Case report

Intracameral SF6 injection and anterior segment OCT-based documentation for acute hydrops management in pellucid marginal corneal degeneration

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Abstract

Purpose: To report a case of acute hydrops in pellucid marginal corneal degeneration (PMCD) documented with anterior segment optical segment tomography and successfully treated with sulphur hexafluoride (SF6) intracameral injection.

Methods: A 47-year-old female patient presented with spontaneous onset of pain, redness and decreased vision in her left eye. Clinical evaluation revealed bilateral PMCD with evidence of acute hydrops in the left eye. Anterior segment Slit lamp Adapted Optical Coherence Tomography (SL-OCT) examination revealed intrastromal clefts with Descemet’s membrane detachment in the left eye. She was managed with descemetopexy with 0.2 ml injection of iso-expansile SF6 (18%) intracameral.

Results: The patient showed excellent early resolution of the stromal edema with reattachment of the Descemet’s membrane.

Conclusion: Prompt intervention in acute hydrops in PMCD cases helps in achieving early good visual results and prevents potentially serious complications such as perforation. Newer imaging modalities like SL-OCT helps in better visualisation and also in monitoring the response to treatment.

Keywords: Acute hydrops; Pellucid marginal corneal degeneration; PMCD; SF6; SLOCT

Pellucid marginal corneal degeneration (PMCD) is a progressive ectatic corneal disorder characterized by a non-inflammatory peripheral band of thinning of the inferior cornea. Currently available surgical management modalities include lamellar or crescentic lamellar keratoplasty, wedge excision, thermokeratoplasty and penetrating keratoplasty [1–6]. During the clinical course of PMCD, acute hydrops with corneal edema in the lower half might develop [5,6]. Acute hydrops, a complication infrequently encountered in clinical practice, occurs when breaks appear in Descemet’s membrane of the ectatic cornea allowing aqueous humor to enter the stroma [7–11]. Allergy and eye-rubbing have been reported to be important risk factors in the development of hydrops [2]. The conventional medical management for hydrops is giving way to newer interventional treatment modalities in both keratoconus and PMCD as evidenced by few available recent reports. The study by Miyata et al. [12] has found the average period of persistence of corneal edema to be 20.1 ± 9.0 days (S.D.) in nine eyes managed by intracameral air injection as against 64.7 ± 34.6 days (S.D.) in 21 eyes which received no treatment or conventional treatment of hydrops in keratoconus.

We describe a case of PMCD with acute hydrops that was successfully managed with intracameral sulphur hexafluoride (SF6) injection resulting in early visual rehabilitation.

1. Materials and methods

A 47-year-old female patient reported to our outpatient department with complaints of spontaneous onset of pain,
watering, redness, photophobia and sudden decrease in vision in the left eye of 1-week duration. On examination she was found to have a best corrected Snellen’s visual acuity (BCSV A) of 6/18 (with a refractive correction of $-4.00 \, D/-8.00 \, D$) in the right eye and finger counting close to face in the left eye. Slit lamp biomicroscopy revealed PMCD in both eyes with evidence of acute hydrops in the left eye. The Orbscan corneal topography reading of the right eye was $57.4 \, D$ @ $153/46.3$ @ $63$ and was not possible in the left eye. Slit lamp adapted Optical Coherence Tomography (SL-OCT, Heidelberg Engineering, Germany) examination revealed multiple intrastromal clefts with Descemet’s membrane detachment in the left eye (Fig. 1a and b). A small area of Descemet’s membrane rupture in the region of corneal thinning infero-temporally was also noted on the SL-OCT evaluation but could not be seen clinically due to the presence of significant corneal edema. The patient was taken to the operating room and treated with descemetopexy with 0.2 ml of iso-expansile SF6 (18%) intracameral (Fig. 2). Postoperative medications included topical steroid and antibiotic drops. She was noncompliant to the postoperative advice of supine posture in the first post-operative week. The bubble was present in the anterior chamber for 7 days. There was a mild rise in intraocular pressure (22 mmHg on Goldmann’s Applanation tonometry) in the first 3 days of the postoperative period which was managed with oral acetazolamide. The corneal edema decreased rapidly within 2 weeks with persistence of edema noted only in the inferior region (Fig. 3). A BCSVA of 4/60 was achieved. Resolution of the intrastromal clefts were observed on the anterior segment OCT evaluation during the follow-up (Fig. 4). The hydrops resolved in 3 weeks time and BSCVA of 6/18 was achieved with a refractive correction of $-3.00 \, D/-4.00 \, D \times 150$.

2. Discussion

Visual rehabilitation following acute hydrops in corneal ectasias has been reported to be in acceptable range only for about 27% cases without surgery [2]. Reports of the rare occurrence of corneal hydrops (4.5–6%) [2,3] leading to spontaneous perforation in patients with PMCD highlight potentially serious complications such as leak with infective keratitis [2,10]. Surgical management of PMCD such as
The timely intervention helps in minimising potentially serious complications and enhances chances for better visual rehabilitation. SL-OCT is an innovative addition to the investigative armamentarium for similar cases.

References