Efficiency and Safety of Ripasudil Hydrochloride Hydrate for Uveitis-associated Ocular Hypertension

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Background:
Ripasudil hydrochloride hydrate (K-115) is an eye drop developed for the treatment of glaucoma and ocular hypertension in Japan. The aim of this study to evaluate the efficiency and safety of ripasudil hydrochloride hydrate for uveitis-associated ocular hypertension (OHT) and compare the outcomes of different uveitis.

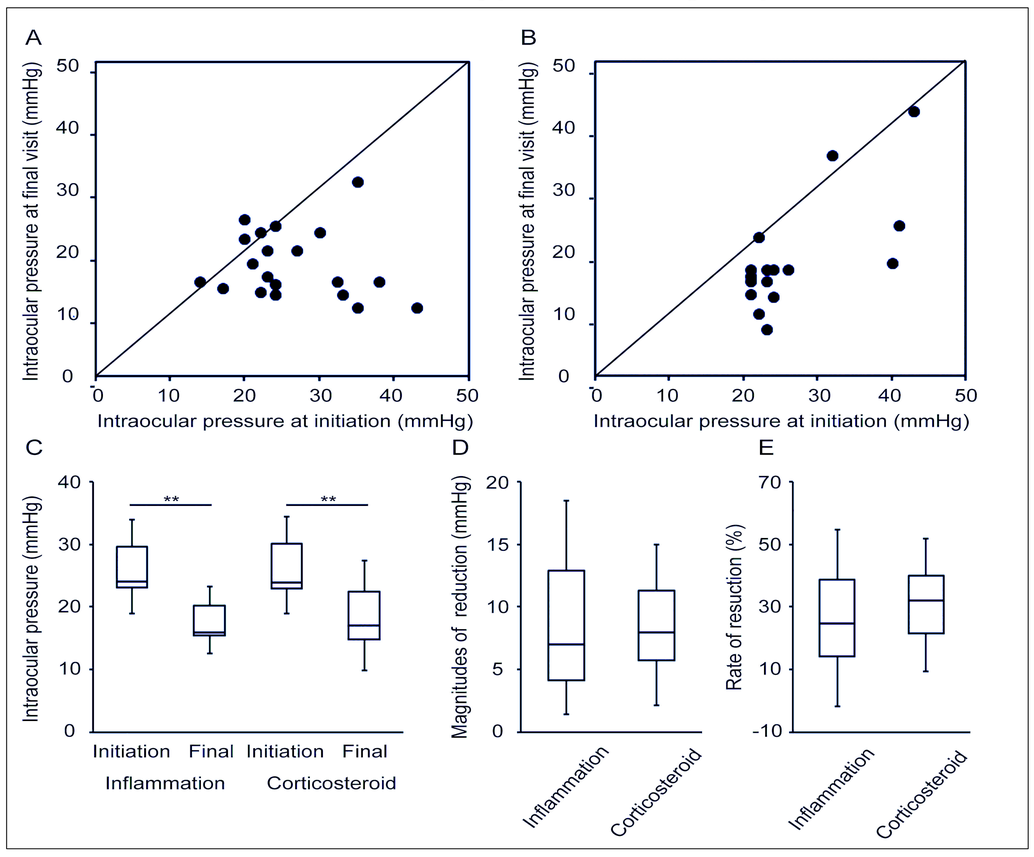
Patients & Methods: Clinical records of 36 eyes of 27 patients with uveitis-associated OHT (18 eyes with granulomatous uveitis and 10 eyes with non-granulomatous uveitis) who were treated by K-115 combined with or without other anti-glaucoma agents were retrospectively reviewed. Intraocular pressure (IOP), aqueous flare, and posterior inflammation scores were compared before and after treatment with K-115.

