



## TYPES AND RATES OF OCULAR COMPLICATIONS AMONG CHILDREN WITH UVEITIS

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DOI: <https://doi.org/10.17605/OSF.IO/U85T2>

Article Received on 15/12/2020

Article Revised on 18/12/2020

Article Accepted on 20/12/2020

### ABSTRACT

**Aim:** to explore uveitis cases in children and to evaluate the extent of their complications and its impact on vision. **Method:** this is a retrospective study which was conducted at the ophthalmology clinic of Queen Rania children hospital. The medical records of all patients who attended to the ophthalmology clinic suffering from uveitis between January 2019 and December 2020 were enrolled in the study. Their medical records were reviewed regarding age, gender, type of uveitis, type of complications encountered in those patients, visual acuity, results of ocular examination including intra ocular pressure and types of medications used in those patients. The results were analyzed and compared with those of other studies. **Results:** 140 children (160 eyes) aged between 2 and 16 years (mean  $9.5 \pm 4.3$  years) were included in the study. 112 eyes (70.0%) had at least one type of complication. The most common etiology of uveitis in children was idiopathic (40.6%). Juvenile idiopathic arthritis was the most common known cause of uveitis (38.8%) and the most common etiology of uveitis in eyes with ocular complications (41.1%). The most common type of complication encountered in children with uveitis was posterior synechiae (23.8%) followed by cataract (17.5%) and glaucoma (11.3%). **Conclusion:** ocular complications were found at high rate among children with uveitis. Early age of onset, long duration of uveitis, infectious uveitis and Behcet's disease were found to be risk factors. Posterior segment involvement and Behcet's disease were the most apparent risk factors for visual morbidity.

**KEYWORDS:** children, uveitis, ocular complications.

### INTRODUCTION

Uveitis is less common in children compared to adults constituting 2-14% of uveitis cases.<sup>[1]</sup> There is a wide geographical variation regarding its prevalence. It is estimated to be 27.9 and 93.1 per 100,000 in children and adults respectively.<sup>[2]</sup> Although it is rare, uveitis is major health problem and considered to be a potentially blinding disorder. It is estimated to be responsible for 10–15% of cases with blindness in United States.<sup>[3]</sup> Visual morbidity is likely to occur because of ocular complications of uveitis including: cataract, glaucoma, band keratopathy, maculopathy, amblyopia, hypotony, posterior synechiae, optic nerve atrophy and retinal detachment.<sup>[4]</sup> The rate of complications among children is considered high when compared to adults. It is reported that 34% of children with uveitis have complications at time of diagnosis and at 3 years 86.3% have one or ocular complications of uveitis.<sup>[5]</sup> Uveitis is classified according to chronicity into acute and chronic, to etiology into infectious and non-infectious, to pathology into granulomatous and non-granulomatous or site of inflammation into anterior, intermediate, posterior

and pan uveitis.<sup>[6]</sup> Uveitis in children tends to be chronic, non-infectious, non-granulomatous and anterior.<sup>[7]</sup>

This study was conducted on children uveitis to explore the extent of ocular complications related to uveitis and its impact on vision.

### METHOD

**Method:** this is a retrospective study which was conducted at the ophthalmology clinic of Queen Rania children hospital. The medical records of all patients who attended to the ophthalmology clinic suffering from uveitis between January 2019 and December 2020 were enrolled in the study. Their medical records were reviewed regarding age, gender, type of uveitis, type of complications encountered in those patients, visual acuity, results of ocular examination including intra ocular pressure and types of medications used in those patients. The results were analyzed and compared with those of other studies.

**RESULTS**

140 children (160 eyes) aged between 2 and 16 years (mean 9.5±4.3 years). Were included in the study. 112

eyes (70.0%) had at least one type of complication. The demographic features of the patients are summarized in table 1.

**Table 1: Demographic features of uveitis patients and patterns of uveitis encountered in those patients.**

	Uveitis with complications (n=112)	Uveitis without complications (n=48)	Total (n=160)
Mean age	10.2	7.7	9.5
Male/female	45/57	19/39	64/96
Unilateral/bilateral	76/18	44/2	120/20
Infectious/non-infectious	22/90	8/40	30/130
Granulomatous/non-granulomatous	10/102	4/44	14/146
Acute/chronic	24/88	7/41	31/129
Age of onset (yrs)	5.6	7.2	6.1
duration	5.2	2.3	4.3
BCVA	0.12	0.42	0.27

The most common etiology of uveitis in children was idiopathic. Juvenile idiopathic arthritis was the most common known cause of uveitis and the most common

etiology of uveitis in eyes with ocular complications. Type and frequencies of ocular complications are summarized in table 2.

