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Case report

Osteolytic clear cell meningioma of the petrous bone occurring 36 years after posterior cranial fossa irradiation: Case report

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ABSTRACT

Objective and importance: While bone invasion and hyperostosis are frequent phenomena in meningiomas, primary intraosseous meningiomas are rare and their occurrence in the skull base is an extraordinary exception. Moreover, radiation-induced meningiomas represent a unique clinical dilemma given the fact that patients with these tumors had often received a prior full course of radiotherapy.

Clinical presentation: A 42-year-old man presented with a 3-month history of progressively worsening facial asymmetry. His medical history was consistent for a posterior cranial fossa irradiation at the age of 6 years for a non-confirmed brain stem tumor. On admission his Karnofsky performance status was graded as 50% and his neurological examination showed a complete right facial nerve paralysis and hearing impairment. Computed tomography and magnetic resonance imaging demonstrated an osteolytic tumor invading the whole right petrous bone without intracranial involvement.

Intervention: As the tumor reached the external auditory canal, a tissue sample was obtained locally. Pathological examination of the lesion identified a grade II clear cell meningioma and the patient was consequently addressed for an intensity modulated radiation therapy. His condition remained unchanged till the most recent follow-up examination, 8 months later.

Conclusions: To the best of our knowledge, a radiation induced osteolytic clear cell meningioma of the petrous bone has not been previously reported. As little literature exists regarding the use of adjuvant therapies for these tumors, intensity modulated radiation therapy remains an attractive treatment option in case of previous irradiation and general status alteration.

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Abbreviations: CECT, contrast enhanced computed tomography; MRI, magnetic resonance imaging; CCM(s), clear cell meningioma(s); IMRT, intensity modulated radiation therapy; SR, stereotactic radiosurgery; FSR, fractionated stereotactic radiotherapy.

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1. Introduction

Primary interosseous meningiomas are a subtype of primary extradural meningiomas. With only 24 reported cases to date, their osteolytic form is most uncommon.

To the best of our knowledge, a radiation induced osteolytic clear cell meningioma of the petrous bone has not been reported so far. The case presented highlights the possible occurrence of a purely interosseous and aggressive meningioma 36 years after conventional irradiation and searches the relevant literature regarding the possible role of adjuvant therapies in such exceptional situations.

2. Case report

This 43-year-old male was first admitted to the neurosurgery section in June 1979 with a progressively aggravating right bulbar syndrome. A ventriculography by opaque injection was first realized and showed a moderate dilatation of the whole ventricular system. Further investigation by a head computed tomography showed a hypodensity in the right bulbar area (Fig. 1). Although the imaging study was not affirmative, the patient was considered as having a brainstem tumor. Surgery for such lesions was not feasible at that time and the decision was to administer a full dose of radiation therapy without the need of a pathological specimen. Consequently the patient received 40 Gy over his posterior cranial fossa and was discharged home few days later. His condition progressively improved and he became symptom free within 4 months but was lost to view since the mid-80s.

In January 2015, he presented once again for a 1 month history of heaviness, impaired hearing in the right ear, vertigo and a progressively worsening right facial asymmetry.

On examination, his general status was altered with a Karnofsky performance scale graded as 50%. His higher mental functions were normal and his cranial nerves examination was remarkable for a complete right facial nerve paralysis

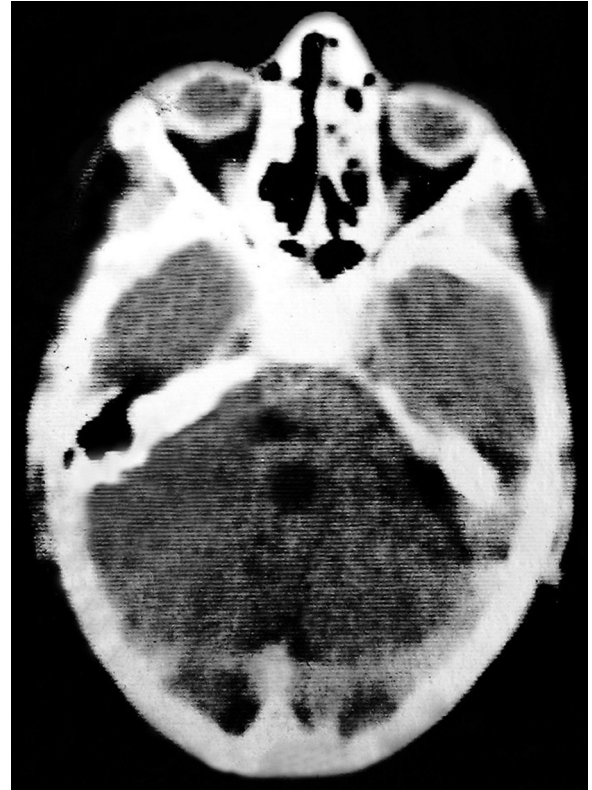


Fig. 1 – Head CT performed in June 1979 showing a right bulbar hypodensity.

(House–Brackmann grade VI). Moreover, his Rinnie's test was negative and Weber's test lateralized to the right side.

Hematological and biochemistry profiles were normal. Contrast enhanced computed tomography of the head (Brilliance 64-multislice CT scanner, Philips Medical System, MA) revealed a heterogeneously enhancing osteolytic mass of the right petrous bone. The tumor reached the right external

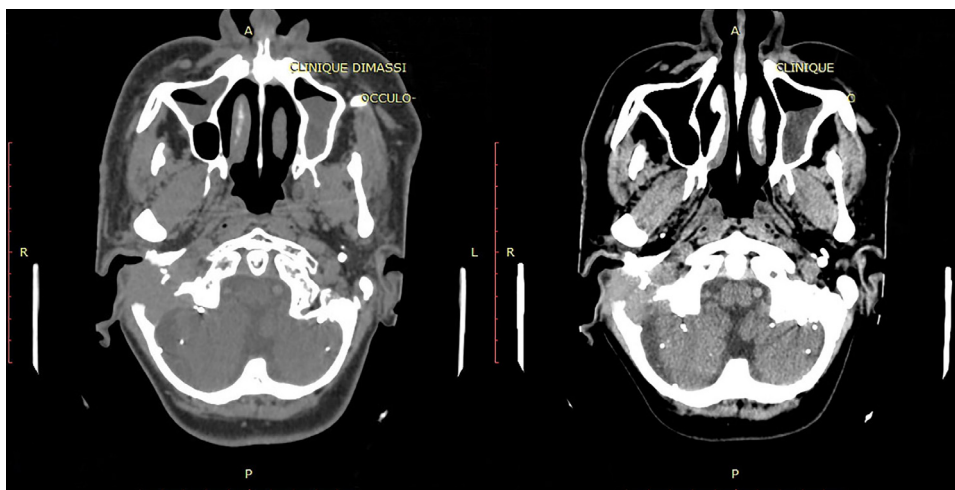


Fig. 2 – Axial CT images of the petrous temporal bones demonstrate a large lytic lesion on the right side with extensive destruction of the mastoid process and lateral petrous region. The external auditory meatus and middle ear cavity are also involved.

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