Results:

Table 1. Patients' characteristics in the inflammation- and corticosteroid-induced ocular hypertension groups

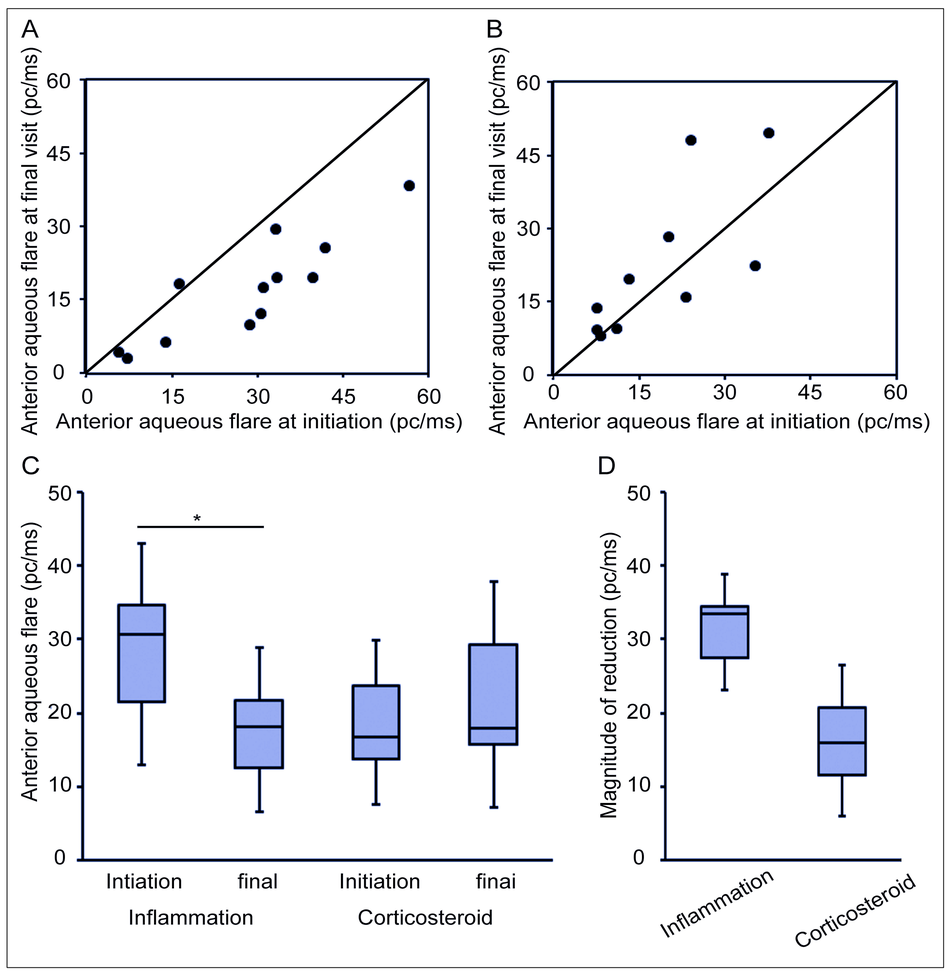
	Inflammation	Corticosteroid	P
Number of eyes (people)	20 (16)	16 (11)	
Male/female (people)	5/11	6/5	
Mean age (years)	62.1 ± 13.2	63.0 ± 15.2	0.36*
Mean observation duration (months)	5.2 ± 3.0	5.2 ± 2.7	0.43*
Mean BCVA (logMAR)	0.47 ± 0.82	0.48 ± 0.80	0.44*
Diagnosis of uveitis (eyes)			
Scleritis-associated uveitis	5	2	
Behçet's disease		6	
Herpes uveitis	3		
Sarcoidosis	2	1	
Vogt–Koyanagi–Harada disease		2	
Cytomegalovirus-associated uveitis	1		
Unknown	9	5	
Prescribed anti-glaucoma agents			
Prostaglandin analogues	15	13	
β-blockers	12	9	0.71#
Carbonic anhydrase inhibitors	7	5	
α2-agonists	5	8	

Figure 1. Changes in intraocular pressure in the inflammation- and corticosteroid-induced ocular hypertension groups



