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Neuro-Behçet's Disease Mimicking a Cerebral Tumor : A Case Report

We report a rare case of neuro-Behçet's disease (NBD) presenting as an inflammatory pseudotumor in the brain. A 52-yr-old woman was evaluated for subacute dizziness and headache. Brain magnetic resonance (MR) imaging showed a right cerebellar mass, which disappeared 2 weeks later. After a year, recurrent mucocutaneous manifestations of Behçet's disease were observed. Immunosuppressant and steroid maintenance treatment were started. She experienced two more neurologic attacks and brain MR imaging revealed an enhancing mass in the right temporal lobe. The second attack showed a good response to steroid pulse therapy, but the third attack did not respond to steroid and her neurologic signs suggested an impending transtentorial hernia. The right temporal lobectomy was performed for the purpose of life-saving. The pathologic finding of the mass was a chronic inflammatory vasculitis, compatible with NBD.

Key Words : *Pseudotumor; Inflammatory Vasculitis; Steroid; Magnetic Resonance Imaging; Hernia, Cerebral*

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INTRODUCTION

The diagnosis of neuro-Behcet's disease (NBD) can be difficult when the central nervous system (CNS) involvement precedes the mucocutaneous involvement or when the history of mucocutaneous lesion is incomplete or absent (1, 2). In these cases, magnetic resonance (MR) imaging study and cerebrospinal fluid examinations may be helpful in differentiating NBD from other neurologic diseases with similar clinical presentations (3-5). However, a brain tumor can not be ruled out if the radiologic findings of NBD show a mass (6-10).

The pseudotumoral form of NBD has rarely been reported. In such cases, NBD was diagnosed by stereotactic biopsy or dependent on the clinical diagnostic criteria of International Study Group for Behcet's disease (6-10). As far as we know, the temporal lobectomy has not been previously reported in pseudotumoral form of NBD. Moreover, all the documented cases had relatively good prognosis showing steroid responsiveness. We experienced a case of NBD presenting as recurrences and disappearances of mass lesions in the brain and finally as an impending cerebral hernia requiring decompressive surgery.

CASE REPORT

A 52-yr-old woman was admitted to the neurology department of our hospital with dizziness, nausea, and vomiting in April 1996. Her past medical and family history was nonspecific. Neurologic examinations revealed Brun's nystagmus, suggesting a right cerebello-pontine angle lesion. Routine laboratory parameters were not remarkable. T2-weighted MR image (T2WI) showed an extensive high signal intensity in the right cerebellar hemisphere, posterior medulla, and pons with an isosignal central mass. Gadolinium-enhanced T1-weighted MR image (Gd-T1WI) showed a homogenously enhancing mass-like lesion inside the T2 high signal intensity (Fig. 1A). We suspected a cerebellar tumor from the clinical and imaging features but steroid treatment was started initially. Two weeks later, the mass nearly disappeared on follow-up MR image (Fig. 1B). Biopsy was not performed because of its location and clinical and radiological improvement.

One year later, she visited the rheumatology department of our hospital because of recurrent headaches, visual disturbance, oral ulcerations, erythema nodosum-like skin lesions, and arthritis. The skin biopsy revealed nonspecific vasculitis. She had no genital ulcer. She was diagnosed as Behcet's disease. And immunosuppressant and steroid maintenance

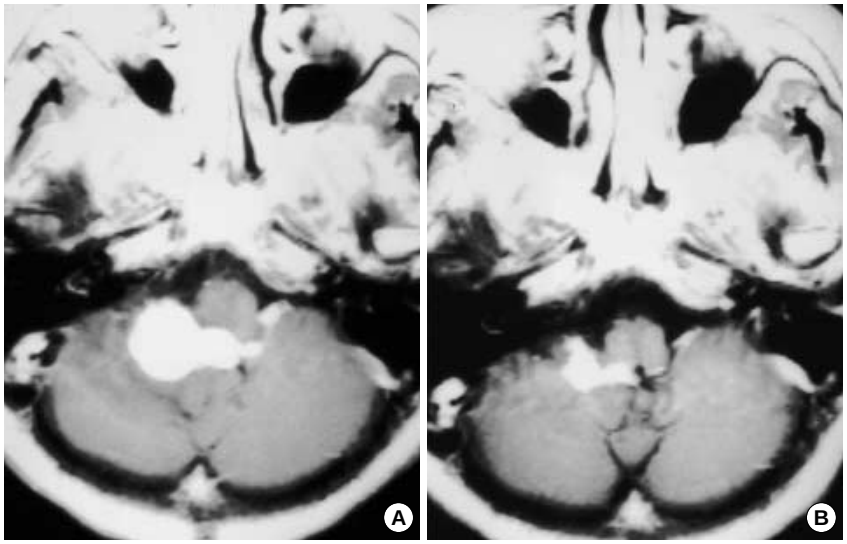

Fig. 1. MRI at the first neurologic attack shows a homogenously enhancing lobulated mass extending to the fourth ventricle on gadolinium-enhanced T1-weighted axial image (A). The mass lesion almost disappeared after steroid treatment for 2 weeks (B).

