Comparative Analysis of Visual Outcomes and Complications: Age-related Patterns of Uveitis in Pediatric patients

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Abstract

Background: Although it only makes up 2 to 14% of all cases, juvenile uveitis is rare and causes negligible ocular damage. A young person suffering from the disease may become legally blind and have lifelong disability due to the greater rate of complications associated with its course. The aim of the study was to assess the Age-related Patterns of Uveitis in Pediatric Patients: A Comparative Analysis of Visual Outcomes and Complications. **Material & Methods:** This study was a comparative study conducted at North Bengal Medical College, Sirajganj & Prof. MA Matin Memorial BNSB based Eye Hospital, Sirajganj. The sample size was 150 and the duration of the study was 2021 to 2022. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. Statistical evaluation of the results used to be obtained via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24). **Results:** Regarding age 40% of the patients had ≤8 years of age and 60% had > 8 years of age mean age at presentation (SD) was 7 (4.7) years in ≤8 years patients and 5 (3.6) years in > 8 years patient's. Mean follow up, months (SD) was 15 (10) in ≤8 years patient's and 12 (8) in > 8 years patient's. Mean number of uveitis episodes (SD) was 15 (10) in ≤8 years patient's and 7.87 in > 8 years patient's. About 78% of the patients were male and 22% of them were female. Idiopathic uveitis was the most common diagnosis. In patients of ≤8 years Idiopathic Causes were 50 (55.55), Autoimmune 30 (33.33) and Infectious 10 (11.11). In patients of > 8 years Idiopathic Causes were 28 (46.67), Autoimmune 20 (33.33) and Infectious 12 (20). With regards to the different etiologies, idiopathic uveitis was the most common and no significant differences in etiologies were noted between the younger and older groups. There were no variations in the methods of treatment across the groups. In a similar vein, no discernible variations in procedure types or rates were discovered between age groups. Visual impairment was present in 48% of the visually immature eyes and 36.3% of visually mature eyes at first visit. In general there was an improvement in vision at subsequent visits in both age groups. Improvement by 2 or more lines was significant in the younger age group both at 6 and 12 months (p = 0.02, 0.03). **Conclusions:** Pediatric uveitis is an uncommon condition, it can have devastating effects on young patients' visual prognosis. Because of the higher rate of problems linked with the disease's course, a young individual afflicted with it may become legally blind and have lifelong handicap.

INTRODUCTION

Although it only makes up 2 to 14% of all cases, juvenile uveitis is rare and causes negligible ocular damage.[1,2] A young person suffering from the disease may become legally blind and have lifelong disability due to the greater rate of complications associated with its course.[3] The primary causes of difficulties in managing uveitis in the younger population include delayed diagnosis, which might occur from the disease's asymptomatic nature or an inability to articulate the complaint.[3,4] This is on top of the evaluation difficulties brought on by the patient's uncooperative eye exam.[5,6] There are unique characteristics unique to pediatric uveitis, such as etiologies such as juvenile idiopathic arthritis (JIA) and Kawasaki illness, or sequelae such amblyopia. In most of the earlier research, juvenile idiopathic arthritis is predominantly linked to pediatric uveitis and is the primary cause of vision loss in children.[4] Pediatric patients are specifically at risk for amblyopia caused by chronic inflammation or its aftereffects, which calls for prompt and intensive treatment. Numerous research endeavors have concentrated on the trends and aftermaths of uveitis among children aged 16 and under.[1,4] Thus, the aim of the study was to assess the Age-related Patterns of Uveitis in Pediatric Patients: A Comparative Analysis of Visual Outcomes and Complications.
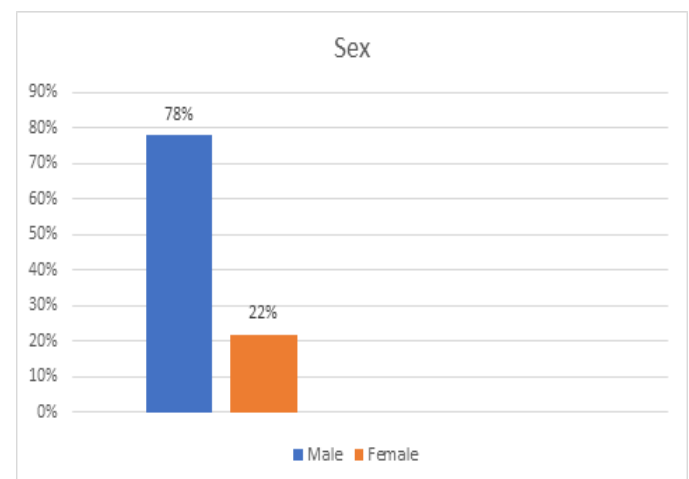
MATERIAL AND METHODS

This study was a comparative study conducted at North Bengal Medical College, Sirajganj & Prof. MA Matin Memorial BNSB based Eye Hospital, Sirajganj. The sample size was 150 and the duration of the study was 2021 to 2022. Patients who were younger than 16 when their uveitis symptoms first appeared were identified. Patient and disease-related demographic data were gathered. Face to face interview was done to collect data with a semi-structured questionnaire. After collection, the data were checked and cleaned, followed by editing, compiling, coding and categorizing according to the objectives and variable to detect errors and to maintain consistency, relevancy and quality control. Statistical evaluation of the results used to be obtained via the use of a window-based computer software program devised with Statistical Packages for Social Sciences (SPSS-24).

