Coexistence of Intracranial Meningioma and Primary Malignant Lymphoma

—Case Report—

Toshihiko KUROIWA, Tomio OHTA, Hitoshi KOBATA,
Hiromasa YAMAMOTO and Naosuke KIMURA

Department of Neurosurgery, Osaka Medical School, Takatsuki, Osaka

Abstract

The authors present a case of multiple primary intracranial tumors of different cell types. A 62-year-old female presented with symptoms suggestive of an intracranial mass lesion. Computed tomographic scans revealed two lesions, one in the right temporal lobe and one in the posterior fossa. Both tumors were approached in one operation. The right temporal tumor was diagnosed as primary malignant lymphoma, and the right posterior fossa tumor as meningioma. Phacomatosis was ruled out as a possible etiology. Multiple primary intracranial tumors of different cell types are rare, and this is the first report of coexistent intracranial meningioma and malignant lymphoma.

Key words: malignant lymphoma, meningioma, multiple brain neoplasms

Introduction

Multiple primary brain tumors rarely originate in different tissues. Cases not associated with von Recklinghausen's neurofibromatosis constitute only 0.3% of all primary brain tumors,¹⁰⁾ and the majority involve meningioma and glioma. Intracranial malignant lymphoma in association with other types of primary intracranial tumors has not been reported previously. We describe a case involving a coexistent meningioma and malignant lymphoma.

Case Report

A 62-year-old female was hospitalized with a 3-week history of headache and a 1-week history of vomiting, personality change, and urinary incontinence. Neurological examination on admission disclosed papilledema, left hyper-reflexia, and left sensory extinction. The level of consciousness as evaluated by the Japan Coma Scale was 1.²⁷⁾

A precontrast computed tomographic (CT) scan showed a round, high-density lesion in the right temporal lobe, surrounded by a low-density area at the temporal tip, as well as a significant leftward

Fig. 1 *left:* Precontrast CT scan showing a high-density area in the right temporal lobe, with perifocal edema. *right:* Postcontrast CT scan showing two homogeneously enhanced lesions in the right temporal lobe and the right posterior fossa.

midline shift and marked compression of the lateral ventricle (Fig. 1 *left*). A postcontrast CT scan showed homogeneous enhancement of the mass in the right temporal lobe. Moreover, another homogeneously enhanced lesion was noted in the posterior fossa (Fig. 1 *right*). The arterial phase of right brachial angiograms revealed upward deviation of

Fig. 2 Right brachial angiograms, anteroposterior (left) and lateral (right) view. Major vessels are compressed.

Fig. 3 upper: Photomicrograph of the right posterior fossa tumor, showing a fibroblastic meningioma. HE stain, $\times 220$. lower: The right temporal lobe tumor exhibits features of malignant lymphoma. HE stain, $\times 220$.

the Sylvian triangle, superomedial deviation of the Sylvian point, and anteroinferior deviation of the choroidal point (Fig. 2). The venous phase showed downward displacement of the copular point, but

no tumor stain was discerned.

Right temporal craniotomy and suboccipital craniectomy were performed at the same time. The tumor in the posterior fossa was excised en bloc and found to be elastic-hard and encapsulated. The tumor in the temporal lobe, which was grayish and not clearly demarcated from the surrounding brain tissue, was subtotally removed in pieces.

Histological examination revealed the posterior fossa tumor to be composed of bundles of spindle-shaped cells, without specific structures, such as palisading. It was diagnosed as a fibroblastic meningioma (Fig. 3 upper). The tumor in the temporal lobe was composed of round cells containing clear nuclei and scant cytoplasm. Mitoses were occasionally observed. The diagnosis was malignant lymphoma (diffuse type) (Fig. 3 lower). Immunohistochemical study with anti-B cell antibodies confirmed that it derived from B cells. There was no evidence of tumor elsewhere. Therefore, intracranial malignant lymphoma was the final diagnosis.

The malignant lymphoma disappeared completely after radiation therapy, but she died of pneumonia 185 days after surgery.

Discussion

Multiple primary intracranial tumors of different cell types (excluding those associated with von Recklinghausen's disease) reportedly account for only 0.3% of all brain tumors.¹⁰⁾ Disregarding cases involving brain metastasis from an extracranial focus, multiple tumors of the same cell type, and new tumors developing after radiation therapy, we found 116 reported cases involving 234 brain tumors^{1-9,11-26,28-38)} (Tables 1 and 2). Meningioma was diagnosed in 85 cases (36.3%) and glioma in 79 (33.8%). The 59 patients with both of these tumors accounted for 50.9% of the total. The other histological types and

Table 1 Histological types of 234 tumors in 116 cases of multiple primary intracranial tumors

Histological type	No. of tumors
Meningioma	85
Glioma	79
Pituitary adenoma	20
Neurinoma	20
Craniopharyngioma	4
Others	26
Total	234

Table 2 Combinations of tumors in 116 cases of multiple primary intracranial tumors

Combination of tumors	No. of patients
Meningioma + glioma	59
Meningioma + pituitary adenoma	11
Meningioma + neurinoma	10
Glioma + pituitary adenoma	5
Glioma + neurinoma	4
Meningioma + craniopharyngioma	2
Pituitary adenoma + craniopharyngioma	2
Glioma + chondroma	2
Others	21
Total	116

combinations are shown in Tables 1 and 2. Most tumors were found incidentally at autopsy or during surgery. Detection of multiple brain tumors has increased since the introduction of CT, since the diagnosis can often be made preoperatively and confirmed by surgery.

In our case, phacomatosis was ruled out by the family and personal histories and clinical findings. Peripheral blood analysis and results of other examinations showed no extracranial pathology. Intracranial meningioma associated with primary malignant lymphoma was the final diagnosis. To our knowledge, this combination of brain tumors has not been reported previously.

Although the pathogenesis of multiple primary intracranial tumors of different cell types is not clear, it cannot be said that such tumor combinations occur simply by chance. The pathogenesis may involve the presence of systemic⁵⁾ or local^{3,4)} carcinogenic substances. One type of tumor may stimulate the surrounding tissues and thereby induce oncogenesis.^{9,11)} In some special cases meningioma may be induced by growth hormone.⁷⁾ However, all these explanations are, at present, speculative. The pathogenesis of such multiple brain tumors will gradually be better understood as additional cases are encountered and studied.

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Address reprint requests to: T. Kuroiwa, M.D., Department of Neurosurgery, Osaka Medical School, 2-7 Daigaku-machi, Takatsuki, Osaka 569, Japan.