Electrophysiological studies on Kirisawa type uveitis (acute retinal necrosis)

SHUICHI YAMAMOTO and EMIKO ADACHI-USAMI

Department of Ophthalmology, School of Medicine, Chiba University, Inohana 1-8-1, Chiba 280, Japan

Abstract. Kirisawa type uveitis (acute retinal necrosis) is characterized by a necrotizing retinitis, heavy vitreous opacities, retinal vasculitis, and subsequent retinal detachment. Not only the etiology but also the clinical findings of this disease have not yet been defined.

In the preceding year we have seen four patients whose clinical course and findings were similar to each other. In two of them a vitrectomy and an encircling operation have been performed before retinal detachment occurred. This treatment has found to be effective. In all 4 cases electrophysiological examinations were done at various stages of the disease. ERGs following pattern and flash stimuli varied in accordance with retinal changes, while VECPs were less strongly affected as ERGs. Results are discussed referring to fluorescein angiographic findings and ocular changes.

Introduction

Kirisawa type uveitis, characterized by a very acute onset of severe uveitis with retinal perivasculitis and subsequent retinal detachment, was first described by Urayama et al [1] in 1971. In Europe and America similar diseases have been reported as necrotizing vaso-occlusive retinitis [2], bilateral acute retinal necrosis [3–6], or acute retinal necrosis [7, 8]. The clinical findings have not yet been defined in detail.

This report describes four cases of Kirisawa type uveitis together with electrophysiological findings obtained during the clinical courses.

Methods

Methods of electrophysiological examinations

Retinal and cortical potentials following flash and pattern stimulation were recorded in all four cases. The flash electroretinogram (FERG), which was evoked by a 20J Xenon flash lamp, was recorded with a contact lens electrode. For the pattern ERG (PERG), a black and white checkerboard pattern was produced on a TV screen placed in front of the patient’s eye at a distance of 90 cm. From that distance, the field size was 13°30’ x 21°20’. The check size was 118’.
The pattern was reversed at a rate of 3 Hz. The mean luminance of the pattern was kept at 39.1 cd/cm² and the contrast was set at 80%. The pattern ERG was recorded with a silver plate electrode placed on the center of the skin of the lower eye lid, the reference electrode was connected to the earlobe. Potentials from right and left lower eye lids were recorded simultaneously. The signals were amplified using a bandpass filter of 1.5–100 Hz. 300 responses were averaged.

For the pattern visually evoked cortical potentials (PVECP), checks of 57.5' reversing at a rate of 12 Hz in square wave mode, and pattern appearance-disappearance stimuli which appearance and disappearance time were 266 msec, were used. The field size was the same as for the PERG recording.

The flash VECP (FVECP) was recorded with a 0.3 J Xenon flash. Both pattern and flash VECPs were averaged 100 times. VECPs were recorded with a silver plate electrode placed at Oz, with a reference electrode on the earlobe.

Results

Case report

Case 1. (Figure 1). A 50-year-old woman was first seen on May 6, 1983 with an almost one month history of ocular pain and visual disturbance in her right eye. Vision of her right eye was 0.1 and 0.4 in the left eye. The right eye had anterior uveitis with cellular floaters. Yellowish-white rounded changes in the infero-temporal peripheral retina and white sheathing of arterioles were noted in the fundus. The left eye was normal. No systemic disorders were found. Serum titers (complement fixation test) for herpes simplex virus, herpes zoster virus, and cytomegalovirus were within normal limits.

On May 27 a vitreous opacity was visible which increased gradually. The patient was treated with oral prednisolone 30 mg/day. On July 5 retinal detachment in the right eye was suggested by ultrasonic scanning and electrophysiological findings, however, eventual retinal tears could not be seen because of heavy vitreous opacity. No surgical treatment was performed. After some time the vitreous began to clear day by day. On July 18 fluorescein angiography could be performed. The photographs showed multifocal leakage of dye in the choroid characteristic of uveitis. Leakage from the vessel walls and many non-perfusion areas were also seen (Figure 2).

On April 10 vision was decreased to 0.01 and proliferative changes and hemorrhages were observed through the entire retina.

Before retinal detachment occurred the FERG was subnormal with a decreased amplitude of the a- and b-wave, and oscillatory potentials. The ERG became flat at the time when the existence of a retinal detachment was suggested. On the PERG, an attenuated and delayed first positive wave was observed after the retinal detachment occurred. The pattern steady-state VECP was almost non-recordable and the pattern appearance-disappearance VECP was clearly reducted and delayed. The FVECP produced subnormal responses.