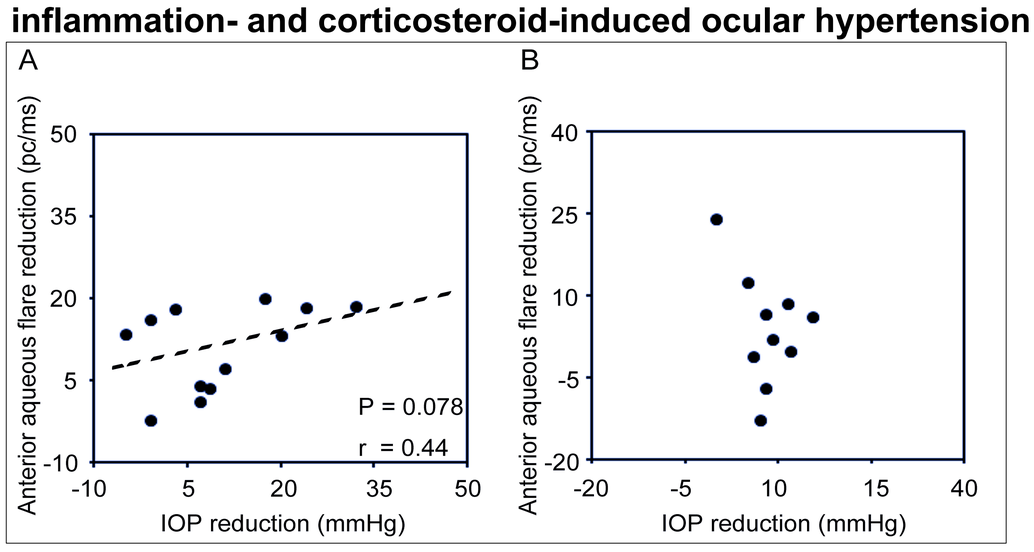
(A) IOP at the initiation and final visit in the inflammation group. **(B)** IOP at the initiation and final visit in the corticosteroid group. **(C)** The mean IOP at the initiation and final visit in the two groups. The mean IOP was reduced significantly by K-115 initiation in both groups. **(D)** The magnitudes of IOP reduction in the two groups. No significant differences were found between the two groups **(E)** The rates of IOP reduction in the two groups. No significant differences were found between the two groups. **: P < 0.01

Figure 2. Changes in anterior aqueous flare in the inflammation- and corticosteroid-induced ocular hypertension groups



(A) Anterior aqueous flare at the initiation and final visit in the inflammation group. **(B)** Anterior aqueous flare at the initiation and final visit in the corticosteroid group. **(C)** The mean anterior aqueous flare in the two groups at the initiation and final visit. In the inflammation group, the mean anterior aqueous flare was significantly decreased. (**D)** The magnitude of change in anterior aqueous flare in the two groups.
*: P< 0.05

Figure 3. Correlations between intraocular pressure and anterior aqueous flare in the inflammation- and corticosteroid-induced ocular hypertension groups



(A) There was a tendency of correlation between IOP reduction and anterior flare decrease in the inflammation group. **(B)** There was no significant correlation between IOP reduction and anterior flare change in the corticosteroid group.

Table 2 Factors affecting changes in IOP and aqueous flare

	IOP		Flare	
	P	β	P	β
Inflammation/corticosteroid	0.95		0.24	
Age	0.51		0.24	
Sex	0.57		0.45	
Granulomatous/non-granulomatous	0.93		0.86	
Prescribed anti-glaucoma agents				
Prostaglandin analogues	0.23		0.65	
β-blockers	0.68		0.21	
Carbon anhydrase inhibitors	0.94		0.63	
α2-agonists	0.64		0.03	–18.30
Aqueous flare at the initiation	0.45		0.21	
IOP at the initiation	<0.001	1.40	0.02	0.56

Comments:
K-115 is effective in lowering IOP and is safe and well-tolerated in eyes with uveitis-associated OHT, including both inflammation- and corticosteroid-induced OHT. K-115 may suppress the anterior inflammation in eyes with inflammation-induced OHT and may have stronger effects in eyes with corticosteroid-induced OHT.

Conclusions:
K-115 decreased IOP in both inflammation- and corticosteroid-induced OHT associated with uveitis and played a synergistic role in reducing ocular inflammation in uveitis treatment.