Recurrent Cerebellitis

—A Case Report of a Possible Relationship with Epstein-Barr Infection—

HIROSHI SHOJI, YOKO GOTO, YOSHIO YANASE, YOSHIHIRO SATO, KENICHI NAKASHIMA, HIDEYO NATORI AND MASARO KAJI

Department of Internal Medicine, Kurume University School of Medicine, Kurume, 830 Japan

Received for publication April 2, 1983

Summary: A 52-year-old male noted a gradually developing dysarthria and ataxic gait. No fever or lymphadenopathy was observed, but hepatomegaly was present. A neurological examination revealed cerebellar speech, dysmetria, decomposition of the four limbs and an ataxic gait. Atypical lymphocytes were found in the blood and CSF. IgG antibody to EBV VCA was 320 x for serum and 8 x for CSF. The patient almost completely recovered several months after the onset, but he suffered a recurrence the following year.

Key words: cerebellitis, recurrent — infectious mononucleosis — Epstein-Barr virus infection — CSF cytology — demyelinative disease

Infectious mononucleosis (IM) is characterized by fever, rash, lymphadenopathy, hepatomegaly, splenomegaly, atypical lymphocytes and heterophil antibodies. The disease is usually caused by Epstein-Barr virus (EBV). About 10 cases of acute cerebellar ataxia and cerebellitis with IM or EBV infection have been reported (Bajada, 1976; Bennett and Peters, 1961; Bergen and Grossman, 1975; Cleary et al. 1980; Cohen 1963; Dowling and Van Slyck, 1966; Fukuyama et al. 1978; Gilbert and Culebras, 1972; Hoyne, 1950; Lascelles et al. 1973; Seltzer, 1953). The following report describes an adult case of recurrent cerebellitis which may have been related to an EBV infection.

Case Report (Fig. 1)

The patient, a 52-year-old male, complained of abdominal pain on June 20 1980, and was admitted to a local hospital with suspected appendicitis. He gradually developed speech and gait disturbances. On August 11 he was transferred to our hospital. Past History: He had pneumoconiosis 2 years previously. Family history: His two daughters suffer from progressive muscular dystrophy.

On the first admission, temperature was 36.2 °C, blood pressure was 120/70. There was no lymphadenopathy or splenomegaly. The liver was palpable 2 cm below the costal margin. He had no impairment of consciousness, but he exhibited horizontal nystagmus and cerebellar speech. Nuchal stiffness and Kernig's sign were negative. Muscle power and deep tendon reflexes of all extremities were normal. Babinski's sign was negative. In finger to nose and heel to knee tests he showed dysmetria and decomposition on the left side rather than the right side. Tandem gait was impossible. No sensory or urinary impairment was observed.
Laboratory data

ESR was 12/hr; Urinalysis normal; RBC $398 \times 10^4$; Hb 12.7 g/dl; Ht 40.1%; WBC 9700 with 2% stab form, 17% neutrophils, 31% lymphocytes, 2% monocytes and 48% atypical lymphocytes. The atypical lymphocytes formed rosettes with sheep erythrocytes. T cell was 87.5%, B cell 4.7%, but lobulated T cells were not observed, and bone marrow findings showed a normal pattern. GOT 14.5 U, GPT 9.5, serum protein 7.5 g/dl, $\alpha_1$-gl 13.5%, $\alpha_2$ 7.9, $\beta$ 8.1, $\gamma$ 13.2, IgG 1030 mg/dl, IgA 175, IgM 472, CEA 1.4 ng/ml (normal < 2.5 ng/ml), Wa R (-), antinuclear antibody (-), CRP (-). Paul-Bunnell test was 32 x, ECG normal, X-rays of chest and skull n.p., EEG normal. Brain CT including enhancement study showed no abnormalities in the cerebellum and hemisphere. CSF pressure was 70 mmH$_2$O, the fluid contained 29 cells per mm$^3$ with 90% lymphocytes (10% atypical form), 10% monocytes (Fig. 2), protein 150 mg/dl, IgG 9.9 mg/dl, IgM 0.3, IgA 1.5, sugar 57 mg. Serological studies (Fig. 1): Serum IgG antibody to EBV viral capsid antigen (VCA) increased from 40 x to 320 x, IgM antibody from < 10 x to 20 x, early antigen 10 x, EBV nuclear antigen 10 x to 20 x, while CSF IgG antibody to EBV VCA was 8 x. The antibody assay of EBV was made by the indirect immunofluorescent method (Special Reference Laboratory, Tokyo). Serum complement fixation antibody to herpes simplex virus was 32 x, varicella-zoster virus 32 x, cytomegalovirus 4 x and Weil-Felix test 10 x.

