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CASE REPORT

Multiple meningiomas consisting of fibrous meningioma, transitional meningioma, and meningotheliomatous meningioma in one adult patient

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ABSTRACT

Multiple histopathology of meningioma is a condition in which the patient has more than one histopathology feature of meningioma in different intracranial locations, with or without sign of neurofibromatosis. Meningiomas are the most common, non-glial, primitive intracranial tumors; their prevalence among operated tumors is around 13–19%. They may occur at any age, but have a peak incidence around 45 years of age. The incidence of multiple intracranial meningiomas varies from 1% to 10% in different series, and the frequency of multiple meningiomas without neurofibromatosis was reported to be <3%.

Key words: Histopathology, multiple meningiomas, neurofibromatosis

Introduction

The multiple histopathology feature of meningioma attracts a lot of interest because of their unclear etiology, their relative rarity, and problems related to proper management strategy. The incidence of multiple intracranial meningiomas varies from 1% to 10% in different series, and the frequency of multiple meningiomas without neurofibromatosis was reported to be <3%.[1-3] Multiple meningiomas are not frequently found in neurofibromatosis type 2 (NF-2), however, they occur much less frequently in cases of sporadic meningioma.[3]

Case Report

A 28-year-old male patient presented with a 1-year episode of severe headache. Computed tomography (CT) scan revealed multiple hyperdense, contrast enhancing extraaxial masses in the left frontoparietal and cerebellopontine angle regions [Figure 1]. An operation was first done to excise the mass from his left frontal region at the Hasan Sadikin Hospital in Bandung, and the patient later underwent another operation for his recurrent left frontal region tumor after 3 years, with different type of histopathologic result of meningioma. The patient's left cerebellopontine angle mass was excised 10 days later, with histopathological diagnosis of meningotheliomatous meningioma [Figure 2]. After several days of inpatient care, the patient was discharged with the improvement of neurological symptoms.

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Discussion

Cushing and Eisenhardt first coined the term multiple meningiomas to describe the occurrence of meningiomas in the absence of neurofibromatosis or acoustic neuromas. The only genes known to be associated are NF-2 on chromosome 22 and the related cytoskeleton element differentially expressed in adenocarcinoma of the lung (DAL-1) on chromosome 18.[2,3]

There are two distinct hypotheses for the pathogenesis of multiple meningiomas. The tumors may arise independently, which had been supported by the reported histological and cytogenetic differences between the multiple tumors from the same patient or that a single transforming event has occurred, and an original clone of cells spreads throughout the meninges in the formation of multiple, clonally related tumors.[4,5]

As the most common, non-glial, primitive intracranial tumors; their prevalence among operated tumors is around 13–19%.

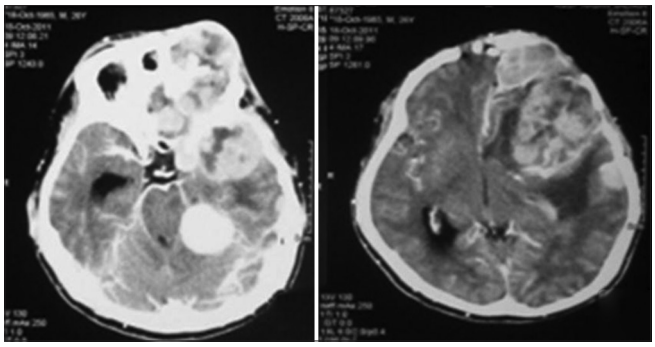

Figure 1: Computed tomography scan post gadolinium contrast showed multiple hyperdense extraaxial enhancing masses

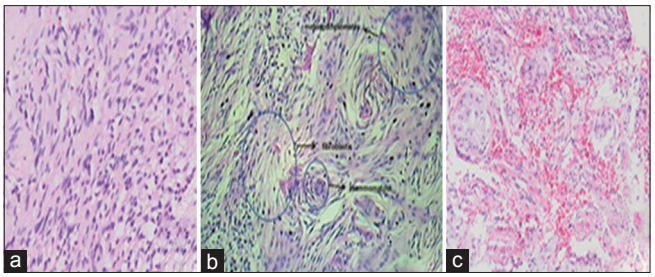

Figure 2: (a) Histopathologic feature with H and E, ×400 of fibroblastic meningioma; (b) Histopathologic feature with H and E, ×40 of transitional meningioma; (c) Histopathologic feature with H and E, ×400 of meningotheliomatous meningioma

They may occur at any age, but have a peak incidence at around 45 years of age; 60% of meningiomas occur in females. The most common location is around the falx and parasagittal area (25%), convexity (20%), sphenoid wing (20%), olfactory groove (10%), suprasellar (10%), posterior fossa (10%), and intraventricular (2%). They uncommonly arise from the infratentorial region in approximately 10% of cases. The most common locations are the cerebellopontine angle, petroclival, and the tentorium.[6] Multiple meningiomas were first described by Anfimow and Blumenau,[7] Cushing and Eisenhardt.[8] The incidence of multiple meningiomas in the post CT scan era has been reported to be between 5, 4, and 8, 9%. While incidence, as seen in autopsy series, ranges between 8, 2, and 16, 9%. The majority of these are located in a hemicranial location.[9,10] Meningiomas are mostly benign tumors, with only 1–2% being malignant.[3] Meningiomas have well-defined margins, are solid, originate from the arachnoid cap cells of the meninges, and are markedly and homogenously enhance with gadolinium (Gd) contrast administration. In addition, enhancing dural tail may also be identified, but there may be on occasion a foci of necrosis as well as scarring, cystic degeneration or calcification. There is relatively associated vasogenic edema in relationship to the size of the lesion. Operative management of multiple meningiomas occupying both the cranial and spinal compartments poses a special problem, as a decision is made regarding which lesions have caused the neurological deficits, and which should be removed initially, with the smaller and asymptomatic lesion may be followed up with serial imaging.[6]

Conclusion

Multiple meningiomas are relatively uncommon brain tumors occurring concurrently in several intracranial locations in the same patients. Multiple histopathological features are known, with unclear etiology of meningiomas; and sporadic, recognized risk factor includes genetic factors and cranial irradiation.

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