



MITOMYCIN-C USE IN TREATMENT OF EPITHELIAL AND FIBROUS DOWNGROWTH- A RARE COMPLICATION OF ANTERIOR SEGMENT SURGERY

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ABSTRACT Mitomycin-C is an alkylating, anti tumour antibiotic, generally used in surgery because of its ability to inhibit fibroblast proliferation and to suppress vascular downgrowth. One of Mitomycin's active metabolites cross links with DNA, causing selective interruption of DNA replication, thus inhibiting mitosis of protein synthesis. Epithelial and fibrous downgrowth after anterior segment surgery are rare surgical complications that can cause devastating secondary glaucoma. It occurs when epithelium or connective tissue invades the anterior chamber through a defect in a wound site. Risk factors for the development of these entities include prolonged inflammation, wound dehiscence, delayed wound closure or descemet's membrane tear. It is an aggressive, vision threatening complication of anterior segment surgery. It is difficult to manage resulting in poor prognosis. In our study, Mitomycin C in the concentration of 0.05 to 0.1mg/ml was given subconjunctivally to treat patients with epithelial and fibrous downgrowth with good clinical outcome.

KEYWORDS : Mitomycin-C, anti metabolite, anterior segment surgery, epithelial and fibrous downgrowth, secondary glaucoma.

INTRODUCTION:

Epithelial and fibrous downgrowth is a rare, distinctive complication of intraocular surgery or penetrating trauma, with the majority of cases developing post-cataract extraction. These are seen more in conventional type of extra capsular cataract extraction. This incidence is around 0.08%. Delayed or inadequate wound closure, wound fistulas, iris or vitreous incarceration, suture track leaks, or intra ocular implantation of epithelial cells via instruments decrease the risk for epithelial invasion into the anterior chamber.

Epithelial and fibrous downgrowth is progressive with a poor prognosis. Irradiation was first used to treat epithelial and fibrous downgrowth in early 20th century. More recent treatment modalities involve surgical scraping, peeling, alcohol treatment, cryotherapy and wide excision of epithelial proliferation with ablative therapy to adjacent structures to eliminate residual cells. Enucleation is an unfortunate but sometimes unavoidable option reserved for end-stage, refractory disease. The most common cause for enucleation is severe secondary glaucoma.

MATERIALS AND METHODS:

Two patients after extra capsular cataract surgery (ECCE) which was conventional in nature with uneventful post operative period, presented in our OPD after a period of 10 months to 1 year with redness, watering and severe pain and diminution of vision.

CASE I:

A 75 year old male patient after having undergone ECCE conventional type in the right eye with uneventful post-operative period came to OPD with redness, watering, severe pain and diminution of vision after 10 months post surgery in the same eye. On complete ophthalmic examination, there was diminution of vision from 6/18 to 6/36. Intraocular pressure on applanation tonometer recorded around 38mmHg. On slit lamp examination there was fibrous downgrowth in the limbal wound extending into the whole surgical section and into the cornea by about 1mm.

He was given subconjunctival injection of Mitomycin-C in the dose of 0.1mg/ml about 8mm behind the superior limbus. He was put on an antibiotic-steroid combination four times a day for a week, was tapered over a period of 15 days and timolol maleate twice a day. On the 1st week of follow up, he was relieved of pain, redness and watering. After 2 months, his vision improved to 6/18. The IOP was found to be normal. There was complete resolution of fibrous downgrowth. On follow up after 6 months, the eye was quiet with no recurrence.

CASE II:

A 60 year old female patient was operated for cataract surgery in the right eye, ECCE conventional type showed delayed wound healing due to ill apposed wound margins with an otherwise uneventful post operative period. After 14 months of surgery, she presented with severe pain, redness and watering with diminution of vision in the same eye. On detailed complete ophthalmic examination, vision recorded was 6/24 which had decreased from 6/18. IOP recorded was 42mmHg on applanation tonometer. Slit lamp examination showed epithelial and fibrous downgrowth along the limbal section which was sheet like and diffuse. The anterior segment showed signs of chronic inflammation, mild pain with discomfort, redness and watering. The patient was treated with subconjunctival injection of Mitomycin-C in the dose of 0.1mg/ml, about 8mm from the superior limbus. She was put on combination of antibiotic and steroid four times a day for the 1st week and tapered over a month. She was treated for glaucoma with anti glaucomatous medication which was a combination of dorzolamide and timolol maleate.

Follow up after 1st week showed the patient was symptomatically better. After a fortnight there was no pain, redness and watering. On follow up after one month, the vision showed improvement from 6/24 to 6/18. IOP recorded was 16mmHg. On slit lamp examination there was complete regression of epithelial and fibrous downgrowth. Patient at the end of 6 months follow up showed a relatively quiet eye with no recurrence.

DISCUSSION:

The incidence of epithelial and fibrous downgrowth after cataract surgery ranges from 0.08% to 0.12% with only a few reports after clear corneal phacoemulsification and upto 0.25% after Penetrating keratoplasty. Cataract extraction is the most frequent cause of epithelial downgrowth. In a 50 year old review of proven cases of epithelial downgrowth, cataract was the cause for 59% of cases.

Mitomycin-C is an anti metabolite with anti proliferative effect on cells showing the highest rate of mitosis inhibition by inhibiting DNA synthesis and interferes with RNA transcription and protein synthesis.

The most common presenting sign of epithelial downgrowth were retrocorneal membrane seen in 45% of patients, glaucoma in 43%, corneal edema in 21% and positive siddel test in 23% of patients.

Epithelial and fibrous downgrowth in a diffuse form, presents with raised IOP because of obstruction to trabecular meshwork. Many eyes

become chronically inflamed, developing phthisis bulbi and require enucleation. Several complex surgical options have been proposed for the treatment of diffuse form including cryotherapy.

Complications associated with epithelial and fibrous downgrowth include pupillary block, secondary glaucoma, iridocyclitis, corneal edema, corneal decompensation, loss of vision and intractable pain. Glaucoma is present in more than half of cases at presentation, with epithelial downgrowth over the angle, peripheral anterior synechiae and trabecular meshwork all potentially playing a role. The angle structure is partially or totally involved in 87% of enucleated eyes with epithelial and fibrous downgrowth.

Unfortunately, all the treatment modalities for epithelial and fibrous ingrowth are associated with a high failure rate.

Another study showed that after surgical treatment of epithelial downgrowth, the eye continues to have problems with corneal edema, glaucoma, hypotony, vitreous haze and possible retinal detachment. Intracameral 5-fluorouracil has been tried but may result in corneal decompensation.

CONCLUSION:

Epithelial downgrowth is a rare complication of intraocular surgery and penetrating trauma. It is important to recognize epithelial downgrowth given its potentially blinding sequelae. We report 2 interesting cases of epithelial and fibrous downgrowth which was treated with Mitomycin C sunconjunctivally in the dose of 0.1mg/ml to 0.05mg/ml successfully.

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