

# 유리체강내 트리암시놀론 주입술 직후의 안압변화와 안구마사지 효과

성현경 · 이정민 · 박영숙 · 이병로

한양대학교 의과대학 안과학교실

**목적** : 유리체강내 0.1 ml 트리암시놀론 주입술(Intravitreal Triamcinolone Acetonide injection, IVTA)직후의 안압상승의 자연경과를 관찰하고 이에 대한 술 전 안구마사지 효과를 알아보고자 하였다.

**대상과 방법** : IVTA 적응이 되는 60명 63안을 대상으로, 33안은 안구마사지 없이 IVTA를 시행하고(A군), 30안은 시술 직전 5분간 안구마사지를 하고 IVTA를 시행하여(B군), 주입 직후, 10분, 20분, 30분, 2시간 후의 안압을 각각 측정하였다.

**결과** : 시술 전 안압은 A군이  $15.00 \pm 2.817$  mmHg, B군이  $14.57 \pm 2.269$  mmHg이었다. 안구마사지 직후 평균  $3.833 \pm 1.704$  mmHg의 안압저하가 있었다. IVTA후의 평균 안압은 주입 직후에 A군  $35.42 \pm 18.257$  mmHg, B군  $36.57 \pm 17.184$  mmHg로 급증하였으며, 10분 후에는 A군  $20.42 \pm 8.682$  mmHg, B군  $18.73 \pm 7.254$  mmHg로 낮아지고, 20분, 30분, 2시간 후에는 각각 A군과 B군 모두 정상범위로 낮아졌다. 또한 시술 전후의 평균 안압 상승폭은 주입 직후가 A군  $20.4242 \pm 18.3814$  mmHg, B군  $25.833 \pm 17.3981$  mmHg, 10분 후에는 A군  $5.424 \pm 8.374$  mmHg, B군  $8.000 \pm 7.669$  mmHg, 그리고 20분, 30분, 2시간 후에는 A군이 각각  $3.121 \pm 6.5467$  mmHg,  $2.454 \pm 7.1505$  mmHg,  $1.363 \pm 4.761$  mmHg, B군 각각  $4.5 \pm 4.904$  mmHg,  $3.266 \pm 3.7131$  mmHg,  $2.400 \pm 3.538$  mmHg이었다. A군과 B군의 평균 안압과 평균 안압 상승폭을 시간별로 각각 서로 비교하였을 때 두 군간에 모두 통계적으로 유의한 차가 없었다.

**결론** : IVTA 직후 안압은 급격히 상승하였으며, 이후 빠르게 하강하여 20분 이후에는 정상범위로 낮아졌다. 또한 안구마사지에 상관없이 시간별 안압변화 양상은 비슷하였으며, 시술 전 안구마사지가 시술 직후의 안압 상승 및 경과에 별다른 영향을 미치지 못하였다.

〈한안지 48(6):808-814, 2007〉

## 참고문헌

- 1) Machemer R, Sugita G, Tano Y. Treatment of intraocular proliferations with intravitreal steroids. Trans Am Ophthalmol Soc 1979;77:171-80.
- 2) Danis RP, Ciulla TA, Pratt LM, et al. Intravitreal triamcinolone acetonide in exudative age-related macular degeneration. Retina 2000;20:244-50.
- 3) Jonas JB, Kreissig I, Degenring R. Intraocular pressure after intravitreal injection of triamcinolone acetonide. Br J Ophthalmol 2003;87:24-7.
- 4) Challacombe JK, Gillies MC, Penfold PL, et al. Exudative macular degeneration and intravitreal triamcinolone : 18 month follow up. Aust N Z J Ophthalmol 1998;26:277-81.
- 5) Jonas JB, Kreissig I, Degenring R, et al. Secondary chronic open angle glaucoma after intravitreal triamcinolone acetonide. Arch Ophthalmol 2003;121:729-30.
- 6) Park CH, Jaffe GJ, Fekrat S. Intravitreal triamcinolone acetonide in eyes with cystoid macular edema associated with central retinal occlusion. Am J Ophthalmol 2003;136:419-25.
- 7) Young S, Larkin G, Branley M, et al. Safety and efficacy of intravitreal triamcinolone for cystoid macular oedema in uveitis. Clin Exp Ophthalmol 2001;29:2-6.
- 8) Bakri SJ, Beer PM. The effect of intravitreal triamcinolone acetonide on intraocular pressure. Ophthalmic Surg Lasers Imaging 2003;34:386-90.
- 9) Yang YH, Kim KR, Yang SW, Yim HB. The Effect of Intravitreal Triamcinolone Acetonide on Intraocular Pressure. J Korean Ophthalmol Soc 2004;45:1081-5.
- 10) Rahhal FM, Arevalo JF, Munguia D, et al. Intravitreal cidofovir for the maintenance treatment of cytomegalovirus retinitis.

