Miliary Tuberculosis Associated with Multiple Intracranial Tuberculomas

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CEYLAN, E. and GENCER, M. Miliary Tuberculosis Associated with Multible Intracranial Tuberculomas. Tohoku J. Exp. Med., 2005, 205 (4), 367-370 —— In this study we have reported a 12-year old girl patient who visited out-patient clinic with the history of headache and convulsion. The patient was diagnosed as miliary tuberculosis and multiple brain tuberculomas. Miliary infiltration was observed in chest x-ray and high-resolution thorax computed tomography (CT), and multiple tuberculomas surrounded with wide edema was observed in Magnetic Resonance Imaging (MRI). Acid-fast bacilli were detected in induced sputum and gastric fluid. Focal epileptiform activity was seen in electroencephalography (EEG). The patient was administered antitubercular, anti-edema and antiepileptic therapy. The patient had not experienced convulsion for the second time and EEG had been normal; therefore her treatment was completed within 12 months. Chest x-ray and high-resolution thorax CT findings turned to normal and brain MRI findings improved significantly. As a conclusion, tuberculosis disease has very different clinical pattern depending on the organs it involves. The significance of our case is due to the presence of both the miliary tuberculosis and intracranial tuberculomas. The patient was admitted to the hospital due to central nervous system symptoms rather than pulmonary symptoms.

——— miliary tuberculosis; tuberculoma; convulsion

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Tuberculosis has high morbidity and mortality, and represents a public health problem, especially in developing countries (Nunes et al. 1996). Beside pulmonary tuberculosis, extrapulmonary tuberculosis and the complications related to these have also been frequently seen in Turkey (Egeli et al. 2003; Aslan et al. 2004; Hidir et al. 2004).

The involvement of Central Nervous System (CNS) caused by tuberculosis occurs often in the form of tuberculosis meningitis and tuberculoma (Ravenscroft et al. 2001). CNS tuberculoma is a rare form of extrapulmonary tuberculosis and it is frequently as a result of hematogenous spreading from a primary focus, characteristically the lung.

In most of the intracranial tuberculomas there are no clinical findings. However, the tuberculomas, those are sufficient in number and size to make focal neurological signs and to increase the intracranial pressure, demonstrate clinical signs (Iraci et al. 1980).

In this study we have reported a rare case, who was diagnosed as pulmonary miliary tuberculosis and multiple brain tuberculomas.
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In electroencephalography (EEG), compared to the left, there was slowness in the paroxysmal background activity in the right occipital area. Also there was minimal focal epileptiform activity.

The patient was diagnosed as miliary tuberculosis with multiple brain tuberculomas, and treated with a combination of four drugs. In the first two months, the patient was administered isoniazid 300 mg once daily, rifampicin 600 mg once daily, pyrazinamide 1 gr twice daily, and ethambutol 1.5 g once daily. Acid-fast bacilli were negative in direct smear and culture both in sputum and gastric fluid at the end of 2 months. Isoniazide (300 mg) and rifampicin (600 mg) once daily were given during the next 10 months. At the start of the treatment, dexamethasone (16 mg/day) was added to the therapy for brain perilesional edema for 10 days. Carbamazepine (400 mg/day) was added as an antiepileptic agent for one year. No adverse effect was observed for any drugs.

The treatment of tuberculosis was completed in 12 months. Chest x-rays and high-resolution thorax CT of the patient turned to normal. In the follow-up MRIs which were taken one year after the initiation of the treatment, 6 of the brain tuberculomas showed dissolution whereas 5 of them showed a significant reduction in size (Fig. 3). The patient had not experience another epileptic

CASE REPORT

This study reports a 12-year old girl patient who had been healthy before and applied out-patient clinic with the history of convolution, headache, exhaustion, loss of weight and appetite within last month in her history. Pulmonary or extra pulmonary tuberculosis was not noted in the family history of the patient. Vital signs, such as pulse, blood pressure, and body temperature, were within normal ranges. The height of the patient was 157 cm and the weight was 51 kg. The nutritional status was normal (body mass index: 20.69). Pulmonary, neurological and other system examinations were normal.

In the laboratory examination, hemoglobin was 10.5 g/100 ml, blood leukocyte was 6,800/ml, and erythrocytes sedimentation rate (ESR) was 90 mm within the first hour. Serum chemistry, blood gases and urinalysis were normal. Induced sputum and gastric fluid, direct smear and culture were positive for acid-fast bacilli. Both BCG vaccine scar and tuberculin skin test were negative. Human immuno-deficiency virus infection, toxoplasmosis, syphilis, cysticercus and fungal granulomas were not found in the body.

Chest x-ray (Fig. 1A) and high-resolution thorax computed tomography (CT) (Fig. 1B) were interpreted as a positive evidence for miliary tuberculosis, and the brain MRI indicated positive

findings of multiple tuberculomas (Fig. 2). In electroencephalography (EEG), compared to the left, there was slowness in the paroxysmal background activity in the right occipital area. Also there was minimal focal epileptiform activity.

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![Fig. 1. Chest x-ray, and high-resolution thorax CT before treatment. Chest x-rays (A) reveals widespread nodularity in millimetric sizes, which show, in some areas, a tendency to combine and more evident in the middle zones of both lung, were observed. Similarly there were widespread micronoduler hiperdense formations in whole lung in the high-resolution thorax CT (B).](image)
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attack and her EEG returned to normal.

**DISCUSSION**

The involvement of central nervous system, caused by tuberculosis, occurs often in the form of tuberculosis meningitis and tuberculoma (Ravenscroft et al. 2001). Radiologic findings in brain tuberculomas are nonspecific. A large lesion with important perilesional edema and ring enhancing patterns sequences suggest tuberculoma (Whiteman et al. 1995). In accordance with this information, multiple rounded lesions, whose peripheric zones showed dense staining whereas the central zones showed less staining in whole brain but especially in cerebellum, and there were wide edemas surrounding the lesions.

Signs and symptoms in the clinical process of brain tuberculomas are generally silent, and the complaints gradually increase (Teoh et al. 1987; Berger et al. 1998). In the beginning there had been only non specific symptoms like headache, exhaustion, loss of weight and appetite in the history of our case, convulsion was occurred in the later stages. The most important factor affecting the prognosis in CNS tuberculosis and brain tuberculomas is early beginning of the therapy (Hussain et al. 2004). The probability of irreversible brain destruction, and formation of sequel lesion increase with late initiation of the therapy (Parsons 1989; Humphries et al. 1990). For this, the most important thing in brain tuberculosis diagnosis is the suspicion from the disease and to fasten the diagnostic procedure.

Tuberculosis shows very different clinical patterns depending on the organs it involves. CNS tuberculosis, and symptoms and signs depending on this, may or may not be seen with pulmonary involvement. Even with pulmonary in-
volvement, some patients with CNS involvement may visit the hospital with CNS symptoms or signs without any evidence for pulmonary involvement.

In cases where pulmonary symptoms are not predominant, some images that lead us to tuberculosis diagnosis can be seen in routine chest x-ray. These pathological findings can be a guide for early diagnosis of tuberculosis, and mortality and morbidity rate can be significantly decreased by the initiation of effective treatment without delay.

References


