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Case Report

MANAGEMENT OF ACUTE CORNEAL HYDROPS SECONDARY TO KERATOCONUS BY DESCEMETOPEXY USING INTRACAMERAL PERFLUOROPROPANE (C_3F_8) – A CASE REPORT

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Abstract :
Keratoconus is a clinical term used to describe bilateral non-inflammatory corneal ectasia in its axial part due to which cornea assumes a conical shape[1]. The onset of keratoconus is generally at the age of puberty, and progresses over a period of 10-20 years[2,3]. The treatment of Keratoconus is rarely an emergency, with the exception of corneal hydrops resulting from rupture of the Descemet's membrane. This may be the common mode of presentation in patients with associated developmental delay, probably related to habitual ocular massage[4,5].

Keywords : Keratoconus, acute hydrops, descemetopexy, C_3F_8

Case Report :

A 21 year old girl presented to the cornea services of Justice K.S. Hegde Charitable Hospital, Mangalore with complaints of sudden decrease in vision in the right eye since one week. She was a known case of developmental delay and had a past history of seizures. On examination, her visual acuity in the right eye was limited to light perception, and that in the left eye was counting fingers at 3 metres (-5.0sph/-2.0cyl 20°). Slit-lamp examination of the right eye revealed central corneal ectasia with dense stromal oedema involving 8mm of the cornea, with a stromal cyst [Fig 1(a) & 1(b)] ; Rest of the anterior segment could not be visualised. The slit-lamp examination of the left eye showed central corneal ectasia with Vogt's striae, with the rest of the anterior segment being unremarkable [Fig 1(c)]. The patient was not co-operative for keratometry, pachymetry and intra-ocular pressure measurements. B-scan of the right eye showed a normal posterior segment, whereas dilated fundus examination of the left eye was within normal limits.

Based on the above clinical findings, a diagnosis of bilateral keratoconus with right eye acute hydrops was made.

On the subsequent day, the patient was taken up for Descemetopexy under intravenous sedation, after obtaining an informed consent. Preoperatively, the pupil was constricted using 2% Pilocarpine eye drops, 1 drop every 15 min, 1 hour prior to the surgery, not only to avoid injury to the lens, but also to prevent the gas from escaping behind the iris. Anterior chamber paracentesis was done following which 0.1ml of gaseous cocktail (3 parts of C_3F_8 and 1 part of filtered air) was injected [Fig 2].

Post-operatively, the patient was advised to remain in supine position. On the 1st post-operative day, approximately 2/3rd of the anterior chamber contained the gas and the stromal oedema had decreased considerably [Fig 3(a)]. She was started on antibiotic-steroid combination 4 times a day and aqueous suppressants.

On the 3rd day, the gas had expanded to fill the anterior chamber entirely. The stromal oedema now, was approximately 5mm in diameter [Fig 3(b)]. The intra-ocular pressure was normal and there were no signs of pupillary block.

At the end of one week, the stromal oedema was now, only about 3mm, however, intrastromal cyst persisted [Fig 3(c)]. There were still no signs of pupillary block and the patient

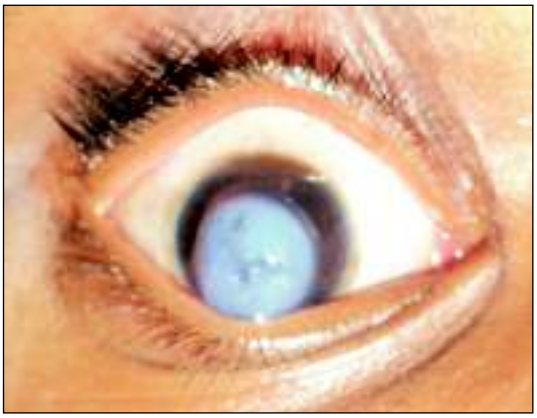

Figure 1(a)

Figure 1(b)

Figure 1(c)

