Impact Of Uveitis Profile On Vision In Jordanian Adults At King Hussein Medical Center

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ABSTRACT

Objective: to explore the severity and the causes of visual impairment related to uveitis and to determine the possible risk factors which contributed to severe visual deterioration.

Method: This was a cross sectional study conducted at King Hussein Medical Centre (KHMC) between June 2017 and June 2018. All patients suffering from uveitis who attended to the ophthalmology clinic were enrolled in the study. After collecting data from the patients regarding age, gender and the past medical history the patients were subjected to detailed ophthalmic exam including best corrected visual acuity (BCVA). Anterior segment exam using the slit lamp, intra ocular pressure exam using Golmann applanation tonometry and posterior segment exam using 78 and 90 diopter Volk lenses were performed. Patients with other ocular diseases that affected visions not related to uveitis were excluded from the study.

Results: 72 patients (120 eyes) with a mean age of 32±12 (range 18-48 years). 43 patients (60%) were males. 33 eyes (28%) had acute uveitis. Visual impairment was found in 43%of eyes with uveitis;14%,18% and 11% of eyes had mild, moderate and sever visual impairment respectively. 68% of eyes with posterior uveitis and 90% of eyes with pan-uveitis had moderate to severe impairment of vision. The most common complication encountered was cataract which was found in 43% of eyes with uveitis. Other complications like posterior synechiae, cystoid macular edema CME and glaucoma were reported in 28%,22% and 17% of eyes with uveitis respectively. Behcet's disease (8%)and HLA B27 related uveitis (8%) were the most frequent known causes for uveitis. 69% of eyes with severe visual impairment had duration of uveitis for ≥ 4 years. 64% of eyes with severe visual impairment had more than 2 years duration before starting systemic treatment.

Conclusion: Visual impairments are common among uveitis patients. Risk factors for severe visual impairment in uveitis include; chronic uveitis, pan and posterior uveitis, long duration of uveitis, Behcet's disease, posterior segment complication involving the macula and the optic nerve, Delay in starting systemic treatment and late referrals.

Key words: risk factors, Uveitis, visual impairment.

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Introduction

Uveitis refers to inflammation that affects a group of intraocular structures including choroid,

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ciliary body, iris, retina, retinal vessels, and optic nerve. It ranks the 5th most common cause of total blindness in 10–15% of the cases in developed countries and up to 25% in developing countries (1,2). Interestingly, a wide geographical variation is observed in the worldwide prevalence of the disease; for example, 730/100,000 in India as compared to 38/100,000 in France (3,4). Uveitis affects young working population with a peak incidence in individuals aged 20–50 years (5). According to WHO, blindness is defined as the best corrected vision in the better eye <3/60 or a visual field of ≤10˚, while severe visual impairment is defined as the best corrected visual acuity in the better eye between 3/60 and 6/60 or a visual field of ≤20˚ (6).

The complications related to uveitis are likely to occur in 50% of the uveitis cases which are responsible for severe visual impairment in 35% of those cases (7). The complications of uveitis that might result in visual impairment include band keratopathy, cataract, posterior synechiae, glaucoma, hypotony, vitreous hemorrhage, epiretinal membrane, retinal detachment, choroidal detachment, retinal vascular occlusions, macular scar, cystoid macular edema, macular hole, optic disc atrophy, or swelling and phthisis.

The present study aimed to explore the severity and causes of visual impairment related to uveitis and to determine the putative risk factors that contribute to severe visual deterioration.

Method

This cross sectional study was conducted at King Hussein Medical Centre (KHMC) between January and June 2018. All patients suffering from uveitis who visited the Ophthalmology clinic were enrolled in this study. After collecting data with respect to age, gender, and history, the patients were subjected to a detailed ophthalmic examination including best corrected visual acuity (BCVA) using Snellen chart, anterior segment assessment using the slit lamp, intraocular pressure exam using Goldmann applanation tonometry and posterior segment evaluation using 78 and 90 diopter Volk lenses. Patients with other ocular disease and with adverse impact on vision not related to uveitis were excluded from the present study. Fundus fluorescein angiography (FFA), optical coherence tomography (OCT) and visual field assessment were performed when needed for selective cases. Finally, the results were recorded and analyzed, and the causes of visual impairment identified.

Results

A total of 72 patients (120 eyes) with a mean age of 32±12 (range, 18–48) years were enrolled in the study. The cohort comprised of 43 male patients (60%), and no statistically significant difference between males and females with respect to the severity of visual impairment using chi-square test. The duration of uveitis ranged from 0.5 to 11 (mean 3.1±1.8) years, and the mean duration of follow-up at KHMC was 1.9±0.9 years. Subsequently, 33 eyes (28%) showed acute or recurrent acute uveitis while 87 eyes (72%) had chronic uveitis. About, 48 patients (67%) had bilateral uveitis. Two patients were legally blind and were known to have Behcet's disease. Another two patients exhibited BCVA <6/60 but >3/60 in the better eye; one of these patients had Behcet's disease and the other had an idiopathic condition. Five patients had BCVA in the better eye (≤6/18, 6/60); two of them were found to have Behcet's disease, one had Cytomegalovirus (CMV) retinitis, one had Serpiginous

choroidopathy and one presented with Vogt-Koyanagi-Harada syndrome (VKH). The types, complications, and etiology of uveitis and the correlation to severity of visual impairments are summarized in Tables I, II, and III, respectively. The duration of uveitis and the interval between the onset of uveitis and starting systemic treatment with respect to the severity of visual impairment are summarized in Tables IV and V, respectively.

