severe headache. CT and MR demonstrated a large, expansile, non-calcified mass involving the clivus which extended into the adjacent sinuses and was associated with extensive bone destruction.

Imaging Findings:
A 74 year old female presented with a 1 week history of severe headache. CT demonstrated an extensive, expansile soft tissue mass involving the clivus which enhanced strongly following intravenous contrast. It extended anteriorly into the sphenoid sinus, laterally into the cavernous sinuses and posteriorly into the posterior cranial fossa (Fig 1a). A large area of bone destruction with well-defined, non-sclerotic margins was demonstrated on bone settings (Fig 1b). MR showed a mass which was isointense to brain on T1 (TR/TE 532/17) and iso-, hypo-intense to brain on T2 (TR/TE 2500/85) weighted images and enhanced inhomogenously following intravenous Gadolinium. The brain stem was displaced slightly posteriorly and there was bilateral carotid artery encasement (Fig 2). A plasmacytoma was diagnosed on transnasal biopsy. Full blood count, serum biochemistry were normal. Serum and urine electrophoresis showed no paraproteins or Bence Jones proteins. There was no evidence of systemic myeloma on trephine bone marrow biopsy and a radiographic skeletal survey was normal. She was commenced on radical radiotherapy.

Discussion:
Plasma cell neoplasms comprise multiple myeloma (MM), solitary plasmacytoma of bone (SPB) and extramedullary plasmacytoma (EMP). They are highly radiosensitive tumours. MM accounts for over 90% of cases and is a systemic disease with clinical features of anaemia and renal failure, serum and urine monoclonal immunoglobulins and osteolytic lesions on plain radiographs in addition to a plasmacytoma or plasmacytosis of bone marrow (1). Both SPB and EMP are localised diseases which have a normal bone marrow and skeletal survey. However, most patients with SPB will develop MM (2) and therefore patients with apparently solitary lesions at presentation require long-term follow-up. SPB usually occurs in the spine. When the skull is involved most occur in the calvarium and the skull base is rarely affected (3). Typically on CT plasmacytomas are osteolytic tumours which enhance strongly following intravenous contrast and may have peripheral bone fragments. On MR they are typically iso-, hypo-intense on T1 and iso-, hyper-intense on T2 weighted images, enhance strongly with intravenous gadolinium and may have intra-tumoural flow voids (3). Although these imaging features are not specific for plasmacytomas, in the skull base certain lesions have a strong predilection for specific anatomical sites and the differential diagnosis of a clival lesion includes other neoplasms (chordoma, chondrosarcoma and meningioma) and non-neoplastic conditions (fibrous dysplasia, meningoceles). Chordomas and chondrosarcomas are the commonest neoplasms at this site occurring in
the fourth and third decades respectively and are resistant to radiotherapy. Chordomas are benign, locally aggressive tumours with a strong tendency for local recurrence and may contain areas of haemorrhage, cyst formation and residual bone fragments. Chondrosarcomas are malignant lesions which are classically asymmetrical and contain areas of calcification. Meningiomas classically affect middle aged females and are may be associated with adjacent bony sclerosis. Whilst there is considerable overlap in the radiological appearances consideration of patients age, sex and the presence of calcification, asymmetry or sclerosis are the most important factors in suggesting the correct diagnosis (4). Although clival plasmacytomas are rare and have no specific imaging features they should be considered in the differential diagnosis of clival lesions because of their radiosensitivity and tendency to progress to MM.

**Differential Diagnosis List:** Plasmacytoma of the Clivus.

**Final Diagnosis:** Plasmacytoma of the Clivus.

**References:**

Nofsinger YC, Mirza N, Rowan P. 
Bataille R, Sany J 
Okamoto K, ITO J. 
Curtin HD, 
Imaging of the Skull Base, Radiological Clinics of North America;1998;807-809.
Description: Axial CT image post contrast (soft-tissue settings) showing an extensive, strongly enhancing soft tissue mass. Origin:
Description: Axial CT image (bone settings) showing an extensive area of bone destruction in the skull base. Origin:
Description: Axial T1-weighted image showing iso-intense mass encasing calcified internal carotid arteries. Origin:
Description: Axial T1-weighted image post Gadolinium showing intense inhomogenous enhancement.
Origin:
Description: Axial T2-weighted image showing mixed iso-, hypo-intense mass. Origin:
**Description:** Sagital T1-weighted image demonstrating replacement of the clivus by hypo-intense mass. **Origin:**
Description: Sagittal T1–weighted image post Gadolinium showing inhomogenously enhancing mass displacing basilar artery. Origin: