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Acute Posterior Multifocal Placoid Pigment Epitheliopathy Accompanied by Cystoid Macular Edema

(APMPPE/photocoagulation/cystoid macular edema)

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In a patient diagnosed as having acute posterior multifocal placoid pigment epitheliopathy (APMPPE) there was an accompanying cystoid macular edema. Oral and subconjunctival administrations of bethamethsone and mono-ocular photocoagulation produced only temporary positive results. This therapy showed be re-evaluated.

Acute posterior multifocal placoid pigment epitheliopathy (APMPPE) was reported by Gass (1) in 1968 to be a disease that demonstrated characteristic clinical fundal and fluorescein angiographic findings. However, the etiology and the definite location of the primary lesion remain obscure. In addition, clinical findings such as uveitis, episcleritis and papillitis that were not included in the case report of Gass (1) were reported by Savino *et al.* (2) and Fitzpatrick and Robertson (3).

We freated a patient with evidence of binocular cystoid macular edema. APMPPE was also suspected from other clinical and fluorescein angiographical findings. Our observations and a comparison with findings by other workers are reported herein.

CASE REPORT

A 46 year old woman was initially seen on February 9, 1981 with the primary complaint of blurred vision in both eyes. She was diagnosed as having hypertension about one year previously. She had been aware of bilateral blurred vision for about one year and the visual disorder gradually progressed. Initial findings :

Visual acuity : right -0.4 (n.c.)
left -0.4 (n.c.)

Intraocular pressure : right -13 mmHg (NCT)

The peripheral and central fields of vision in both eyes presented no abnormality. The anterior findings in both eyes showed minor conjunctival congestion.

The optic media were binocularly affected with slight clouding of the lens

and a slight opacification of vitreous bodies inferior to the periphery of the fundi.

The right fundus showed slight reddening of the optic disk and had a rather indistinct margin. The macula assumed a dark reddish shade similar to that seen in the case of cystoid macular edema. The posterior pole was spotted with several yellowish-white irregular mottled lesions, among which there were observed 2 opacified, brownish foci the size of one papilla and 1/3 papilla in diameter, respectively, suggesting the detachment of retinal pigment epithelium. There was a spreading of the whitish lesion with a mottled effect in the periphery superior to the ear.

The left fundus showed slight reddening of the optic disk with an indistinct margin and also there was evidence of cystoid macular edema in the right eye. There were no evident abnormalities in the posterior pole and peripheral regions.

Fluorescein angiography of the right eye failed to produce a clear visualization of the defects of the background fluorescence in the arterial phase, but the arterio-venous phase displayed a consistent leakage of the stain in the lesions.

There was no peripheral diffusion of the stain. Marked leakage of the stain occurred in the optic disk and produced a ring-shaped area in the macula (Fig. 1).

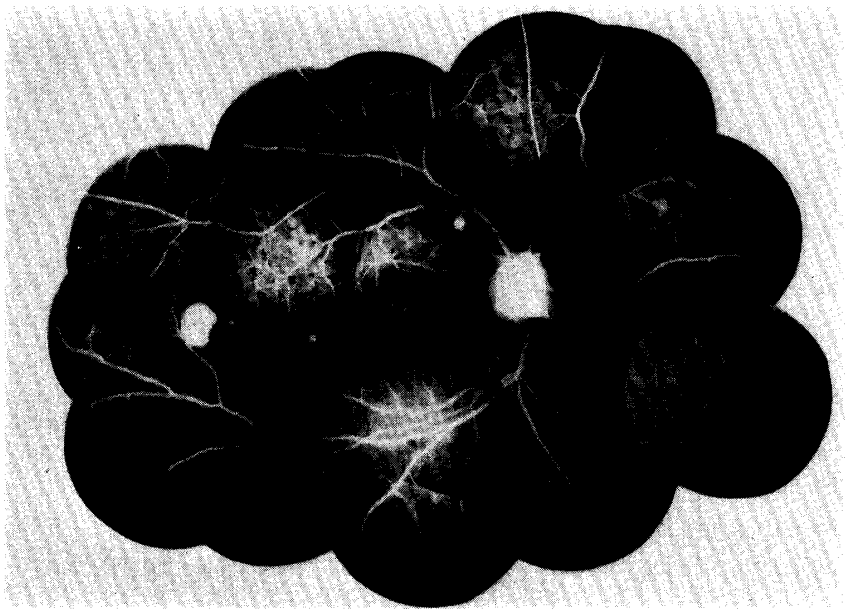

Fig. 1. Fluorescein of the fundus of the right eye : venous filling phase showed marked leakage of the stain in the disc and extensive hyperfluorescence in the posterior polar region.

In the fluorescein angiogram of the left eye, the arterial phase showed defects of back-ground fluorescence superior in the macula but the arterio-venous phase did not produce hyperfluorescence. There was marked leakage of the stain in the optic disk, and the macula was surrounded by a ring-shaped fluorescence such as was oberved in the right eye. Laboratory data showed

no abnormality.

