Clinical Neurology and Neurosurgery 117 (2014) 112–115

Contents lists available at ScienceDirect

Clinical Neurology and Neurosurgery

journal homepage: www.elsevier.com/locate/clineuro

Case report

Impaired diagnosis and successful management of a rare intra-axial central nervous system plasmacytoma in a patient with multiple myeloma

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ARTICLE INFO

Article history:
Received 9 July 2013
Received in revised form
13 November 2013
Accepted 28 November 2013
Available online 6 December 2013

Keywords:
Intracranial tumor
Intra-axial extramedullary plasmacytoma
Multiple myeloma

1. Introduction

Intracranial central nervous system (CNS) plasmacytomas associated with multiple myeloma (MM) are exceptionally rare, and tumors not involving either bone or dura are even rarer. This report uniquely demonstrates a successful surgical approach in a 45-year old man with an intra-axial plasmacytoma as metastatic spread of MM. Initial diagnosis was uniquely challenging as magnetic resonance (MR)-imaging findings were uncharacteristic for the lesion, and the patient had renal insufficiency which precluded the use of contrast-enhanced imaging. However, surgical management was clear due to clinical signs and imaging characteristics.

2. Case report

A 45-year old African American male with MM Durie–Salmon Stage III (diagnosed and treated with immunosuppressive chemotherapy after resection of a ribcage lesion one year previously), renal insufficiency, and hypertension presented to the emergency room with constant bilateral supraorbital headache and associated nausea and vomiting for 3 days. The patient denied known seizure activity. Neurological evaluation revealed right lateral gaze palsy, right facial weakness, and decreased sensation to pinprick on the right side of the face (along the chin). The patient demonstrated dysmetria bilaterally (worse on the left side) and was unable to ambulate due to ataxia.

Serology revealed hypercalcemia (16.2 mg/dL), elevated serum ferritin (1428 ng/ml), and thrombocytopenia (113,000/μL). Serum and urine immunoglobulin electrophoresis were within normal limits. Non-contrast computed tomography (CT) demonstrated an expansile hyperattenuating lesion in the left cerebellar hemisphere with an irregular margin, right shift of the vermis, narrowing of the fourth ventricle without signs of herniation or hydrocephalus, and no indication of lytic disease (Fig. 1A). T_2-weighted MR-imaging confirmed the presence of a hyper- to iso-intense heterogeneous cerebellar lesion (hypointense on T_1-weighted imaging) with no obvious sign of dural involvement or attachment to the skull (Fig. 1B). The patient's renal insufficiency (eGFR: 27 ml/min/1.73 m^2) precluded the use of contrast-enhanced imaging. Initial diagnosis could not be differentiated between tumor (plasmacytoma, lymphoma, meningioma, glioma, and metastasis), ischemic infarct, or hemorrhage.

2.1. Surgical approach

Posterior fossa craniectomy was performed in the prone position. The mass, which appeared vascular and gelatinous, was not

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0303-8467/$ – see front matter
http://dx.doi.org/10.1016/j.clineuro.2013.11.017

