CASE REPORT

Retrobulbar neuritis associated with Borrelia afzelii infection

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Abstract

Purpose: **To report retrobulbar neuritis caused by Borrelia afzelii culturally proved from cerebrospinal fluid (CSF).**

Methods: **A 23 year old female underwent ophthalmologic, laboratory and other auxilliary examinations.**

Results: **CSF cultures grew spirochetal microorganisms, serotyped by monoclonal antibodies as Borrelia afzelii. Following the serological and cultural results, treatment with doxycycline 200 mg daily was started and kept for three weeks. Gradual improvement of the visual acuity of the right eye was observed with full recovery to 20/20.**

Conclusions: **Borrelia infection should be considered in the differential diagnosis of retrobulbar neuritis. CSF should be examined also culturally.** ***(Ref. 5.)***

Key words: retrobulbar neuritis, oculo-neuroborreliosis, Borrelia afzelii.

A 23-year-old woman was admitted on march 26, 1997 to the Department of Ophthalmology, Faculty of Medicine, Comenius University, Bratislava, with a history of sudden loss of vision in her right eye to hand movements. The visual loss was accompanied by mild retrobulbar pain. The anterior segment of both eyes appeared normal but for a slight mydriasis of the right pupil (5.5 mm) accompanied by a sluggish direct light response and an normal consensual response.

The visual evoked potential (VER) showed a prolonged latency of the wave P100 (111.2 ms) on stimulation of the right eye with a normal response of the left eye.

Computerized tomography disclosed a slight enlargement of the retrobulbar portion of the right optic nerve as compared to the left.

Lumbar puncture demonstrated a normal pressure and biochemical composition with only a few small lymphocytes. The cerebrospinal fluid was submitted for culture.

Because of the profound loss of vision and the possible diagnosis of MS, the patient was initially treated with B-vitamins multiplex and 1.0 mg/kg/day of prednisone.

Repeated serological studies four weeks after the onset of disease revealed the presence of specific IgG and IgM antibodies to Borrelia species at a titer of 1:256. At the same time cultures initiated on BSK II medium from the CSF tap revealed the growth of pure spirochetes colonies. These colonies were submitted for further subtyping and characterization.

Treatment with 200 mg of Doxyllin daily was initiated and continued for three weeks while the prednisone dosage was discontinuated. A rapid visual recovery was observed with an acuity of 20/20 recorded a week after the antibiotic treatment was started.

Ocular examination two months after presentation to our clinic revealed a visual acuity of 20/20 in both eyes, normal pupillary responses, full visual fields and normal posterior segments but for a mild relative temporal pallor of the right optic nerve.

One year after initiation of the disease, the patient retains full visual acuity and fields in both eyes. Repeated serological tests disclosed a rise of the IgG antibodies titer to Borrelia to 1:2048 but the patient was free of any ocular or systemic symptoms.

The isolated borrelia strains was submitted to further typing according the OspA serotyping system by monoclonal antibodies in western blot, using monoclonal antibodies H9724, specific for the flagella antigen; H5332, specific for OspA of B. burgdorferi sensu stricto (obtained by the courtesy of A.G. Barbour, University of Texas, San Antonio, USA); I 17.3, J 8.3 specific for OspB and OspA of B. afzelii (obtained from D. Postic, Institut Pasteur, Paris, France) and D6 specific for OspA of B. garinii (obtained from O. Péter, Institut Central des Hôpitaux Valaisans, Sion, Switzerland). Western blot with monoclonal antidobies was performed according Stanek et al. The Western blot analysis demonstrated the reactivity of the isolated strein with monoclonal antibodies H5332, H9724, I 17.3 and J 8.3 and could be therefore on the basis of its OspA seroreactivity preliminary classified as Borrelia afzelii.

The isolation of B. afzelii in cases of neuropathies is not often reported. Mostly B. garinii is found in cases of neuroborreliosis in Central Europe and this genotype is also regularly isolated from ticks in Slovakia. In the literature, so far as we know, no culture positive cases of ocular neuropathies were reported except a few papers, where the presence of borreliae was proved using the PCR. Also in experiments with nonhuman primates were borrelias only rarely cultured from the CSF (Pachner). PCR is apparently at present the only method able to prove the aetiology of the illness shortly after onset.

The high antibody titer found after one year indicates that the infection continued after the primary therapeutic intervention. In spite of the evidently complete recovery of the patient, it seems reasonable bedame of the high antibody titer to recommend in such cases the patient to be kept under further observation.

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