RESULTS

Regarding age 40% of the patients had ≤8 years of age and 60% had > 8 years of age mean age at presentation (SD) was 7 (4.7) years in ≤8 years patients and 5 (3.6) years in > 8 years patient's. Mean follow up, months (SD) was 15 (10) in ≤8 years patient's and 12 (8) in > 8 years patient's. Mean number of uveitis episodes (SD) was 15 (10) in ≤8 years patient's and 7.87 in > 8 years patient's.

Figure 1: Distribution of the respondents by sex

About 78% of the patients were male and 22% of them were female.

In patients of ≤8 years the location of Uveitis was Bilateral, Anterior 20 (22.22) respectively, Panuveitis 10 (11.11), Posterior and Intermediate was 5 (5.55) respectively. In patients of > 8 years the location of Uveitis was Bilateral 25 (41.67), Anterior 30 (50), Posterior 10 (16.67), Intermediate 5 (8.33).

Regarding chronicity, Acute was 20 (22.22), Chronic 60 (66.67), Recurrent 10 (11.11) in In patients of ≤8 years. In patients of > 8 years Acute was 15 (25), Chronic 35 (58.33) and Recurrent was 10 (16.67). [Table 2]

Regarding Etiology of pediatric uveitis here, In patients of ≤8 years Idiopathic Causes were 50 (55.55), Autoimmune 30 (33.33) and Infectious 10 (11.11). In patients of > 8 years Idiopathic Causes were 28 (46.67), Autoimmune 20 (33.33)and Infectious 12 (20).With regards to the different etiologies, idiopathic uveitis was the most common and no significant differences in etiologies were noted between the younger and older groups [Table 3]

Complications in younger age groups were Cataract 20 (22.22), Ocular hypertension 10 (11.11), Glaucoma 5 (5.55), Amblyopia 5 (5.55), Amblyopia and CME were 2 (2.22) Band keratopathy 1 (1.11).

In older age group Cataract 10 (16.67), Ocular hypertension 10 (16.67), Glaucoma 5 (8.33), Amblyopia 5 (5.55), Amblyopia 3 (5.0) and Band keratopathy 2 (3.33). [Table 4]

There were no variations in the methods of treatment across the groups. In a similar vein, no discernible variations in procedure types or rates were discovered between age groups. Visual impairment was present in 48% of the visually immature eyes and 36.3% of visually mature eyes at first visit. In general there was an improvement in vision at subsequent visits in both age groups. Improvement by 2 or more lines was significant in the younger age group both at 6 and 12 months (p = 0.02, 0.03). [Table 5]

Table 1: Distribution of the respondents by age, follow up and number of uveitis episodes.

Age	N=150	%	P value
≤8 years	60	40	
> 8 years	90	60	
	≤8 years	> 8 years	
Mean age at presentation, years (SD)	7 (4.7)	5 (3.6)	< 0.001*
Mean follow up, months (SD)	15 (10)	12 (8)	0.48
Mean number of uveitis episodes (SD)	15 (10)	11.8 (7.87)	0.42

Table 2: Distribution of the respondents According to location and chronicity

Location	≤8 years	> 8 years	P value
	N=90 (%)	N=60 (%)	
Bilateral	20 (22.22)	25 (41.67)	0.67
Anterior	20 (22.22)	30 (50)	0.09
Panuveitis	10 (11.11)	20 (33.33)	0.22

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Posterior	5 (5.55)	10 (16.67)	0.56
Intermediate	5 (5.55)	5 (8.33)	1.00
Chronicity			
Acute	20 (22.22)	15 (25)	0.91
Chronic	60 (66.67)	35 (58.33)	0.32
Recurrent	10 (11.11)	10 (16.67)	0.11

Table 3: Distribution of the respondents According to Etiology of pediatric uveitis stratified by age

Etiology	≤8 years	> 8 years	
	N=90 (%)	N=60 (%)	
Idiopathic	50 (55.55)	28 (46.67)	0.67
Autoimmune	30 (33.33)	20 (33.33)	0.12
Juvenile Idiopathic Arthritis (JIA)	25 (27.27)	5 (8.33)	
Behcet	0	5 (8.33)	
Sarcoidosis	0	1 (1.67)	
Vogt-Koyanagi-Harada (VKH)	0	0	
Inflammatory Bowel Disease (IBD)	5 (5.55)	3 (5.0)	
Takayasu	0	5 (8.33)	
Tubulu-intestitial nephritis-uveitis (TINU)	0	1 (1.67)	
Infectious	10 (11.11)	12 (20)	
Toxoplasmosis	7 (7.77)	6 (10)	
Herpes Simplex virus (HSV)	1 (1.11)	2 (3.33)	0.73
Progressive outer retinalnecrosis (PORN)	1 (1.11)	1 (1.67)	
Cytomegalovirus (CMV)	1 (1.11)	2 (3.33)	
Tuberculosis (TB)	1 (1.11)	1 (1.67)	