**Table 2: Type and frequencies of ocular complications of uveitis.**

Etiology of uveitis	With complication	Without complication	Total	BCVA
Idiopathic	37 (33.0%)	28 (58.3%)	65 (40.6%)	0.30
Juvenile idiopathic arthritis (JIA)	46 (41.1%)	16 (33.3%)	62 (38.8%)	0.27
Behcet's disease	12 (10.7%)	1 (2.1%)	13 (8.1%)	0.10
Sarcoidosis	6 (5.4%)	1 (2.1%)	7 (4.4%)	0.11
Tubulointerstitial nephritis-uveitis	2 (1.8%)	1 (2.1%)	3 (1.9%)	0.3
Toxoplasmosis	2 (1.8%)	0 (0.0%)	2 (1.3%)	0.8
Vogt-Koyanagi-Harada syndrome (VKH)	2 (1.8%)	1 (2.1%)	3 (1.9%)	0.30
Herpetic uveitis	2 (1.8%)	0 (0.0%)	2 (1.3%)	0.40
CMV retinitis	2 (1.8%)	0 (0.0%)	2 (1.3%)	0.15
Tuberculosis	1 (0.9%)	0 (0.0%)	1 (0.6%)	0.30
Total No. of eyes	112 (100%)	48 (100%)	160 (100%)	0.27

The most common type of complication encountered in children with uveitis was posterior synechiae (23.8%) followed by cataract (17.5%) and glaucoma (11.3%).

The spectrum of uveitis complications and their rates are summarized in table 3.

**Table 3: types and rates of ocular complications of uveitis among children.**

Complication	Number of eyes	percentage	BCVA
Band keratopathy	12	7.5%	0.82
Posterior synechiae	38	23.8%	0.58
Cataract /Pseuphakia	28	17.5%	0.22
glaucoma	18	11.3%	0.15
Vitreous haze	8	5.0%	0.07
vasculitis	2	1.2%	0.05
Macular edema	2	1.2%	0.11
Retinal detachment	1	1.0%	0.05
Phthisis	1	1.0%	0.0

## DISCUSSION

Uveitis is a rare but serious condition affecting children. There is a wide variation regarding its prevalence, patterns and complication worldwide. In the present study the patients were divided into two groups those with complications and those without. This made it easier to explore the rates and the risk factors associated with ocular complications of uveitis. Children are at higher risk to develop complications compared to adults because of the late attendance to the ophthalmology clinic.<sup>[8]</sup> Late attendance of Children to the ophthalmology clinic may occur either because of inability of children to express their complaints to the family or because of the asymptomatic nature of the disease in the majority of cases.<sup>[9,10]</sup> In addition, most of uveitis cases in children are chronic in nature.<sup>[11]</sup>

The mean age of the patients was (9.5 years) which was consistent with that found in other studies.<sup>[12]</sup> However, the mean age for uveitis patients with complications (10.2 years) was significantly higher than that of patients without complications (7.7 years). This all suggests that children late attendance is the general tendency of children with uveitis. Giving more chance for complication to take place.

Uveitis in children was more prominent in females. The explanation for this is that the most common know cause of uveitis in this study was juvenile idiopathic arthritis which is known to have female predominance.<sup>[13]</sup> The majority of uveitis cases in our study were unilateral, anterior, chronic, non-granulomatous and non-infectious in nature. Those results were very comparable to that found in other studies of regional countries.<sup>[9,10]</sup> Uveitis with ocular complication occurred more among patients with younger age of onset and more duration of the disease. BCVA was significantly lower among patients with ocular complication. A strong relationship between ocular complication of uveitis and visual morbidity was reported.<sup>[14]</sup>

In this study, JIA was the most common etiology for uveitis with ocular complication but with mild to moderate visual impairment. Behcet's disease had very high rate of complication (12/13(92.3%)) associated with the worst visual acuity (0.1). Although rare, all infectious causes of uveitis had ocular complications with variable visual outcome depending on the eye structures involved in uveitis.

Posterior synechiae was the most common ocular complication of uveitis in children. However, children maintained good visual acuity. Posterior synechiae is relatively has no visual morbidity unless resultant angle closure glaucoma occurs.<sup>[15,16]</sup> Cataract (17.5%) and glaucoma (11.3%) were the 2<sup>nd</sup> and 3<sup>rd</sup> types of complications encountered in our study with mean BCVA of 0.22 and 0.15 respectively. Cataract in children with uveitis remain a challenge to ophthalmologist because of the wide controversy regarding time of

surgery, preparation of the patients and intra ocular lens implant.<sup>[17,18]</sup> Posterior segment complications including vitreous haze, vasculitis, macular edema, retinal detachment and phthisis were infrequent but were associated with severe visual impairment.

In conclusion, ocular complications were found at high rate among children with uveitis. Early age of onset, long duration of uveitis, infectious uveitis and Behcet's disease were found to risk factors. Posterior segment involvement and Behcet's disease were the most apparent risk factors for visual morbidity.

