

CASE REPORT

A CASE OF *BORRELIA* MENINGITIS

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A 16-year-old male with headache, vomiting, fever, neck stiffness, and a positive Kerning's sign was referred to Boali Medical Center. The cerebrospinal fluid examination revealed a lymphocytic meningitis, and the blood smears was positive for *Borrelia*. He was successfully treated with doxycycline.

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Introduction

Relapsing fever is caused by arthropod-borne spirochetes of the genus *Borrelia*, and is clinically characterized by recurrent episodes of fever and spirochetemia.¹⁻³ Outbreaks of disease have been reported from throughout the world with the exception of a few areas in the South-West Pacific. Ardabil Province in North-West of Iran has long suffered from this tick-borne relapsing fever, which is caused by *Borrelia persica*.^{4, 5} The disease is endemic in the towns of Parsabad, Meshgin-Shahr and Khalkhal.

Case Report

A 16-year-old male student from Khalkhal town of Ardabil Province (North-West of Iran) was admitted to the Infectious Disease Ward of Boali Medical Center with fever, headache, and vomiting, which had suddenly been started 5 days prior to admission.

He suffered from malaise and occipital headache. His past medical history was negative for any significant medical/surgical diseases, and no medication had been administered prior to admission. He also denied any tick bites.

On physical examination, he seemed to be a well-developed and well-nourished young male. His body temperature (BT) was 36.4°C while his pulse rate, and blood pressure were 88 per minute and 88/50 mmHg, respectively. He was found to have neck stiffness, and a positive Kernig's sign.

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The physical examination was otherwise normal. Chest X-ray was also normal.

The results of blood studies were as follows: hemoglobin 12 g/dL, hematocrit 37%, white blood cells (WBC) count 6,600 (neutrophil 46%, lymphocyte 44%, monocyte 7%, and eosinophil 3%), the 1st hour erythrocyte sedimentation rate (ESR) 25 and the 2nd hour ESR 42. Urinalysis revealed 12 – 15 WBCs. Wright and Widal tests were negative; three blood cultures and the blood smear for malaria were also negative. In lumbar puncture, the patient had a high cerebrospinal fluid (CSF) pressure. CSF analysis results were as follows: protein 112 mg/dL, CSF sugar 65 mg/dL (blood sugar 110 mg/dL), and WBC count 47 (with 2% polymorphonuclear cells and 98% lymphocytes). CSF smear and culture were negative for bacteria.

In the 4th day of admission, BT rised to 39°C, but physical examination was otherwise normal. Repeated blood cultures and smears were performed, and ceftriaxon 2 g two times daily was started. In the 5th day, the Laboratory of Health Center reported that his blood smear was positive for *Borrelia*. Therefore, ceftriaxon was discontinued and doxycycline was started two times daily. He was discharged after 5 days of treatment without any signs or symptoms.

Discussion

A case of meningitis caused by *Borrelia* was reported. The diagnosis was made by blood smear examination.

The spirochetal relapsing fever is caused by

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different *Borrelia* species. Relapsing fever is well recognised as an infection of the blood, but little is known about its predilection for the nervous system. Cadavid and Barbour discussed that *Borrelia turricata* and *Borrelia duttoni* can cause neurological involvement as often as *Borrelia burgdorferi*, which can cause lymphocytic meningitis and peripheral facial palsy.⁴

In the study of Warren and Johnson, less common findings included nuchal rigidity, pulmonary rales and rhonchi, lymphadenopathy, and jaundice.¹ Neurological findings have been reported in up to 30% of patients and include coma, cranial nerve palsies, hemiplegia, meningitis, and seizures.⁴ Cerebrospinal fluid pressure is usually elevated in patients with central nervous system involvement and is associated with pleocytosis (15 to 2,200 cells/mm³) and an elevated protein concentration (up to 160 mg/dL). The spinal fluid glucose level is normal. Spirochetes have been detected in cerebrospinal fluid by smear or by animal in up to 12% of patients with central nervous system signs.^{4,6-7}

Spirochetal relapsing fever is an endemic disease in Ardabil Province and 126 cases have already been reported from Khalkhal district by Ardabil University of Medical Sciences.⁵ Considering the high frequency of the disease in

the region, it is important to consider its unusual manifestations in all febrile patients.

References

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