Table I: represents types of uveitisin relation to BCVA.

uveitis	**Normal BCVA (≥6/9)**	**Mild visual impairment (<6/9to > 6/18)**	**moderate visual impairment (≤6/18 - 6/60)**	**sever visual impairment (<6/60)**	**Total**
Anterior	53(85%)	6 (10%)	1 (2%)	2 (3%)	62(52%)
intermediate	13 (50%)	5 (20%)	4 (15%)	4 (15%)	26 (22%)
posterior	2 (9%)	5 (23%)	9 (41%)	6 (27%)	22 (18%)
panuveitis	0 (0%)	1 (10%)	8 (80%)	1 (10%)	10 (8%)
Acute	22 (67%)	8 (24%)	1 (3%)	2 (6%)	33(28%)
Chronic	46 (53%)	9 (10%)	21 (24%)	11 (13%)	87(72%)
Infectious	5 (38%)	3 (23%)	3 (23%)	2 (16%)	13 (11%)
Non infectious	63 (59%)	14 (13%)	19 (18%)	11 (10%)	107 (89%)
Granulomatous	16 (64%)	3 (12%)	4 (16%)	2 (8%)	25 (21%)
Non Granulomatous	52 (55%)	14 (15%)	18 (19%)	11 (11%)	95 (79%)
Total	68 (57%)	17 (14%)	22 (18%)	13 (11%)	120 (100%)

Table II: types of uveitis complications in relation to BCVA.

Types of uveitis complications	Normal BCVA (≥6/9)	Mild visual impairment (<6/9 to > 6/18)	moderate visual impairment (≤6/18 - 6/60)	sever visual impairment (< 6/60)	Total (120 eyes)
Band keratopathy	2 (67%)	1 (33%)	0	0	3 (3%)
cataract	23 (44%)	14 (27%)	11 (21%)	4 (8%)	52 (43%)
Glaucoma	10 (50%)	5 (25%)	3 (15%)	2 (10%)	20 (17%)
Posterior synechiae	9 (27%)	9 (27%)	7 (22%)	8 (24%)	33 (28%)
Vitreous haze	1 (8%)	2 (15%)	4 (31%)	6 (46%)	13 (11%)
Vitreous hemorrhage	0	1 (12%)	2 (25%)	5 (63%)	8 (7%)
Retinal detachment	0 (0%)	0(0%)	0(0%)	2 (100%)	2 (2%)
Macular edema	1 (4%)	6 (23%)	8 (31%)	11 (42%)	26 (22%)
Macular scar/hole	0(0%)	0(0%)	2 (33%)	4 (67%)	6 (5%)
Epi retinal membrane	0(0%)	1 (25%)	1 (25%)	2 (25%)	4 (3%)
Optic atrophy	0(0%)	0(0%)	0(0%)	1 (100%)	1 (1%)
Retinal vascular occlusions	0(0%)	0(0%)	1 (33%)	2 (67%)	3 (3%)
Total	68 (57%)	17 (14%)	22 (18%)	13 (11%)	120 (100%)

Table III: Causes of uveitis in relation to BCVA .

Etiology of uveitis	Normal BCVA (≥6/9)	Mild visual impairment (<6/9 to > 6/18)	moderate visual impairment (≤6/18 - 6/60)	sever visual impairment (< 6/60)	Total No.of eyes	Number of patients
Idiopathic	48 (79%)	2 (3%)	4 (7%)	7 (11%)	61	35 (49%)
HLA B27 uveitis	12 (80%)	2 (13%)	1 (7%)	0 (0%)	15	8 (11%)
Behcet's disease	1 (8%)	2 (15%)	6 (46%)	4 (31%)	13	8 (11%)
Fuch's uveitis	1(20%)	3 (60%)	1 (20%)	0 (0%)	5	5 (7%)
Sarcoidosis	1 (25%)	2 (50%)	1 (25%)	0 (0%)	4	2 (3%)
Toxoplasmosis	0 (0%)	0 (0%)	1 (50%)	1 (5%)	2	2 (3%)
Vogt-Koyanagi-Harada syndrome(VKH)	0 (0%)	1 (25%)	2 (50%)	1 (25%)	4	2 (3%)
Tuberculosis	2 (50%)	1 (25%)	1 (25%)	0 (0%)	4	2 (3%)
Herpetic uveitis	3 (60%)	2 (40%)	1 (25%)	0 (0%)	5	4 (6%)
CMV retinitis	0 (0%)	0 (0%)	1 (50%)	1 (50%)	2	1 (1%)
Serpiginous choroidopathy	0 (0%)	0 (0%)	2 (100%)	0 (0%)	2	1 (1%)
Systemic lupus (SLE)	0 (0%)	1 (50%)	1 (50%)	0 (0%)	2	1 (1%)
Punctate inner choroidopathy	0 (0%)	1 (50%)	1 (50%)	0 (0%)	2	1 (1%)
Total No. of eyes	68 (57%)	17 (14%)	22 (18%)	13 (11%)	120 eyes (100%)	72Patients (100%)