Blood analysis : Erythrocytes : 4.44-million. Leukocytes : 6000. Hemoglobin : 13.7 g/dl. Hematocrit : 41.4%. Thrombocytes : 192×10^3.

Biochemical analysis : T. P. : 6.9 g/dl. T. BIL : 0.4 mg/dl. GOT : 16 IU/l. GPT : IU/l. ALP : 37 IU/l. BUN : 13 mg/dl. Na : 142 mEq/l. K : 3.7 mEq/l. Cl : 108 mEq/l. Glu. : 88 mg/dl.

Urinalysis : Glu (−), Pro (−), Bl (++), Ket (−), Bil (−) and Uro (±).

Serum test : Syphilis seroreaction (−) and toxoplasma erythrocyte agglutination ×128.

Radiography : A chest X-ray, cephalography and cephalic CT scanning showed no untoward findings.

Clinical course :

From the 14th day after the initial diagnosis, the patient was put on oral betamethasone, starting from 2 mg/day but gradually decreasing to 0.5 mg/day, that is a total of 40.5 mg. From approximately one month after the initial diagnosis, a conjunctival injection of betamethasone (0.5 mg) was given into both eyes once or twice a week.

On March 19, 1981 (the 40th day after the initial diagnosis), a photo-coagulation radiation to the regions of the stain leakage in the right eye was given using an argon laser photo-coagulator (Britt, Model 150) with a power 0.2 to 0.3W, spot size 100 to 200μ and exposure 0.05 to 0.1 sec, this radiation was repeated 40 times.

On April 9, 1981, 5 doses of the above photocoagulation therapy, power 0.3W, spot size 100μ and exposure 0.05 sec this time, were given to the region of the optic disk superior to the ear in the right eye, at the point where the stain leakage was still observed in fluorescein angiography.

Visual acuity improved gradually after the internal administrations of the steroid. On March 16, 1981 that is prior to the first administration of photo-coagulation therapy to the right eye, visual acuity was recovered to 0.6 (n. c) for the right eye and 0.8 (n. c.) for the left. Visual acuity was further improved to 1.0 (n. c.) for the right eye and 0.8 (n. c.) for the left 2 weeks after the first photo-coagulation, when the second photo-coagulation was performed. A week later visual acuity was 0.9 (n. c.) for the right eye and 0.9 (n. c.) for the left.

The fluorescein angiographic findings after the first photo-coagulation of the right eye confirmed disappearance of fluorescence leakage from the lesions except in the region of optic disk superior to the ear and there was a marked decrease in the leakage in the macula (Fig. 2). At the same time, fluorescein angiography of the left eye showed a marked decrease in the fluorescence leakage in the macula.

The left visual acuity was maintained at a range between 0.8 and 1.0. However, visual acuity of the right eye was gradually lost, returning to 0.4 (n. c.) on June 4, 1981 and was reduced further two days later to 0.2 (n. c.). The anterior finding of the right eye at that time showed a noticeable emergence of keratic precipitate. There was also a diminution in the cystoid macular

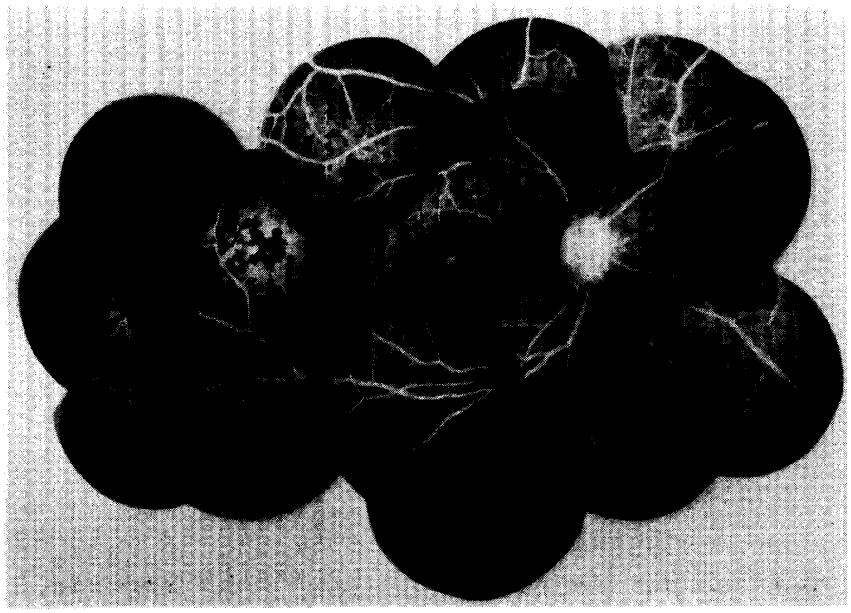

Fig. 2. Fluorescein fundus angiogram of the right eye after photocoagulation, in the venous filling phase, dye leakage in the posterior pole was reduced.

edema in the fundus. Atropine (1%) was put into the right eye along with steroid drops. Although postkeratic precipitates in the right eye disappeared about three weeks later, the fundal conditions remained unchanged. Visual acuity as of July 9, 1981 was 0.4 (n. c.) for the right eye and 0.9 (n. c.) for the left.