## CONCLUSION

Ocular complications were found at high rate among children with uveitis. Early age of onset, long duration of uveitis, infectious uveitis and Behcet's disease were found to risk factors. Posterior segment involvement and Behcet's disease were the most apparent risk factors for visual morbidity.

## REFERENCES

1. BenEzra D, Cohen E, Maftzir G. Uveitis in children and adolescents. *Br J Ophthalmol*, 2005; 89(4): 444–8.
2. Paivönsalo-Hietanen T, Tuominen J, Saari KM. Uveitis in children: population-based study in Finland. *Acta Ophthalmol Scand*, 2000; 78: 84–88.
3. de Boer J, Wulffraat N, Rothova AV. Visual loss in uveitis of childhood. *British Journal of Ophthalmology*, 2003; 87: 879–884.
4. Edelsten C, Reddy MA, Stanford M, et al. Visual loss associated with pediatric uveitis in English primary and referral centers. *Am J Ophthalmol*, 2003; 135: 676–680.
5. Rosenberg KD, Feuer WJ, Davis JL. Ocular complications of pediatric uveitis. *Ophthalmology*, 2004; 111: 2299–2306.
6. Tugal-Tutkun I. Pediatric uveitis. *J Ophthalmic Vis Res*, 2011; 6(4): 259–269.
7. Angeles-Han ST, Rabinovich CE. Uveitis in children. *Curr Opin Rheumatol*, 2016; 28(5): 544–549. doi:10.1097/BOR.0000000000000316.
8. Soyulu M, Özdemir G, Anli A. Pediatric uveitis in southern Turkey. *Ocul Immunol Inflamm*, 1997; 5(3): 197–202.
9. Khairallah M, Yahia SB, Ladjimi A, Messaoud R, Zaouali S, Attia S, Jenzeri S, Jelliti B. Pattern of uveitis in a referral Centre in Tunisia, North Africa. *Eye*, 2007; 21(1): 33.
10. Abdulhameed H, Mahmood, Rawan A, Hawsawi, Anoud F, Al Saati, Samir S, Shoughy, Khalid F, Tabbara; Uveitis Among Children in Saudi Arabia. *Invest. Ophthalmol. Vis. Sci*, 2020; 61(7): 2063.
11. Chen, YH., Gepstein, R., Sharief, L. et al. Outcome and risk of ocular complications of managing children with chronic anterior uveitis with topical rimexolone 1%. *Int Ophthalmol*, 2020; 40: 1061–1068. <https://doi.org/10.1007/s10792-020-01358-9>.

12. Keino H, Watanabe T, Taki W, et al Clinical features of uveitis in children and adolescents at a tertiary referral centre in Tokyo *British Journal of Ophthalmology*, 2017; 101: 406-410.
13. Jacqueline L. Hayworth, Matthew A. Turk, Tatiana Nevskaya, Janet E. Pope. The frequency of uveitis in patients with juvenile inflammatory rheumatic diseases. *Joint Bone Spine*, 2019; 86(6): 685-690. ISSN 1297-319X, <https://doi.org/10.1016/j.jbspin.2019.06.001>. (<http://www.sciencedirect.com/science/article/pii/S1297319X1930092>).
14. Marc D. de Smet, Simon R.J. Taylor, Bahram Bodaghi, Elisabetta Miserocchi, Philip I. Murray, Uwe Pleyer, Manfred Zierhut, Talin Barisani-Asenbauer, Phuc LeHoang, Sue Lightman, Understanding uveitis: The impact of research on visual outcomes, *Progress in Retinal and Eye Research*, 2011; 30(6): 452-470. ISSN 1350-9462, <https://doi.org/10.1016/j.preteyeres.2011.06.005>.
15. Kanda T, Shibata M, Taguchi M, et al Prevalence and aetiology of ocular hypertension in acute and chronic uveitis *British Journal of Ophthalmology*, 2014; 98: 932-936.
16. Sana S. Siddique, Ana M. Suelves, Ujwala Baheti, C. Stephen Foster. Glaucoma and Uveitis, *Survey of Ophthalmology*, 2013; 58(1): 1-10. ISSN 0039-6257. <https://doi.org/10.1016/j.survophthal.2012.04.006>.
17. Jancevski, Mariaa,b; Foster, Charles Sa,b,c Cataracts and uveitis, *Current Opinion in Ophthalmology*, 2010; 21: 10-14. doi: 10.1097/ICU.0b013e328332f575.
18. David BenEzra, Evelyne Cohen. Cataract surgery in children with chronic uveitis. *Ophthalmology*, 2000; 107(7): 1255-126. ISSN 0161-6420. [https://doi.org/10.1016/S0161-6420\(00\)00160-3](https://doi.org/10.1016/S0161-6420(00)00160-3).