

# SUDDEN VASCULAR OBSTRUCTION OF THE CENTRAL VESSELS OF THE EYE

## *Report of 2 Cases*

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When the eye is involved in a vascular accident, the treatment and prognosis always constitute a serious problem. After even small hemorrhages the eye rarely returns to normal and with a massive hemorrhage, a large percentage of the vision may be lost. Sudden loss of vision is usually due to thrombosis of the central vein or embolus of the central artery. The diagnosis is easily made by ophthalmoscopic examination as is illustrated by the following two cases.

### REPORT OF CASES

*Case 1:* The patient was a white man, 50 years of age, who was first seen on August 22, 1938. Ten days before examination, he first noticed dimness of vision in the right eye. This condition became much more severe the following day, and he consulted his oculist whose examination revealed the vision in the right eye to be 6/60, in the left eye 6/12, and corrected vision, right eye 6/30, left eye 6/6. The examination of the right eye had shown it to be essentially normal except for the disc which was swollen and the margin was indistinct; the blood vessels were thrombosed; there were numerous hemorrhages and a few white exudative spots. The blood pressure at that time was 130 systolic, 80 diastolic. The previous medical history was irrelevant except for a high blood pressure in 1934.

*Examination:* When the patient was seen at the Clinic on August 22, vision in the right eye was 4/60 and in the left eye 6/60 plus 1. The lids, iris, conjunctiva, and cornea were normal. The pupil of the right eye, which was round and reacted to light, measured 4 mm.; the pupil of the left eye measured 3 mm., was round and reacted to direct and consensual light stimulation. The finger tension was normal in both eyes and the muscle excursions were full. After dilatation with homatropine, examination of the fundus of the right eye showed many large and fine vitreous opacities; the disc was edematous and the veins engorged; the fundus was splashed with many hemorrhages of various sizes and shapes; the arteries were constricted and showed increased light reflex; the veins were dilated and showed an increased tortuosity. In the left eye, there were a few fine vitreous opacities; the disc was round, well defined, and of good color; the vessels were 3 to 4 with a slight increase in the light reflex; the macula was normal; no hemorrhages or exudates were seen. The visual field studies showed a

large, relative, central scotoma of the right eye and some concentric contraction for form; the visual field studies of the left eye gave essentially normal findings.

*Diagnosis:* Thrombosis of the central vein of the right eye.

*Laboratory Findings:* Examination of the blood showed 5,350,000 red cells, 7,900 white cells, hemoglobin 91 per cent with differential count of: neutrophils 59 per cent, lymphocytes 36 per cent, monocytes 4 per cent, eosinophils 1 per cent. The level of the blood sugar three hours postprandial was 88 mg. per 100 cc. Sedimentation rate was 0.1 mm. per minute. The Wassermann and Kahn tests gave negative reactions. Urinalysis showed: pH 6.9, specific gravity 1.017, albumin negative, sugar negative. The glucose tolerance test gave findings within the limits of normal.

*Consultations:* This patient was referred to Dr. A. Carlton Ernstene of the Medical Department, and a diagnosis of early generalized arteriosclerosis was made. The blood pressure at this time was 128 systolic, 86 diastolic. Roentgen examination of the chest was essentially negative. The examination of the ear, nose and throat by Dr. Paul Moore showed some chemical irritation of the throat with the tonsils as a possible focus of infection.

*Treatment:* The treatment advised was deep heat to the orbit in the form of diathermy.

*Prognosis:* Poor for the right eye.

*Case 2:* This patient was a white man, 24 years of age, who was first seen on August 26, 1938. He complained that loss of vision had been present for three weeks. On August 5, while driving his car, he first noticed cloudy vision in the left eye, and two days later there was almost total loss of vision in this eye.

*Examination* revealed the vision to be 6/6 in the right eye and limited to hand movements in the left eye. Finger tension was normal in both eyes. The pupils were round and equal and reacted to light and accommodation. After dilatation with homatropine, examination of the fundus of the right eye revealed the media to be clear, the disc round, well defined, and of good color, and the lamina cribrosa visible. There were no lesions of the macula or periphery. In the left eye, there were many large vitreous opacities and the detail of the fundus was somewhat difficult to make out due to intense vitreous haze. The disc could not be outlined but was of a rosy color; no cherry-red spot could be seen in the macula although there appeared to be an area of exudate. The entire retina was ischemic. The arteries were quite small; the veins were normal in size.

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*Diagnosis:* Embolism of the central artery of the left eye.

*Laboratory Examinations:* Examination of the blood showed 5,650,000 red cells, 7,250 white cells, 95 per cent hemoglobin with the following differential count: neutrophils 57 per cent, lymphocytes 42 per cent, eosinophils 1 per cent. The level of the blood sugar 5 hours postprandial was 140 mg. per 100 cc.

*Consultations:* Examination in the nose and throat department, by Dr. Paul Moore, revealed chronic tonsillitis and a deviated nasal septum. It was felt that the tonsils might be a possible focus of infection. Examination in the genito-urinary department revealed a normal prostate.

*Treatment:* The patient was advised to have all foci of infection removed and to have deep diathermy to the orbit.

*Prognosis:* Poor. After 24 hours of anemia, the retinal tissue rarely recovers.

### COMMENT

Retinal viability is very low as is all cerebral tissue. Therefore, total anemia of the retinae for even a very short period of time is sufficient to cause its death. In Case 1 some blood still reaches the retinal tissue and if it is possible by the use of diathermy, vasodilators, sweats, etc., to open the venous outflow, some restoration of vision is possible. Usually, this does not take place and blindness ensues. The further complication is secondary glaucoma for which enucleation is advised, other measures being of almost no value. This complication occurs in 25 per cent of cases. Undoubtedly, the end result in central venous thrombosis is dependent upon the extent of obstruction; if obstruction is not complete it may be possible to aid the vascular outflow by dilators, etc., as was accomplished in one of our recent cases in which good vision resulted.

Case 2 illustrates the rapid death of the retinal elements from loss of blood supply. Although collateral circulation and return of the blood supply occurs, the retina dies early and recovery is rare in cases of central arterial embolus unless, by chance, treatment is instituted immediately and the embolus is moved along to a small vessel. This should be attempted either by aqueous drainage or by forceful massage of the globe. While the venous thrombosis is very hemorrhagic, the arterial cases rarely produce hemorrhages and then very few and slight. The prognosis is poor in Case 2 as this patient does not have a cilio-retinal vessel which might supply the macula area and keep the central vision intact. The hopeful side of these seemingly hopeless cases is that rarely is the other eye similarly affected and, occurring as it does in middle or late adult life, there is a good possibility that the patient will escape blindness.