Table 4: Distribution of the respondents According to Eyes with the most common ocular complications stratified by age

Complications	≤8 years	> 8 years	P value
	N=40 (%)	N=30 (%)	
Cataract	20 (22.22)	10 (16.67)	0.58
Ocular hypertension	10 (11.11)	10 (16.67)	0.15
Glaucoma	5 (5.55)	5 (8.33)	0.15
Amblyopia	2 (2.22)	3 (5.0)	< 0.003
CME	2 (2.22)	0	< 0.003
Band keratopathy	1 (1.11)	2 (3.33)	0.03

Table 5: Distribution of the respondents according to Visual acuity changes stratified by age

Visual acuity	≤8 years	> 8 years	P value
At initial visit	$n = 80$	$n = 59$	
VA≤ 20/50	52 (52.0)	40 (26.67)	0.22

VA ≤ 20/200	28 (48.0)	9(6)	0.13
At 6 months			
VA≤ 20/50	49 (33.3)	46 (30.6)	0.18
VA ≤ 20/200	31 (66.7)	3(2)	1.00
Improvement≥2 lines	78 (52.0)	30.6 (20.4)	0.02
Worsening≥2 lines	9.9(6.6)	3 (13.95)	1.00
At 1 year			
VA≤ 20/50	60 (39.9)	59 (39.5)	0.81
VA ≤ 20/200	18(12.1)	25 (17.1)	0.63
Improvement≥2 lines	83 (55.6)	38 (25.8)	0.037
Worsening≥2 lines	17 (11.1)	43 (29)	0.19
At last visit			
VA≤ 20/50	54 (36.0)	44 (29.4)	
VA ≤ 20/200	17(11.1)	43(29)	
Improvement≥2 lines	54(36.0)	24(15.7)	0.076
Worsening≥2 lines	6 (4.0)	17(11.8)	0.41

VA: Visual Acuity

DISCUSSION

This study was a comparative study conducted at North Bengal Medical College, Sirajganj & Prof. MA Matin Memorial BNSB based Eye Hospital, Sirajganj. The sample size was 150 and the duration of the study was 2021 to 2022.

In this study Regarding age 40% of the patients had ≤8 years of age and 60% had > 8 years of age mean age at presentation (SD) was 7 (4.7) years in ≤8 years patients and 5 (3.6) years in > 8 years patient's. Mean follow up, months (SD) was 15 (10) in ≤8 years patient's and 12 (8) in > 8 years patient's. Mean number of uveitis episodes (SD) was 15 (10) in ≤8 years patient's and 7.87 in > 8 years patient's.

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pediatric uveitis here, In patients of ≤8 years Idiopathic Causes were 50 (55.55), Autoimmune 30 (33.33) and Infectious 10 (11.11). In patients of > 8 years Idiopathic Causes were 28 (46.67), Autoimmune 20 (33.33)and Infectious 12 (20).With regards to the different etiologies, idiopathic uveitis was the most common and no significant differences in etiologies were noted between the younger and older groups

For visually immature children, amblyopia was the most common cause of visual loss, but cataracts, with a mean uveitis duration of 23 months, were the leading cause for visually mature children. We discovered that idiopathic uveitis predominated in 78% of the cases, which is consistent with recent publications (30–55%).[7,8,9] All recent studies showed a high prevalence of JIA as the culprit of identifiable causes of uveitis in the pediatric age group (9.4–47%).[8,9]

This study shows that, In patients of ≤8 years the location of Uveitis was Bilateral, Anterior 20 (22.22) respectively, Panuveitis 10 (11.11), Posterior and Intermediate was 5 (5.55) respectively. In patients of > 8 years the location of Uveitis was Bilateral 25 (41.67), Anterior 30 (50), Posterior 10 (16.67), Intermediate 5 (8.33). According to recent data, anterior uveitis rose to 30–57% whereas posterior uveitis decreased to 5- 32% in the juvenile age range.[10,11,12,13,14] Regarding visual outcomes, compared to 9.3–17% and 19–23.6%, respectively, described in the literature, the current data demonstrated a more significant visual loss upon presentation to the specialist with 17.4% of eyes having legal blindness and 32.1% visual impairment.[15,16,17] These numbers improved to after 6 months of management There were no variations in the methods of treatment across the groups. In a similar vein, no discernible variations in procedure types or rates were discovered between age groups. Visual impairment was present in 48% of the visually immature eyes and 36.3% of visually mature eyes at first visit. In general there was an improvement in vision at subsequent visits in both age groups. Improvement by 2 or more lines was significant in the younger age group both at 6 and 12 months (p = 0.02, 0.03).

CONCLUSIONS

Pediatric uveitis is an uncommon condition, it can have devastating effects on young patients' visual prognosis. Because of the higher rate of problems linked with the disease's course, a young individual afflicted with it may become legally blind and have lifelong handicap.

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