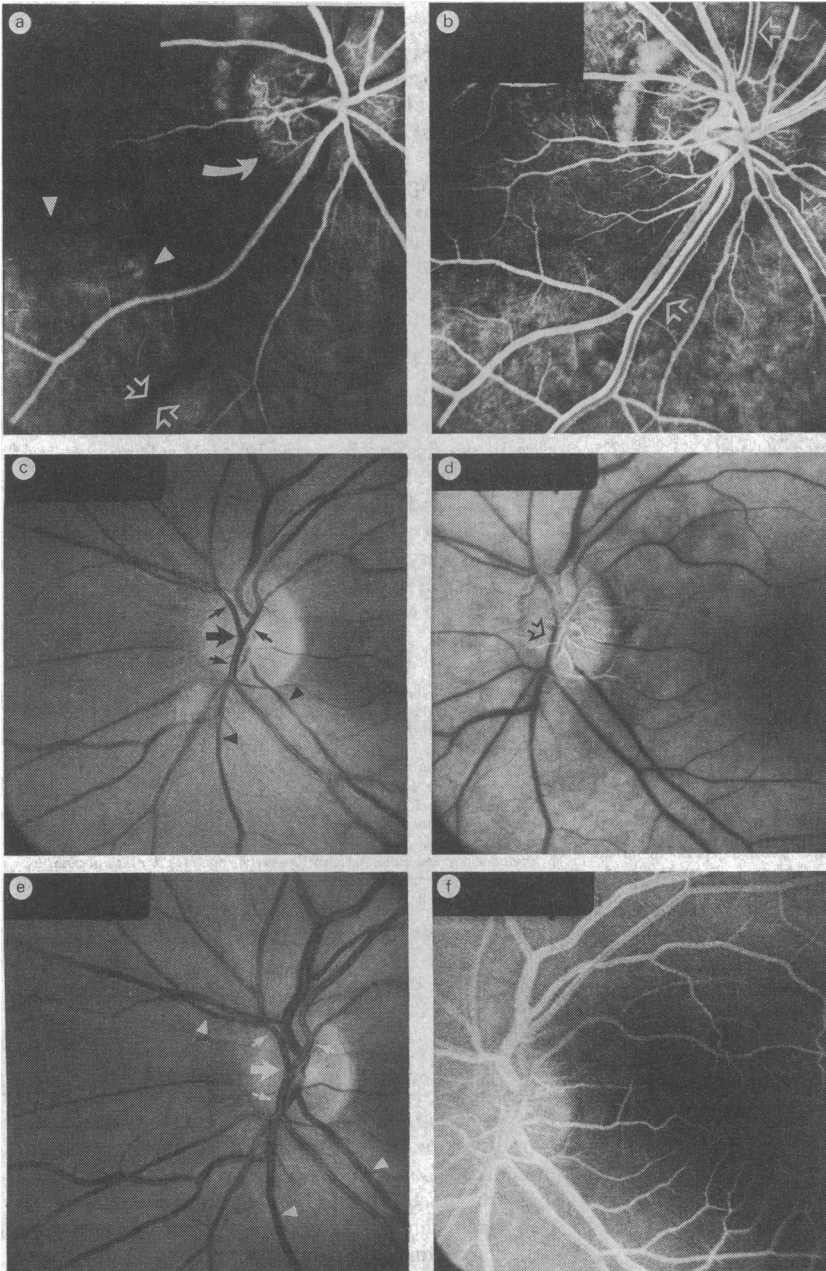


damage, the macula being the most vulnerable retinal area (recanalisation of the ocular vascular system had occurred more than 105 minutes after occlusion in all patients). Reocclusion occurred in only the eldest patient, who was not given anticoagulation treatment, after 10 days and resulted in amaurosis.

General examinations of all patients detected no arrhythmias, carotid stenoses, or embolic disorders.