Figure 2

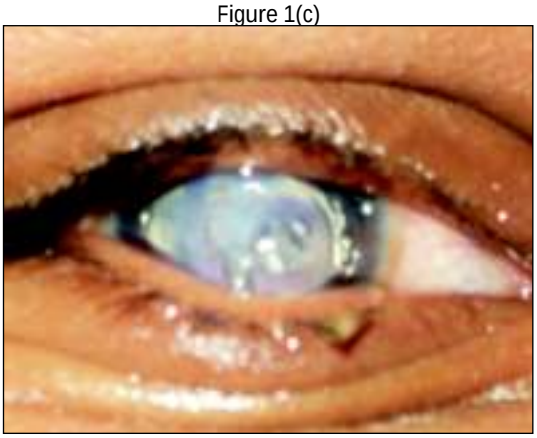

Figure 3(a)

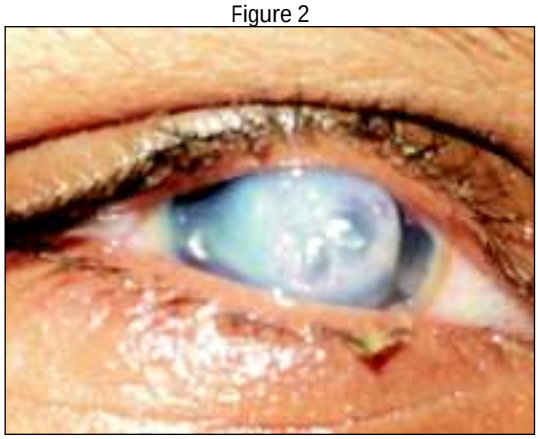

Figure 3(b)

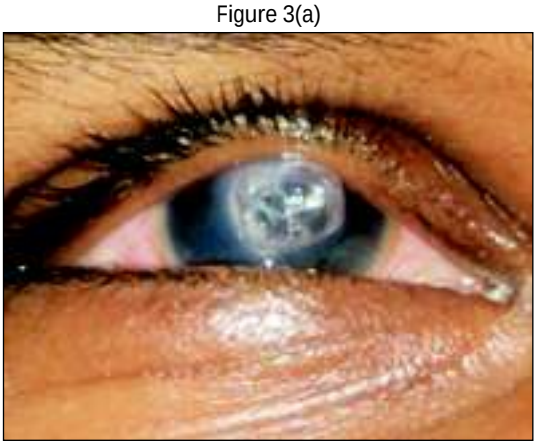

Figure 3(c)

was asked to follow-up after one week.

Discussion :

Corneal ectatic disorders like keratoconus[6], keratoglobus[7] and pellucid marginal degeneration[8] can be complicated with the occurrence of acute hydrops. Incidence of acute hydrops can vary from 2.8%[9] to 3.15%[10] in keratoconus. In most instances, treatment of acute hydrops has been conservative and non-specific such as use of topical antibiotic-steroids, cycloplegics and hypertonic saline, wherein the average time of resolution varies from 5-36

weeks[11].

Miyata et al[12] described intracameral air injections for resolution of acute hydrops wherein resolution of took about 20.1±9.0 days with an average of 2.4±1.3 injections compared to those who received conventional treatment which took 64.7±34.6 days. Panda et al[13] reported the use of SF_6 instead of air in their series of 9 cases with the need for repeat injections in 6 cases. Sayan Basu et al[10] have used non-expansile C_3F_8 for the same purpose in their retrospective study wherein resolution of hydrops took 78.7±53.2 days versus the conventional treatment that took 117.9±68.2 days.

In our case, we have used C_3F_8 along with air in the ratio of 3:1, filling 2/3rd of the anterior chamber with an intention to reduce the concentration of the gas and also allow its expansion. C_3F_8 has a distinct advantage over airand SF_6 as it is retained in anterior chamber for a longer time and therefore, repeated injections may not be needed[14]. The gas acts as a mechanical barrier by preventing entry of aqueous into the stroma and at the same time, provides the tamponade necessary to repose the torn edges of Descemet's membrane, due to which there is a faster resolution of stromal oedema.

C_3F_8 has also been used to treat acute hydrops following keratoglobus[10], pellucid marginal degeneration[15] and Descemet membrane detachments following viscocanaliculostomy[16,17] with varying degrees of success. Endothelial toxicity of C_3F_8 has been a concern, but its use is described as safe and effective in re-attachment of Descemet's membrane after a complicated cataract surgery[18]. The stromal cyst that has been described in our case was left alone due to the existence of a possible communication with the anterior chamber[19]. Therefore, Descemetopexy using C_3F_8in the management of acute corneal hydrops can be an effective and safe procedure for the early resolution.

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