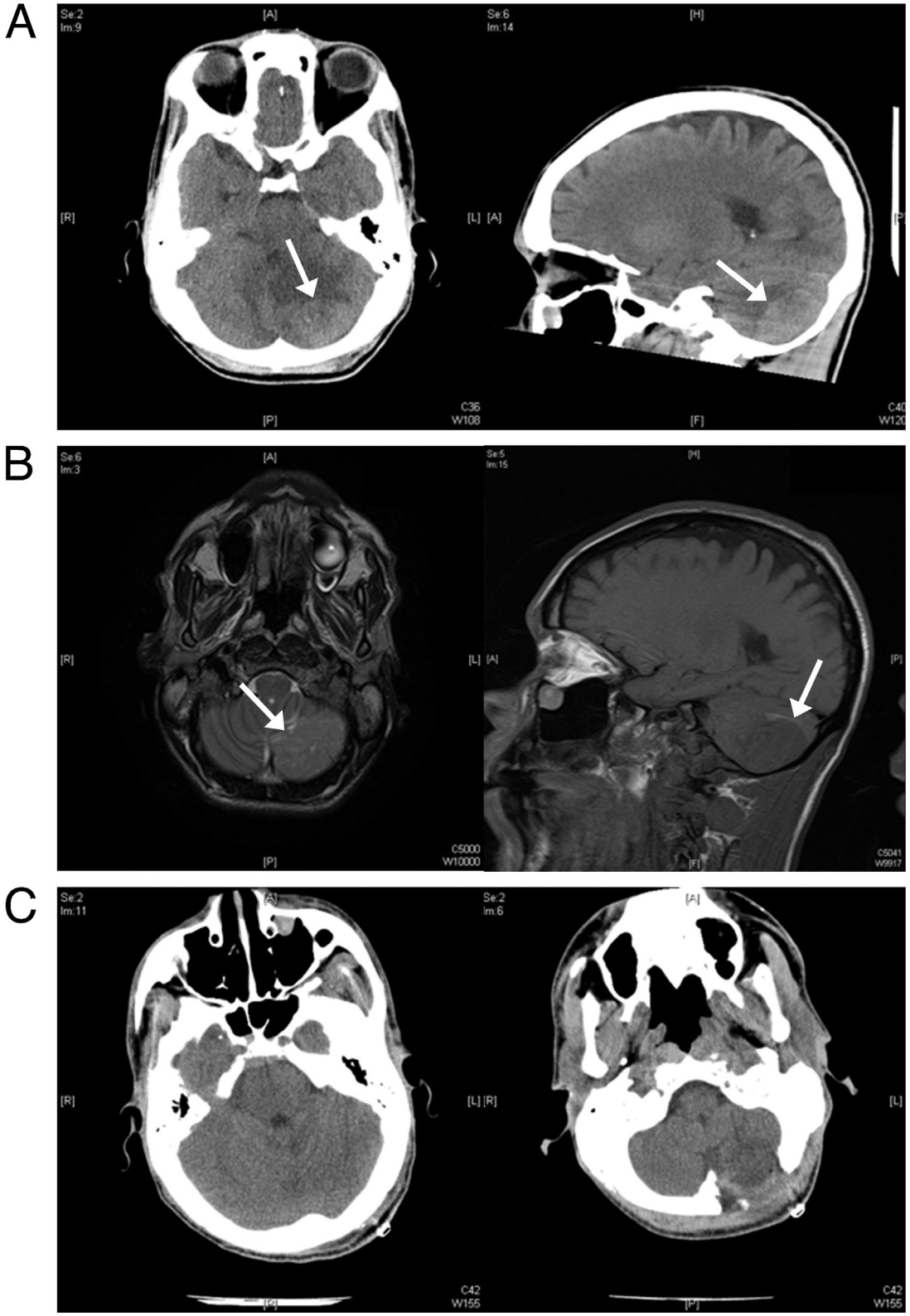

Fig. 1. Preoperative axial and sagittal non-contrast computed tomography (CT) imaging demonstrates an expansile hyperdense lesion in the left cerebellar hemisphere (arrows). Fourth ventricle compression is apparent on axial CT (A). Preoperative axial (T_2-weighted) and sagittal (T_1-weighted) non-contrast magnetic resonance imaging (MRI) demonstrates a hyper- to isointense (T2-weighted) and hypointense (T1-weighted) heterogeneous lesion in the left cerebellar hemisphere (arrows) without apparent dural involvement (B). Postoperative axial non-contrast computed tomography (CT) imaging of the brain demonstrates cerebellar hemispheric symmetry and a normal decompressed fourth ventricle, as well as craniectomy site (arrow). The lesion seen preoperatively is no longer visible (C).