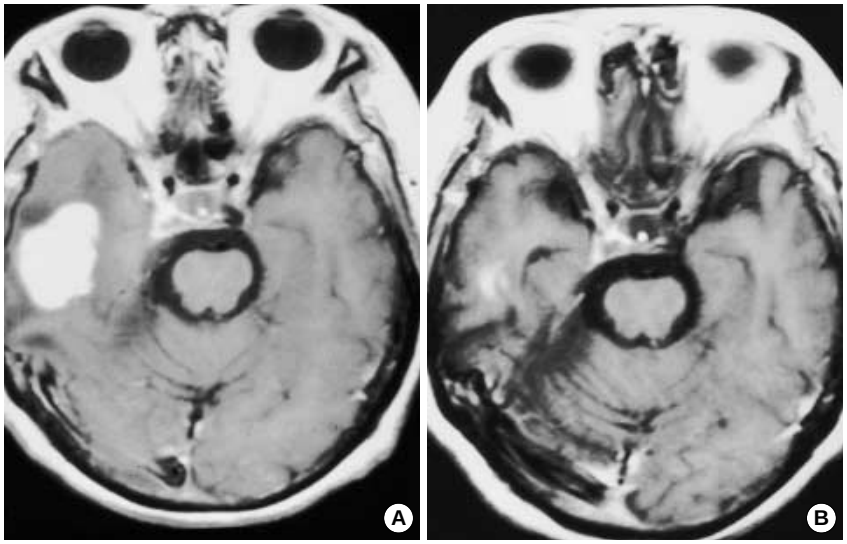

Fig. 2. Gd-enhanced T1-weighted MRI at the second neurologic attack shows a lobulated mass in the right temporal area (A), which also almost disappeared, after steroid treatment (B).

therapy were started.

In January 1999, she had the second neurologic attack manifested by subacute headache, confusion, poor feeding, and vomiting. On neurologic examinations, a mild attention deficit, immediate memory impairment, visuo-spatial disorientation, and wide-based unsteady gait were noted. Laboratory studies including CSF study were normal. Brain MR imaging demonstrated a homogenously enhancing solid mass-like lesion in the right temporal white matter with surrounding edema (Fig. 2A). She was treated with high-dose steroid (methylprednisolone 1,000 mg/day) for a week and became fully recovered. CSF study revealed pressure of 180 mm H_2O, lymphocytes 25 per μL, protein 300 mg/dL, and normal glucose concentration. No malignant cells were seen. Other CSF studies including IgG index, oligoclonal band, myelin basic protein, anti-cytomegalovirus antibody, and anti-herpes simplex virus antibody were either normal or negative. Follow-up MRI after 2 months showed little evidence of the previous lesion (Fig. 2B). Maintenance doses of prednisolone and azathioprin (300 mg/day) were continued.

Her third attack was in July 1999. On neurologic examinations, left homonymous hemianopsia, left hemiparesis, and left extensor plantar reflex were represented. MR imaging revealed nearly same findings as previous ones except slightly changed shape and location in the right temporal area (Fig. 3A). In spite of high-dose steroid and hypertonic solution (25% mannitol 1.0 g/kg body weight), her neurologic symptoms and signs got more and more worsened. She fell into stuporous consciousness with bilateral long tract signs. Right temporal lobectomy was done for decompression of impending herniation. After the temporal lobectomy (Fig. 3B), she regained alert mental state without physical impairments, but her condition was slowly deteriorated to almost a bed-ridden state with cognitive impairment over the next 5