(a) Normal fluorescein angiogram 0-56 s after first appearance of fluorescein on optic disc (arterial circulation time).³ Capillaries on optic disc (thick arrow) are stained from ciliary vessel system; choroid is patchily fluorescent (arrowheads); and veins (open arrows) are still dark and unfilled. (b) Normal fluorescein angiogram 7-8 s after first appearance of fluorescein on optic disc (late venous circulation time).³ Venous system (open arrows) is completely filled up to disc's edge. (c) Red free photograph of left fundus (case 2, age 48) 1½ hours after ocular central artery occlusion (thick arrow). Main arterial branches (small arrows) as well as veins (arrowheads) appear thinned owing to missing circulation. (Whether blood is flowing in vessels cannot be proved ophthalmoscopically). (d) Fluorescein angiogram (case 2) 120 s after fluorescein injection. Bright background indicates complete choroidal filling, bright disc good filling by ciliary vessels. Ocular central artery and its main branches (arrow) show only laminar flow due to passive coloration of plasma—corporeal movement in centre of arteries cannot be proved. Laminar flow can be seen only in disc area. There is definite proof of occlusion. (e) Red free photograph (case 2) 60 minutes after intravenous steroid bolus injection. Ocular central artery (thick arrow) and its branches (small arrows), as well as the veins (arrowheads) appear thicker owing to reinstated circulation. Compare their calibre with that in (c). (f) Fluorescein angiogram (case 2) 60 minutes after intravenous steroid bolus injection. Late venous circulation time of 10 s is nearly normal (b). Arterial and venous systems are completely filled with fluorescein

Severe hypertension was found in only the eldest patient, which implies that atherosclerotic changes in the wall of the ocular central artery were more likely than endothelial oedema to have been causal factors in this case.

Comment

After several hours of ischaemia due to an occlusion fluorescein escapes from the occluded retinal arteries despite the so called blood-retina barrier, which is normally impenetrable to it. This means that the first line of defence, the endothelial cell, is not functioning normally. The primary cause of this dysfunction is the cell's oedema.

The angiographically documented recirculation in our patients was attributable to the single intravenous bolus of high dose steroid. Given the time course of blindness in acute occlusion (105 minutes),¹ plasma expander and anticoagulant treatment (days later) would have been too late. Steroids are always the fastest working substances in oedemas of other organs, such as the brain.⁵ However, to our knowledge, angiographic evidence of the immediate efficacy of steroids on vessel walls has not been documented. As our patients showed angiographically complete recirculation in the eye so quickly after steroid application, their occlusions were probably due to vasospasm with consecutive ischaemic endothelial oedema rather than atherosclerosis, particularly in the younger patients.

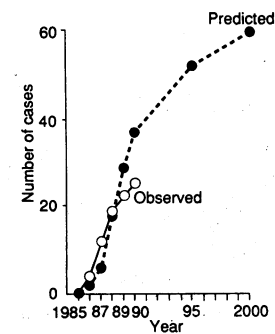
A steroid bolus seems to be a suitable emergency treatment. Steroids do not interfere with any drugs that might be given for this condition. Possible side effects compared with other treatments—for example, lysis—are negligible. The possibility of giving other treatments simultaneously is also not ruled out: in other words, even lysis could be started immediately after admission.

- 1 Hayreh SS, Weingeist TA. Experimental occlusion of the central artery of the retina. IV. Retinal tolerance time to acute ischaemia. *Br J Ophthalmol* 1980;64:818-25.
- 2 Neubauer H, Karges E. Corticosteroids in the treatment of disturbances of the retinal arterial blood supply. *Klin Monatsbl Augenheilkd* 1962;141:70-93.
- 3 Richard G. *Fluoreszenzangiographie. Atlas und Lehrbuch*. Stuttgart: Thieme, 1989:19-21.
- 4 Magargal LE, Goldberg RE. Anterior chamber paracentesis in the management of acute nonarteritic central retinal artery occlusion. *Surgery Forum* 1977;28:518-21.
- 5 Braugher JM, Hall ED. Current application of "high-dose" steroid therapy for CNS injury. *J Neurosurg* 1985;62:805-10.

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Correction

Progression of HIV disease in a haemophilic cohort followed for 11 years and the effect of treatment



Owing to an editorial error figure 2 in this paper by Dr Christine A Lee and others (2 November, p 1093) was incorrect. The correct figure is reproduced here.