

Tuberculous Meningitis with Initial Manifestation of Isolated Oculomotor Nerve Palsy

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Abstract- Tuberculous meningitis (TB meningitis) is a subacute meningitis known for its various form of initial manifestations, which often make early diagnosis difficult. The present case report demonstrates a patient with TB meningitis, who had initial manifestation of isolated right oculomotor nerve palsy. High vigilance is needed in diagnosing TB meningitis.

A 75 year-old female was hospitalized due to acute onset of right side ptosis. Thorough neurological examination at admission revealed isolated right oculomotor nerve palsy. Brain magnetic resonance imaging and cerebral angiography showed no specific finding. Lumbar puncture was performed two days later due to low grade fever. Cerebrospinal fluid (CSF) study and the polymerase chain reaction on CSF confirmed the diagnosis of TB meningitis.

Because TB meningitis is a chronic disease, cranial nerve palsies are common manifestations. This report suggests that TB meningitis should be a disease of differential diagnosis for isolated oculomotor nerve palsy.

Key Words: Tuberculous meningitis, Oculomotor nerve palsy

Acta Neurol Taiwan 2005;14:21-23

INTRODUCTION

Tuberculous meningitis (TB meningitis) is not uncommon in central nervous system infection. Its initial manifestation varies widely, and may cause difficulty in diagnosis and even leads to arteriography. This is because some of the transient deficits may be confused with non-infectious ischemic attacks⁽¹⁾. The rate and extent of recovery have been shown to be strongly related to the rapidity of initiating anti-tuberculosis therapy.

Therefore, it is crucial to diagnose TB meningitis and administer anti-tuberculosis agents early in the course. The present case report is an example of the rare initial manifestation of TB meningitis .

CASE REPORT

A 75-year-old female came to the hospital due to acute drop of right eyelid which was noted when she woke up in the morning. The patient denied any preex-

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Received December 3, 2004. Revised December 23, 2004.
Accepted January 14, 2005.

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isting underlying disease such as diabetes mellitus or hypertension. She was admitted for evaluation on the same day. After admission, neurological examination revealed a conscious clear patient with isolated right oculomotor nerve palsy, which manifested as ptosis of the upper eyelid, ipsilateral pupil dilatation (7 mm), loss of light reflex, and restriction of extraocular movement attributed to oculomotor nerve in the right eye.

There were no headache, nausea, vomiting, proptosis, orbital pain, eye swelling, facial paresthesia, bulbar signs, bruits, nuchal rigidity, seizure or other focal findings. The body temperature of the patient was 36.8°C on admission. Laboratory data at this time revealed the following values: leukocytes, 5520/ul (84.5% neutrophils; 4.9% monocytes; and 10% lymphocytes); hemoglobin, 11.9 g/dl; rheumatoid factor, <20 IU/ml; C3, 101 mg/dl; C4, 24.7 mg/dl; C-reactive protein, < 1 µg/ml; antinuclear antibody profile, negative. Chest plain film, brain magnetic resonance images and cerebral arteriography all showed negative findings. However, fever up to 38°C was noted two days after admission. Lumbar puncture was performed on 6th day of admission due to persistent low grade fever. Examinations of the cerebrospinal fluid showed an initial pressure of 302 mmH₂O with cloudy appearance. The cell count was 183 (49% mononuclear leukocytes and 51% polymorphonuclear leukocytes) with protein level of 270 mg/dl, and glucose level of 18 mg/dl (blood glucose level of 137 mg/dl). Microbiological stains for Gram (+) and Gram (-) bacteria, fungi, and acid-fast bacilli were negative. Other tests including Venereal Disease Research Laboratory Slide Test, and bacterial cultures were negative.

Based on the findings of lumbar puncture and posi-

tive tuberculosis polymerase chain reaction, TB meningitis was suspected and four-drug anti-tuberculosis therapy (rifampicin, isoniazid, pyrazinamide, ethambutol) was instituted on the same day of CSF study. After treatment, fever subsided on 7 th day of anti-TB therapy, the right pupil size returned to 4 mm (slightly larger than the left pupil), and right light reflex returned on 10th day of anti-TB therapy, but ptosis and restriction of extraocular movement persisted. Repeated lumbar punctures on 6 th and 13th days of anti-TB therapy revealed improving profiles after therapy (Table). She discharged on the 21th day of anti-TB therapy with ptosis and limitations of extraocular movements, which did not recover until the 85 th day of anti-TB therapy.

DISCUSSION

In the present case, the presentation of acute right eyelid drop with dilated pupil prompts the initial diagnosis of isolated oculomotor palsy. It was the negative finding in brain imagings and angiography as well as persistent low grade fever that make CSF study necessary. In the present case, the lack of headache, neck stiffness, disturbance of consciousness, or general malaise further complicated the diagnosis. The present case serves a good example of the diversity and rarity of the initial manifestations in TB meningitis. Therefore, it is always necessary to take TBM into consideration when abrupt deficit of 3rd cranial nerve is noted⁽¹⁻³⁾.

According to an earlier review of 45 cases, Chotmongkol and colleagues found that initial clinical presentations of TBM include headache (95.6%), fever (91.1%), stiff-neck (77.8%), mental impairment (40.0%),

Table. Findings of cerebrospinal fluid

	Appearance	Cell count P/M (%)	Protein (mg/dl)	Sugar CSF/Blood (mg/dl)	Initial pressure (mm H ₂ O)
1 st CSF study (6 th day of admission)	Cloudy	183 (51/49)	270	18/137	302
2 nd CSF study (11 th day of admission)	Cloudy	153 (80/20)	117	31/145	163
3 rd CSF study (18 th day of admission)	Clear	44 (2/98)	66	45/201	76

CSF: cerebrospinal fluid; P: polymorphonuclear leukocytes; M: mononuclear leukocytes.

motor weakness (11.1%) and cranial nerve palsies (11.1%). Unilateral oculomotor nerve palsy has been found to be quite uncommon (2.2%). Other atypical manifestations include inter-nuclear ophthalmoplegia, psychosis and hemianopia. The presence of focal neurological deficits often indicates that the neurological sequelae may persist in the survivors⁽⁴⁻⁸⁾.

The presentation of acute or subacute unilateral oculomotor nerve palsy raises a number of diseases for differential diagnosis, including brainstem vascular disease, multiple sclerosis, tumor, aneurysm, temporal lobe herniation, infection, cavernous sinus thrombosis, diabetes mellitus, arteriovenous malformations, Tolosa-Hunt syndrome, migraine, myasthenia gravis and carotid-cavernous fistula⁽⁹⁾. However, many of the above diagnosis can be excluded by obtaining detailed history, performing neurological examinations, brain imaging studies, including cerebral arteriography.

The prognosis of TB meningitis is related to the rapidity of initiating appropriate therapy. Delays in diagnosis and treatment result in poor prognosis with severe neurological sequelae. However, early diagnosis of TBM is often difficult and the discrimination of cases from those of bacterial meningitis or other meningo-encephalitis is sometimes difficult, if not impossible, by clinical features alone. Thus, empiric anti-tuberculosis therapy may be necessary when TBM was suspected^(1-3,10).

Taken together, for every patient presenting with abrupt onset of unilateral oculomotor nerve palsy, TB meningitis should be in the list of differential diagnosis since the timing of treatment is crucial for the prognosis.

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