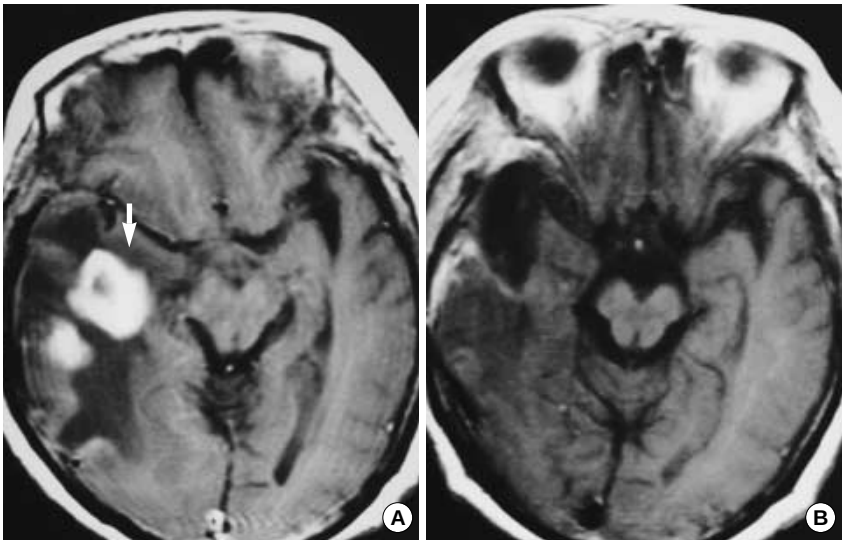

Fig. 3. MRI at the third neurologic attack (A) shows a densely enhancing mass with midline shifting in the right temporal deep white matter on gadolinium-enhanced T1-weighted axial image. Prominent edema around the mass is shown (arrow). MRI after resection of the temporal mass (B) shows neither a mass lesion nor midline shifting.

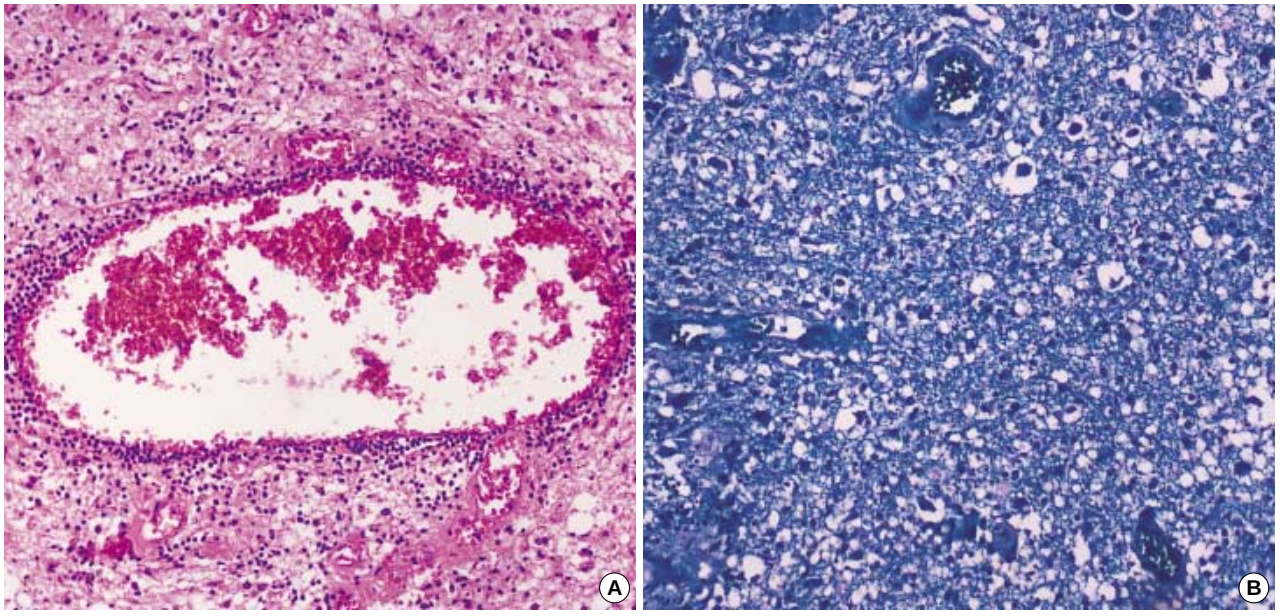

Fig. 4. (A) Histologic specimen discloses lymphocytic vasculitis with the typical vascular cuffing (H&E, × 100). (B) Myelin fibers are relatively well preserved (Luxol-Fast-Blue, × 100).

months. She died of respiratory complication after 46 months from the first neurologic attack.

