Letter to Editor

Role of low dose mitomycin C in pterygium surgery

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Dear Editor,

Pterygium is a triangular sheet of fibrovascular tissue that invades the clear cornea from the bulbar conjunctiva. The prevalence of pterygium seems to be associated with geographical latitude, with moderate to high prevalence occurring within 35^0 above and below the equator, suggesting prolonged exposure to sunlight or UV light as a causal factor (Tan et al, 1997).

Excision pterygium with bare sclera has an unacceptably high recurrence rate of 30 – 89 %. Different adjunctive treatments have been tried to reduce the recurrence. The use of postoperative beta irradiation leads to severe complications like scleral ulceration, infection and cataract; use of topical thiotepa causes depigmentation of lids. The use of mitomycin C eye drops (0.2 – 0.4 mg/ml) postoperatively has been related to serious ocular complications such as secondary glaucoma, corneal oedema, iritis, cataract and scleral infection (Cano et al, 1995). The use of conjunctival autograft also has a high recurrence rate between 5.3 – 39 % besides increased intra-operative time.

A prospective randomized study was carried out in 105 consecutive eyes with primary pterygium that were surgically excised. A complete ocular examination was performed for each eye. The inclusion criteria were (1) age older than 20 years, (2) primary pterygium which invaded more than 2 mm into the cornea. The exclusion criteria were external ocular diseases such as Sjogren syndrome and ocular rosacea.

All the eyes were randomly and equally divided into 3 subgroups. Group I underwent bare sclera (BS) excision only with postoperative betamethasone-neomycin drops TDS x 1week. Group II received MMC (0.1mg/ml) drops postoperatively (after BS) twice daily for 5 days. Group III received a single intra-operative exposure of MMC (0.1 mg/ml x 3 min) after BS.

A simple grading system to classify pterygium morphology based on slit-lamp examination as devised by Tan et al (1997) was used. Grade T1 (atrophic) denoted a pterygium in which episcleral vessels underlying the body of pterygium were un-obscured and clearly distinguished. Grade T3 denoted a thick pterygium in which episcleral vessels were totally obscured. Group T2 was the intermediate category. All the eyes were evaluated on postoperative Day 1, Day 7, 3 months, 6 months, and 1 year. Recurrence was defined as the postoperative regrowth of fibrovascular tissues invading the cornea. Any postoperative complications, if present, were noted.

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The age and gender distribution was almost similar in all the three groups. The majority of the patients were middle aged adults. Almost all pterygia were on the nasal side except one in group II. All the three groups had equal distribution of all three grades of pterygium. The number of patients with more than six months follow-up was low. It could be due to many factors: difficult terrain, financial reasons, etc. This was the limitation of this study. The post-operative complications of these patients were as follows. Group I had recurrence in 2 eyes and granuloma in 2 eyes. Group II patients had superficial punctate keratitis in 2 eyes and sclera thinning with bleb formation in 1 eye. Group III patients had neither recurrence nor any complications.

The recurrence of pterygium appears not to be associated with ultraviolet light exposure and would be due to an accelerated fibroblastic prolifertion produced by the trauma of operation in the same way as production of keloid tissue (Cameron et al, 1983). Mitomycin C is an anti-neoplastic antibiotic agent isolated from streptomyces caespitosus. It inhibits DNA, RNA and protein synthesis thereby decreasing cellular proliferation.

The use of MMC eye-drops post-operatively in both 0.2 and 0.4 mg/ml dosage four times daily for 5 - 15 days, has been effective in reducing the recurrence rate of pterygium (Cano et al, 1995). However, it is related to serious ocular complications such as secondary glaucoma, corneal oedema, corneal perforation, iritis, sudden onset of mature cataract and sclera calcification (Rubinfeld et al, 1992). Frucht et al (1994) used MMC eye drops (0.1 mg/ml) postoperatively BD x 5 days and concluded that it is effective as well as a safe adjunctive for pterygium surgery. In our study we had SPK in 2 eyes, but more worrisome was the scleral thinning in this group. In order to decrease the potential adverse effects of a cumulative dose of mitomycin C, we used the minimal concentration of mitomycin C intra-operatively in a single dose for 3 minutes only.

Cano et al (1995) conducted a study on primary pterygium in Spain and found that among the eyes that underwent simple excision, recurrence was observed in 38.8 %. But the recurrence was only 3.33 % in eyes treated with excision and a single intra-operative application of mitomycin C (0.1 mg/ml for 5 minutes). Neither serious ocular complications nor systemic toxicity was noted in the mitomycin C treated group. Our study corroborates this fact, though we reduced the exposure time to 3 minutes.

In another study (Mastropasqua et al, 1996)) on recurrent pterygium conducted in Italy, among the eyes with recurrent pterygium that underwent simple excision, 35.6 % exhibited recurrences, whereas, among the eyes with recurrent pterygium that underwent excision with a single intra-operative exposure of mitomycin C (0.2 mg/ml), only 12.5 % had recurrence. No severe side effects appeared during the follow-up. Superficial punctate keratitis appeared in the early postoperative period in 15.5 % of eyes treated with mitomycin C.

We conclude that a low dose single intra-operative exposure of mitomycin C (0.1 mg/ml) for 3 minutes is safe, simple and effective adjunctive therapy in the surgical treatment of primary pterygium.

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