Intravenous streptokinase in the treatment of retinal vascular occlusion

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We have treated 25 patients with streptokinase, in most cases by continuous intravenous infusion but in some cases by local intra-arterial infusion using a syringe driver. Twelve of these were cases of occlusion of the retinal artery or vein, all of which were treated with generalized intravenous therapy. We have been fortunate in that these cases have been sent to us by the Royal Eye Hospital Medical Ophthalmology Unit under the direction of Professor Sorsby, and therefore expert assessment has been possible before, during, and after thrombolytic therapy.

RETINAL ARTERY OCCLUSION

Six cases of retinal artery occlusion have been treated, three being secondary to other diseases, such as temporal arteritis, for which the patients were receiving other forms of treatment so that it is not possible to attribute any improvement in vision solely to the thrombolytic therapy.

Of the other three, one patient was a woman aged 47 with a complete retinal artery occlusion of approximately six hours' duration. While the loading dose of streptokinase was being run in the artery began to pulsate and the branches to fill with the consequent disappearance of 'cattle-trucking'. Streptokinase therapy was continued for five hours and then followed by heparin and phenindione. Visual acuity before treatment was 0.5/60, during treatment 1/60, and after treatment 1.5/60 with an increased field.

The second infusion was given to a man aged 52 with a segmental artery block of about six hours' duration. Seventy-five minutes after starting therapy the artery was observed to be pulsating. Before treatment the patient had poor perception of light and could only see hand movements with the affected segment. During treatment his visual acuity was 1.5/60 and after treatment 3/60.

The third infusion was to the same patient. He was found to have a severe carotid stenosis and it was thought that the retinal occlusion had been due

to an embolus from this site. This impression was confirmed in this patient by the retinal artery becoming completely occluded three and a half months after the first incident: this time the infusion was started about four and a half hours after the onset of symptoms. The anti-streptokinase antibody level on this occasion was exactly the same as it had been three months earlier, and the same loading dose was given over the same period of time followed by the same sustaining dose, and this had a similar effect on the euglobulin lysis time. However, on this occasion the thrombus was not affected and after six hours the treatment was abandoned. Two hours after the infusion was discontinued the patient's temperature rose to 104°F. and his blood pressure fell to 80/60 mm. Hg. Nonetheless he felt perfectly well and after about five hours his pulse and blood pressure had returned to normal. This is the only significant reaction we have observed in any of our patients.

RETINAL VEIN OCCLUSION

Six cases have been treated, the infusion being started at varying times after the onset of symptoms. In four patients this interval was more than 48 hours and in none of these was there any improvement in vision after 24 hours' treatment.

In one case of segmental thrombosis in which treatment was started within 12 hours there was marked improvement in vision. Before treatment visual acuity was 6/36, during treatment 3/9, and after treatment 6/6.

In another case of segmental venous thrombosis treated after six and a half hours, vision improved from 6/18 before treatment to 6/6 afterwards.

We are most grateful to Dr. Denis Williams and Dr. Gautier-Smith for admitting these patients to St. George's Hospital under their care. We should also like to thank Dr. Clifford Rose for his help in initiating and maintaining the cooperation between the Medical Ophthalmology Unit and St. George's Hospital.

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DR. FEARNLEY pointed out that Mr. Pierse's cases were the first examples they had been shown of the effect of treating blood clot as opposed to thrombosis and wondered if that might be a factor in the excellence of his results.

MR. FORREST asked about the time which elapsed between injury and treatment.

MR. PIERSE replied that this was complicated by the fact that secondary haemorrhage tended to occur five days after the injury and was the more severe of the two

haemorrhages. In the majority of his cases it was the secondary haemorrhage which was treated, usually within 12 to 24 hours of its occurrence.

DR. MCNICOL was surprised by the rapidity of the effect of urokinase in this situation, in that only two minutes elapsed between its injection and removal of the clot.

MR. PIERSE pointed out that the clot was not completely dissolved but was lysed sufficiently to allow it to be washed out of the anterior chamber.

DR. NEWMAN stated that he had examined a few specimens of fluid from the anterior chamber of the eye for plasminogen, and that in a test system incorporating the fluid clot lysis took place within a few minutes.