Intracameral injection of gentamicin

Report of a case

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Prompt and effective administration of antibiotics is of crucial importance in all cases of intraocular infections. Intraocular minimum inhibitory concentration of antibiotics is hardly achieved with antibiotics administered via the conventional routes (Furiguiele, 1967, 1970; Litwak, Pettit, and Johnson, 1969; Green and Leopold, 1965; Golden and Coppel, 1970). Recently Peyman, May, Ericson, and Apple (1974) found that 250 to 1000 µg of gentamicin could be injected into the anterior chamber of normal rabbits' eyes without damage to the cornea, lens, or retina. Peyman, Vastine, Cronch, and Herbst (1974) also reported treatment of five cases of bacterial endophthalmitis with intracameral and intravitreal injection of gentamicin and dexamethasone with good visual results.

A case of bacterial endophthalmitis in a patient who regained normal vision after intracameral and subconjunctival injections of gentamicin sulphate is presented.

Case report

A 25-year-old man was sent to hospital on 4 February 1975. For the previous five days he had had redness and pain in the left eye since being struck in that eye with a pointed splinter of wood. Vision was perception of light in the left eye (Fig. 1). The lids were swollen and the conjunctiva was chemotic. There was a paracentral corneal ulcer involving the deeper layers of the stroma. A small 1.0-mm pointed foreign body was stuck in the cornea with its tip projecting into the anterior chamber. There was a hypopyon filling one-third of the anterior chamber with 4+ cells. The pupil was mid-dilated and the iris adherent to the corneal ulcer at 9 o'clock. The lens appeared to be clear. Details of the vitreous and fundus could not be seen. Topical tetracaine 0.5 per cent was instilled into the conjunctival sac. The corneal foreign body was removed. A 25 gauge needle attached to 1-ml syringe was introduced into the anterior chamber at the limbus

FIG. 1 Site of penetrating injury in the cornea and evidence of endophthalmitis

at 4 o'clock and 0.4 ml of aqueous was aspirated. Gram's stain of the aqueous revealed numerous polymorphonuclear neutrophil leucocytes and Gram-positive cocci. Cultures grew heavy growth of *Staphylococcus epidermidis* coagulase negative. The organism was sensitive to gentamicin.

A total of 0.4 ml (200 µg) of gentamicin was injected into the anterior chamber through the same corneal tract; 40 mg of gentamicin were given subconjunctivally. The patient was then started on local 1 per cent atropine drops twice daily and gentamicin drops every hour.

In 48 hours there was marked clinical improvement, and the lid swelling and conjunctival chemosis had subsided. One week later the corneal ulcer had healed completely leaving an anterior iris adhesion. The central cornea and the lens were clear and there was no evidence of endothelial damage. The hypopyon had disappeared completely. Four weeks later the patient had a white left eye with a nasal anterior adherent leucoma and a visual acuity of 20/20 (Fig. 2).

Discussion

Intracameral and intravitreal injection of gentamicin may be considered as a useful and effective procedure in the treatment of bacterial endophthalmitis. Anterior chamber paracentesis provides

This study was supported in part by grant no. 18-5104 from the School of Medicine, American University Medical Center, Beirut, Lebanon

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FIG. 2 Eye of patient 4 weeks after treatment with intracameral and subconjunctival gentamicin

the material for prompt identification of the offending organism (Allensmith, Skaggs, and Kimura, 1970). It also provides a means of delivering a high concentration of antibiotics into the anterior chamber without any untoward effects. This procedure can easily be performed in minor surgery without any special instrumentation. The intracameral and subconjunctival injections of gentamicin were effective in irradiating the infection and regaining

normal vision without being clinically detectable and without the administration of systemic antibiotics.

Staphylococcus epidermidis coagulase negative, which was recovered from the present case, is usually regarded as a harmless organism. However, it has long been known to be a potential pathogen in cases of bacterial endocarditis in the presence of rheumatic valvular disease. Valenton, Burbaker, and Allen (1973) and Forster (1974) reported cases of endophthalmitis, mainly after cataract surgery from which *Staphylococcus epidermidis* coagulase negative was recovered. They emphasized the potential pathogenicity of this organism, the good response to antibiotics, and the good visual outcome.

Summary

A case of bacterial endophthalmitis secondary to a penetrating injury was successfully treated with intracameral topical and subconjunctival injections of gentamicin. After treatment the patient had normal vision and there was no evidence of toxic side-effects on the anterior segment of the eye including the endothelium, angle structures, and lens. The potential pathogenicity of *Staphylococcus epidermidis* is again emphasized.

We are grateful to Miss Eleonore Shweiry for her secretarial assistance.

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