DISCUSSION

APMPPE is a disease first reported by Gass (1) in 1968 and the characteristics are :

(1) The lesion is localized in the retinal pigment epithelium, may be of various sizes, be scattered or multiple and usually occurs in one eye and sometimes in both.

(2) All the lesions have a yellowish-white colour.

(3) Serous detachment of the neuroepithelium is not involved.

(4) The lesion disappears after a few days or a few weeks, losing the yellowish-white colour but retaining partial pigmentation on the epithelium in the lesion.

(5) There is a recovery of visual function.

(6) The disease is characterized by the fluorescein angiographic findings in the fundus. In the acute stage of this disease, the initial phase of angiography produces hypofluorescence as the pigment epithelial lesion obstructs the background fluorescence. In the late angiographic phase, fluorescent dyes are incorporated into the lesion, and there is hyperfluorescence. In the convalescent stage, however, background fluorescence is visualized consistently in all the lesions.

In our patient there were scattered, flat, yellowish-white mottled opaque

lesions and round-shaped brownish opaque lesions in the right posterior pole. The fluorescein angiography in the late stage demonstrated hyperfluorescence consistent with the extent of the lesions. However, comparison with a typical case of APMPPE disclosed differences in the clinical development, fundal observations and fluorescein angiographic patterns.

This patient was referred to us after an elapse of about one year from the onset. The progress of visual acuity in the meantime was unknown. There was a tendency toward recurrence in the right eye, after the initial diagnosis. Ryan and Maumenee (4) reported a patient with a 2 year history of the disease and cases of favourable prognosis even after repeated recurrences were reported by Maruyama (5) and Koshibu and Uyama (6).

In the initial phase of fluorescein angiography, hyperfluorescence of the lesion lacked distinction. Koshibu *et al.* (6, 7) found that in the convalescent stage, a fairly normal choroidal fluorescence was obtained in the initial phase of fluorescein angiography but that a hyperfluorescence was seen in the late angiographic phase. Our patient had binocular papillitis and cystoid macular edema, as diagnosed by fundus examination and fluorescein angiographic procedure. Cases of APMPPE complicated with papillitis have been reported by some researchers (2, 6—8). Koshibu *et al.* (7) considered it reasonable to ascribe the cause of papillitis to a reactive congestion of optic disk due to retinal pigment epithelial lesion. Maruyama (5) and Kirkham *et al.* (8) referred to choroidal vasculitis as its cause. With regard to cystoid macular edema, this disease may be related to abnormalities in the retinal capillaries as APMPPE is considered to belong to the category of a vascular disorder (9—12).

Clouding of binocular vitreous bodies and keratic precipitate in the right eye were present in our patient. Vitreous opacification has been reported by Koshibu *et al.* (7) and Yoshioka and Tsumagari (12). There are reports of a keratic precipitation by Savino *et al.* (2), Fitzpatrick and Robertson (3), Koshibu *et al.* (7) and Yoshioka and Tsumagari (12). Vitreous opacification and keratic precipitation suggest that APMPPE may be an inflammatory type of disease.

Gass (1) suggested that APMPPE may be associated with a regional toxic substance. Other reports indicated the possibility of a viral origin influenza (3), adenovirus type V (13), etc. (4, 6).

He also considered that the primary lesion was in the retinal pigment epithelium and this idea was supported by other researchers (4, 7, 14, 15). On the other hand, some workers proposed that lamina choriocapillaris is the location of the primary lesion (2, 8—12). The findings of anterior and posterior uveitis and the presence of papillitis and cystoid macular edema in our patient suggest that APMPPE may be a vasculitis of the lamina choriocapillaris.

In view of the characteristically rapid regression of the focus (foci) and favourable prognosis of visual acuity in patients with APMPPE, no particular treatment is given in many cases. Koshibu and Uyama (6), however, described the remarkable therapeutic effects obtained by oral administration of steroids and sulfadrugs in combination with subconjunctival injections of steriods on the assumption that viral injection of retinal pigment epithelium or subse-

quent immunoreaction is involved in the onset of this disease. In the present case, prolongation of the lesion and in particular the detachment of the pigment epithelium in the right eye indicated a photo-coagulation treatment to the right eye, in addition to steroid administration. There was an improvement in visual acuity and the cystoid macular edema diminished. However, a recession of right visual acuity, activation of cystoid macular edema and emergence of anterior uveitis soon followed. The application of photocoagulation for the treatment of patients with APMPPE, should be given careful consideration.

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