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Incidence, management and outcome of ocular hypertension and secondary glaucoma in children with uveitis

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Financial interest: None

INTRODUCTION

Ocular hypertension and glaucoma are frequent complications in childhood-onset uveitis and remains one of the major causes of visual loss in this group. In 1984, one third of children with uveitis and glaucoma became blind.[1] In contrast, a 2006 study found an incidence of 7%,[2] which may in part be explained by improved management. The aim of this study was to report the current incidence, management and outcome of raised intraocular pressure (IOP) in children with uveitis treated at the Manchester Uveitis Clinic, UK.

METHODS

- Retrospective, observational study of children who presented with both uveitis and raised IOP under the age of 16 to this tertiary referral centre, from July 2002 to June 2016.

RESULTS

- 244 children with uveitis were identified from the patient database.
- 41 of these (16.8%, 64 eyes) had raised IOP requiring treatment.
- Table 1 shows the baseline characteristics of these 41 patients.
- The mean IOP pre-treatment was **32.3±6.9mmHg** and the mean IOP at the final visit was **15.6±4.6mmHg** , on a mean 0.7 medications; **71.1%** of eyes were off glaucoma treatment at final visit.
- Time from diagnosis of uveitis to raised IOP is shown in Table 2.
- 24 eyes (37.5%) required **glaucoma surgery** (20 Baerveldt glaucoma implants, 2 trabeculectomy+MMC and 2 Molteno tube implants) and 8 (12.5%) had **cyclodiode** prior to that.
- Based on IOP criteria <21mmHg, the **qualified success** for eyes which had glaucoma tube surgery was **100%** and **complete success** was **63.6%**.
- Outcome of eyes with raised IOP is shown in Table 3.

Table 2: Onset of raised IOP from diagnosis of uveitis

	At presentation	< 3 months	3-6 months	6-12 months	1-2 years	2-3 years	After 3 years
Number of eyes (%)	6 (9.4)	14 (21.9)	6 (9.4)	9 (14.1)	10 (15.6)	9 (14.1)	10 (15.6)

Table 3: Outcome of eyes with raised IOP

Outcome	
Mean BCVA (logMar)	
At first presentation	0.19±0.29
At final visit	0.25±0.62
BCVA at final visit	No. of eyes
HM (advanced glaucoma)	1
PL	0
NPL (advanced glaucoma)	1
Mean Cup-disc-ratio	0.4
Lens status at final follow up visit	No. of eyes(%)
Phakic (clear)	43 (67.2)
Phakic (with cataract)	16 (25.0)
Pseudophakic	1 (1.6)
Aphakic	4 (6.3)
Other ocular complications	N (%)
Band keratopathy	9 (14.1)
Posterior synechiae	13 (20.3)
Certificate visual impairment registration	1
Enucleation/ Evisceration	0

Table 1: Baseline characteristics of children with raised IOP requiring intervention

Baseline characteristics	
Mean age	Years
At diagnosis of uveitis	9.0±4.0
At diagnosis of raised IOP	10.0±3.5
Female: Male	1:1
Race	No. of patients (%)
Caucasian	35 (85.4)
Asian	3 (7.3)
Afro-Carribean	2 (4.9)
Oriental	1 (2.4)
Diagnosis of uveitis	No. of eyes (%)
Idiopathic	22 (34.4)
JIA	23 (35.9)
HLB-B27 related	1 (1.6)
Sarcoid-related	2 (3.1)
Others	16 (25.0)
ANA status	No. of patients (%)
Positive	25 (39.1)
Negative	17 (26.6)
Not available	22 (34.4)
Anatomical classification of uveitis	No. of eyes (%)
Anterior	40 (62.5)
Intermediate	9 (14.1)
Posterior	3 (4.7)
Panuveitis	12 (18.8)
Course of uveitis	No. of eyes (%)
Acute	7 (10.9)
Chronic	55 (85.9)
Recurrent	2 (3.1)
Mean follow-up duration	
From diagnosis of uveitis to first raised IOP	30.8 months (range 1-170)
From diagnosis of uveitis to last visit	77.7 months (range 3-205)
From raised IOP to last visit	46.7 months (range 3-147)
Presumed Mechanism of raised IOP	No. of eyes (%)
Steroid response	38 (59.4)
Others	26 (40.6)
Treatment at diagnosis of first raised IOP	No. of eyes (%)
Number of eyes on topical steroid treatment on first recorded raised IOP	54 (84.4)
Mean number of steroid eye drops per day	3.5
Number of patients on systemic treatment:	10 (15.6)
Prednisolone	21 (32.8)
DMARDS Second line immunosuppression	2 (3.1)
Biologic therapy	2 (3.1)

CONCLUSIONS

These children with raised IOP have a good outcome overall through aggressive medical and surgical management. One third of patients had raised IOP within 3 months of diagnosis of uveitis and the main presumed mechanism was steroid response. Primary glaucoma drainage implant surgery was effective in managing cases of uncontrolled high IOP and early surgery is recommended.

References:

1. Kanski JJ, Shun-Shin GA. Systemic uveitis syndromes in childhood: an analysis of 340 cases. *Ophthalmology* 1984;91:1247-1252.
2. Sijssens KM, Rothova A, Berendschot TT, de Boer JH. Ocular hypertension and secondary glaucoma in children with uveitis. *Ophthalmology* 2006;113:853-859.e852.