Pathology

No malignant cells were seen on frozen sections. Pathologic characteristics of the specimen were multifocal ill-defined old ischemic lesions and lymphocytic vasculitis involving small and medium-sized vessels (mainly veins) of white matter accompanied by focal cortical dysplasia. Old ischemic lesions were composed of a proliferation of small and capillary vessels with congestion, perivascular infiltration of small mature lymphocytes, histiocytes, and a few plasma cells, hyaline thickening of small vessel walls, and reactive astrocytosis. Multi-layered perivascular lymphocytic infiltration showed the characteristic vascular cuffings (Fig. 4A). In the Luxol-Fast-Blue stain, the myelin fibers were relatively well preserved in the old ischemic lesions (Fig. 4B). Some lymphocytes were spread into the brain parenchyma, which showed liquefaction (softening). The cortex was mostly well preserved, however, focal areas of the cortex, adjacent to the old ischemic lesion, showed histologic features of focal cortical dysplasia, such as disorganized neuronal cells, subpial gliosis, scattered heterotopic neuronal cells in the white matter, and a few bal-

loon cells in the white matter. Ill-defined reactive ischemic lesions and focal cortical dysplastic changes might be related to the chronic ischemia due to multifocal brain parenchymal lymphocytic vasculitis. These findings suggested nonspecific inflammatory vasculitic process of the disease, which appears to play a central role in the pathogenesis of NBD.

DISCUSSION

The NBD was introduced by Cavara and d'Ermo in 1954 (1). The rate of CNS involvement in Behçet's disease is variable from 4% to 49% (1-3). Usually, most of CNS involvements occur several months or years after mucocutaneous or ocular symptoms. However about 5% of patients may not develop the mucocutaneous manifestations until the neurologic manifestaitions occur (3, 11).

In most reports, the patients with pseudotumoral NBD on imaging studies had preceding neurologic manifestations or had vague mucocutaneous manifestations (6-10). Brain MR imaging or computed tomography (CT) were not helpful for the differential diagnosis because the findings of NBD could be the same as those of multiple sclerosis and cerebral tumor, especially cerebral lymphoma. Thus, they reached the final diagnosis by biopsy to exclude cerebral tumor or by clinical observation until mucocutaneous symptoms met the criteria of Behçet's disease recommended by the international study group.

At the onset of the disease, our patient did not meet the criteria for the diagnosis of Behçet's disease. So, we diagnosed the patient as having a tumor. After one year, she showed typical recurrent oral ulceration, biopsy proven skin lesion, and uveitis. This time, we diagnosed her as NBD, based on clinical criteria of Behçet's disease, but could not exclude the possibility of other similar diseases including multiple sclerosis, neurosarcoidosis, and brain tumor. Relapsing mass-like lesion is very unusual in NBD and favors to CNS lymphoma. This made the diagnosis suspicious until the biopsy. We could not find any neoplastic lymphoid cells throughout the biopsy specimens. Moreover, vasculitis of small vessels, mainly of venules, is a characteristic feature of Behçet's syndrome (12).

There is some consensus about MR imaging findings of NBD. The common distribution of the lesion is mesencephalo-diencephalic junction (1-5, 13). Although still on debate, a confluent lesion extending from the brain stem to diencephalic structures and basal ganglia in T2WI is a characteristic feature in acute stage of NBD. Brain stem atrophy without cortical atrophy can be observed in chronic stage of NBD (3, 5, 13). The NBD presenting as a mass-like lesion on CT or MRI is rare, but already described previously (6-10). The location of the mass seems to have no predilection in the brain. Interestingly, all cases were favorable to steroid treatment at least in short-term follow-up. The long-term follow-up results were not well documented. Thus, it is uncertain whether the long-term prognosis of pseudotumoral form of NBD is favorable or not. In our case, the mass responded to steroid treatment at the first and second occasions, but the last one did not.

Histological findings of NBD may be variable according to the treatment and stage of the disease, but usually reveal following features: perivascular cuffing of small lymphocytes, microcystic softening, demyelination, and gliosis (14-16). Some authors reported acute neutrophilic inflammation without vasculitis in a fulminant form of NBD (16). In pseudotumoral form of NBD, a few examples of biopsy have been reported. Geni et al. reported mild perivascular inflammation without necrosis and Park et al. reported perivascular lymphocytic infiltration, secondary gliosis, petechial hemorrhage, and hemosiderin with or without demyelination (6, 10). In addition to these findings, plasma cell infiltration, hyaline thickening of the vascular wall, and ischemic necrotic foci as shown in our case may reflect the long duration of inflammatory process. NBD shows variable response to steroid treatment (10, 16, 17). However, it is accepted that acute inflammation is more favorable to steroid treatment and has better prognosis than chronic inflammation (4, 10, 17). Histologic evidence of chronic inflammation in our case could explain the unresponsiveness to steroid therapy and poor prognosis.

In summary, we report a case of pseudotumoral form of NBD, of which the diagnosis was greatly hampered by atypical imaging features with recurrent mass-like lesions. We emphasize that if pseudotumoral NBD is suspected, more meticulous and aggressive approach including stereotactic biopsy as well as, if needed, resection should be done for more precise diagnosis and prognostic information. To elucidate the prognostic implications of the pseudotumoral form of NBD, more case reports or studies are needed.

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