- Ophthalmology 1996;103:1078-83.
- 11) Sebag J, Tang M. Pneumatic retinopexy using only air. Retina 1993;13:8-12.
  - 12) Hattenbach LO, Klais C, Koch FH, Gmbel HO. Intravitreous injection of tissue plasminogen activator and gas in the treatment of submacular hemorrhage under various conditions. Ophthalmology 2001;108:1485-92.
  - 13) Lahey JM, Fong DS, Kearney J. Intravitreal tissue plasminogen activator for acute central retinal vein occlusion. Ophthalmic Surg Lasers 1999;30:427-34.
  - 14) Jonas JB, Kreissig I, Hugger P, et al. Intravitreal triamcinolone acetonide for exudative age related macular degeneration. Br J Ophthalmol 2003;87:462-8.
  - 15) Moshfeghi DM, Kaiser PK, Scott IU, et al. Acute endophthalmitis following intravitreal triamcinolone acetonide injection. Am J Ophthalmol 2003;136:791-6.
  - 16) Friberg TR, Eller AW. Pneumatic repair of primary and secondary retinal detachments using a binocular indirect ophthalmoscope laser delivery system. Ophthalmology 1988;95:187-93.
  - 17) Cochereau-Massin I, Lehoang P, Lautier-Frau M, et al. Efficacy and tolerance of intravitreal ganciclovir in cytomegalovirus retinitis in acquired immune deficiency syndrome. Ophthalmology 1991;98:1348-55.
  - 18) Gillies MC, Simpson JM, Luo W, et al. A randomized clinical trial of a single dose of intravitreal triamcinolone acetonide for neovascular age-related macular degeneration: one-year results. Arch Ophthalmol 2003;121:667-73.
  - 19) Penfold PL, Gyory JF, Hunyor AB, Billson FA. Exudative macular degeneration and intravitreal triamcinolone. A pilot study. Aust N Z J Ophthalmol 1995;23:293-8.
  - 20) Silver DM, Geyer O. Pressure-volume relation for the living human eye. Curr Eye Res 2000;20:115-20.
  - 21) Hildreth HR. Digital ocular compression preceding cataract surgery. Am J Ophthalmol 1961;51:1237-9.
  - 22) Robbins R, Blumenthal M, Galin MA. Reduction of vitreous weight by ocular massage. Am J Ophthalmol 1970;69:603-7.
  - 23) Francois J, Gdal OM, Takeuchi T, Victoria TV. Ocular hypotension and massage of the eyeball. Ann Ophthalmol 1973;5:645-62.
  - 24) Kirsch RE, Steinman W. Digital pressure: an important safeguard in cataract surgery. Arch Ophthalmol 1955;54:697-704.
  - 25) Cho P and Lui T. Comparison of the performance of the Nidek NT-2000 noncontact tonometer with the Keeler Pulsair 2000 and the Goldmann applanation tonometer. Optom Vis Sci 1997;74:51-8.

=ABSTRACT=

## Immediate Natural Course of IOP after IVTA and The Effect of Preoperative Ocular Massage

Hyun Kyung Seong, M.D., Jeong Min Lee, M.D., Young Sook Park, M.D., Byung Ro Lee, M.D.

Department of Ophthalmology, Hanyang University College of Medicine, Seoul, Korea

**Purpose:** We determined immediate natural course of intraocular pressure (IOP) at different time points after intravitreal injection of triamcinolone acetonide (IVTA), and evaluated the effect of preoperative ocular massage to lower the immediate IOP spike after IVTA.

**Methods:** This prospective randomized comparative case-series study comprised sixty three eyes of 60 patients with macular edema. Thirty three eyes of 28 patients underwent IVTA (group A), and thirty eyes of 27 patients underwent IVTA with preoperative ocular massage (group B). Anterior chamber paracentesis was not performed in any of the eyes. The IOPs before and after massage, and the IOPs after IVTA (immediately, 10 minutes, 20 minutes, 30 minutes, and 1 hour, 2 hours after IVTA) were measured, respectively.

**Results:** Mean IOP reached a significant peak immediately after IVTA, and rapidly declined at 10 minutes, and then normalized after 20 minutes. Although Mean IOP was significantly lowered preoperatively by ocular massage, the IOP increment at any time point after IVTA was not significantly different between two groups.

**Conclusions:** The significant IOP spike immediately after IVTA was rapidly normalized over 20 minutes. Preoperative ocular massage was not significantly effective in diminishing the immediate IOP elevation and its persistence after IVTA.

J Korean Ophthalmol Soc 48(6):808-814, 2007

**Key Words:** Intraocular pressure, Intravitreal injection, Ocular massage, Triamcinolone acetonide

---

Address reprint requests to **Byung Ro Lee, M.D.**

Department of Ophthalmology, Hanyang University College of Medicine

#17 Haendang-dong, Seongdong-gu, Seoul 133-791, Korea

Tel: 82-2-2290-8570, Fax: 82-2-2291-8517, E-mail: brlee@hanyang.ac.kr