Clinical course

In the middle of August, the patient contracted herpes zoster in the left Th 10. After administration of prednisolone the
cerebellar symptoms diminished markedly, and he was discharged in December 1980. In April of the next year, a 39°C fever continued for approximately one week. He complained again of cerebellar speech and an ataxic gait, and was readmitted to our hospital on May 18 1981. On the second admission, dysarthria, cerebellar signs of the four limbs and an ataxic gait were observed. WBC was $109 \times 10^4$, with 38% neutrophils, 48% lymphocytes, 2% monocytes and 12% atypical lymphocytes. The CSF cell count was 106 per mm$^3$ with 79.4% T cells and 0.4% B cells (microplate method using rosette-forming, normal T cell 70-80%, B cell 10-20%), protein 90 mg/dl, IgG 4.8 mg/dl, IgM 0.3, IgA 0.1, sugar 54 mg, myelin basic protein 3.10 ng/ml (normal < 4 ng/ml). Repeated brain CT revealed no abnormalities. The patient was again given prednisolone, and the cerebellar symptoms subsided within 2 months. He was discharged on September 1, but at the end of the month he died acutely from a fulminating hepatitis. An autopsy was not performed.

Discussion

In the case of this 52-year-old male, hepatomegaly, atypical lymphocytes and an increase of serum EBV IgG antibody including the CSF antibody (Joncas and Chiicone, 1974) were observed, but fever, lymphadenopathy, splenomegaly and heterophil antibody were not observed. IM in the aged often does not produce lymphadenopathy and splenomegaly (Carter et al. 1976). The patient was diagnosed to have atypical IM, possibly due to EBV.

For the differential diagnosis, acute or chronic lymphocytic leukemia was ruled out on the basis of the peripheral blood and bone marrow findings. On the other hand, in southern Japan including this area, the incidence of adult T cell leukemia caused by a type of retrovirus is high, and a meningeal infiltration is common. However, the disease (Uchiyama et al. 1977) is distinguished by the rapid course, lymphadenopathy, skin infiltration and lobulated T cells. The present case displayed none of these findings, thus adult T cell leukemia was excluded.

There have been about 10 cases of acute cerebellar ataxia and cerebellitis associated with IM or EBV infection (Bajada, 1976; Bennett and Peters, 1961; Bergen and Grossman, 1975; Cleary et al. 1980; Cohen, 1963; Dowling and Van Slyck, 1966; Fukuyama et al. 1978; Gilbert and Culebras, 1972; Hoyne, 1950; Lascelles et al. 1973; Seltzer, 1953). Most of these were infantile cases. This disease rarely occurs in adults over 50 years of age.

Bennett and Peters (1961) described a 52-year-old male with an acute cerebellar syndrome associated with IM. Fukuyama et al. (1978) reported a 38-year-old female with cerebellar ataxia associated with IM. In this case, the patient showed EBV antibody of 640x without CSF pleocytosis, and the cerebellar ataxia continued for 6 months. Although the CSF cell count was normal or with a slight pleocytosis in most of the literature cases, it is notable that our case exhibited moderate pleocytosis. In IM, it is generally accepted that the T cell response appears following a B cell infection due to EBV. The presence of atypical lymphocytes in the CSF suggests that the cerebellitis was caused by a closely related mechanism in the blood.

Finally, the recurrence of cerebellitis is similar to demyelinative disease accompanying herpes zoster (Horten et al. 1981; McAlpine et al. 1959), recurrent herpes zoster encephalitis (O'Donell et al. 1981), or recurrent herpes simplex encephalitis (Milstein and Biggs 1977). EBV and other herpes viruses are usually maintained as latent or persistent infections. Virus reactivation may occur under certain host states, and could become a focus for recurrent CNS infection or demyelinative disease.
References


