Meningioma of the fourth ventricle: a case report

Roberto Delfini, Raffaela Capone, Pasquale Ciappetta, and Maurizio Domenicucci

Department of Neurological Sciences, Neurosurgery, Rome University “La Sapienza”, Italy

Abstract

A rare case of fourth ventricle meningioma with a combined intraventricular-intracerebellar localization, successfully removed by surgical treatment, is reported. The features of this type of meningioma as compared to the purely intra-ventricular variety are discussed.

Keywords: Fourth ventricle, inferior tela choroidea, posterior cranial fossa meningioma.

1 Introduction

Meningiomas of the fourth ventricle are extremely rare.

The first case was reported by SACHS in 1983 [20]. To our knowledge only 23 cases have been reported in the literature [1, 3, 5-8, 10-25] so far.

This paper presents a further case of fourth ventricle meningioma.

2 Case report

This 22-year-old man came to our attention due to progressively worsening intense frontal and nuchal headache that had begun about 4 years earlier and was associated with gait disturbances, vomiting, and dyspnea in the months immediately preceding hospitalization.

On admission, general physical examination and routine blood tests revealed no abnormalities. Neurological examination revealed oscillation in Romberg’s test without side prevalence, bilateral deficit of the VIth cranial nerve, rotatory nystagmus when the patient looked upwards, and severe ataxia. Fundus oculi examination showed bilateral papilledema.

Computerized tomography (CT) (Figure 1a, 1b) showed a space-occupying lesion in the IVth ventricle that extended upwards as far as the mesencephalon and the quadrigeminal lamina.

At surgery, total tumor removal was achieved by means of a suboccipital craniectomy and incision of the cerebellar vermis. A wine-red colored tumor extending from the IVth ventricle through a considerably dilated aqueduct up to the mesencephalon and the quadrigeminal lamina was exposed. Histologically, the tumor was found to be a fibroblastic meningioma.

The post-operative course was uneventful. Six years later neurological examination is almost completely negative and control CT shows no signs of recurrence of the lesion (Figure 2).

3 Discussion

Meningiomas of the fourth ventricle can be divided into the following two categories [3]:

1. meningiomas originating from the choroid plexus of the fourth ventricle and developing solely within the ventricle
2. meningiomas of the inferior tela choroidea developing partly in the fourth ventricle and partly in the cerebellar hemisphere and vermis.

Most of the cases culled from the literature are exclusively intraventricular, the intraventricular intracerebellar variety is rarer.

Our previously published case [3] belonged to the second category, while the case presented here belongs to the first.
In contrast to the usual 2:1 female: male ratio for most meningiomas, the ratio for this type of meningioma is 0.9:1. The mean age is approximately 65 years with a range of 7.

A strictly intraventricular tumor does not give rise to any characteristic clinical pattern until it blocks the CSF circulation and thus produces internal hydrocephalus and intracranial hypertension. On the other hand, a tumor developing mainly in the cerebellum initially causes cerebellar signs and ultimately intracranial hypertension.

Other symptoms such as bilateral hearing loss, as in the case reported by Sachs [20] and long tract signs as reported by Zuleta [25] have also been described, but these are not considered to be specific for a primary fourth ventricle tumor.

It is essential that the preoperative diagnosis includes the localization and the typing of the tumor.

With CT and MRI accurate information regarding location and shape of the tumor, its relationship with the surrounding structures, and, finally, ventricular size can be easily obtained.

These diagnostic investigations may even allow differential diagnosis of intraventricular mass lesions with a high degree of reliability, although experience with MRI in this field is still limited.

Papilloma of the choroid plexus is most difficult to differentiate from IVth ventricle meningioma. The following CT aspects are, however, useful: smooth contours are common in meningioma while irregular contours are more frequent in plexus papilloma; calcifications occur more frequently in the former than in the latter; and meningiomas and many papillomas have a higher density than the brain although isodense choroid plexus papillomas are not uncommon [9, 14].

Vertebral angiography is still a valid means of assessing the tumor's vascular supply, information which may be a useful aid to surgical removal.

Complete surgical excision is the only satisfactory treatment for this type of tumor.

Identification and coagulation of the vascular plexus coming from the choroid supply facilitate tumor removal. Furthermore, microsurgical techniques and piecemeal removal with minimal retraction of the cerebellar tissue and avoidance of traction on the floor of the fourth ventricle, allow complete excision of the tumor with very low mortality and morbidity.