Table IV: the duration of Uveitis in relation to BCVA

Duration of uveitis	Normal BCVA (≥6/9)	Mild visual impairment (<6/9 to > 6/18)	moderate visual impairment (≤6/18 - 6/60)	sever visual impairment (< 6/60)
≥6 months-<1 year	34 (50%)	7 (41%)	2 (9%)	1 (8%)
≥ 1yr - <2 yrs	24 (35%)	4 (24%)	3 (14%)	1 (8%)
≥2 yrs-<4 yrs	5 (7%)	3 (18%)	5 (23%)	2 (15%)
≥4 yrs-<6 yrs	3(4%)	2 (11%)	7 (32%)	6 (46%)
≥ 6 years	2 (4%)	1 (6%)	5 (22%)	3 (23%)

total	68 (100%)	17 (100%)	22 (100%)	13 (100%)

Table V: time interval between onset of uveitis and starting systemic treatment

Time interval	**Normal BCVA (≥6/9)**	**Mild visual impairment (<6/9 to > 6/18)**	**moderate visual impairment (≤6/18 - 6/60)**	**sever visual impairment (< 6/60)**
<6 months	19 (43%)	5 (33%)	1 (6%)	1 (9%)
≥6 months-<1 year	16 (37%)	7 (47%)	3 (18%)	1 (9%)
≥ 1yr - <2 yrs	5 (11%)	2 (13%)	6 (35%)	2 (18%)
≥2 yrs	4 (9%)	1 (7%)	7 (41%)	7 (64%)
Total (87 eyes)	44 (100%)	15 (100%)	17 (100%)	11 (100%)

Discussion

Uveitis is a severe condition that might result in visual morbidity with adverse impacts on daily activities. The actual prevalence in Jordan is not yet well-studied; however, uveitis cases are common in an Ophthalmology clinic. In this study, the data regarding the mean age of the patients and the gender were similar to most of those in the worldwide studies performed without any statistically significant effect on the severity of visual impairment (8).

In the present study 72% of the cases were chronic that was not in line with the other studies, where in most of the cases were acute or recurrent acute pattern (8,9), This phenomenon could be attributed to KHMC being a referral center for chronic cases, while the acute cases are managed at the primary Ophthalmology Care Centers. In addition, pediatric patients were not included in the present study.

The most common form of uveitis was anterior (52 %,) followed by intermediate (22%), posterior (18%), and pan uveitis (8%). Visual impairment was detected in 43% of the eyes with uveitis; 17%, 22%, and 13% of eyes had mild, moderate, and sever visual impairment, respectively. Moreover, 68% of the eyes with posterior uveitis and 90% of the eyes with pan-uveitis had moderate to severe impairment of vision. On the other hand, 95% of eyes with anterior uveitis and 70% of eyes with intermediate uveitis had normal vision or mild visual impairment. Additionally, 27% of chronic uveitis and 9% of acute uveitis had moderate to severe visual impairment. These results suggested that chronic uveitis and posterior and pan uveitis were associated with a high risk for moderate and severe visual impairment (P-value <0.05). Next, 89% and 79% of the cases were non-infectious and non-granulomatous, respectively. The pathological type (granulomatous or non-granulomatous) and the etiological type (infectious or non-infectious) of uveitis was not significantly associated with moderate or severe visual impairment (P-value >0.05).

The complications of uveitis were recorded in 64% of the eyes, which was relatively high as compared to that reported in other studies (10). The high frequency of chronic uveitis and the delay in starting systemic treatment for such cases were the major issues, which contributed to this result. The most common complication in the eyes with uveitis in patients was cataract (43%), followed by posterior synechiae (28%), cystoid macular edema (CME) (22%), and glaucoma (17%). The high frequency of cataract could be attributed to the frequent use of topical, systemic, and local steroids. However, CME was the most frequent complication found in patients with severe visual impairment (42%). The posterior segment complications involving the macula and optic nerve have a high risk for severe visual impairment.

Globally idiopathic uveitis is responsible for 30–59% of uveitis cases (11,12), In the present study, the etiology of uveitis in 49% of the cases could not be identified, which could be due to a wide variation in the most common causes of uveitis. Toxoplasmosis was the most common cause in Italy and the USA, Behcet's disease was frequently seen in Turkey, VKH in Japan, tuberculosis in India, and sarcoidosis in Switzerland (8,13-17). In the neighboring countries, such as Lebanon and Saudi Arabia, Behcet's disease is the most frequently reported etiology for uveitis. In this study, Behcet's disease was the most frequent cause of uveitis in addition to HLA B27-related uveitis. Therefore, geographical variations could be ascribed to play a major role in determining the etiology of uveitis. Behcet's disease is the most common etiology for severe visual impairment. On the other hand, 80% of the eyes with HLA B27-related uveitis had normal vision. Thus, Behcet's disease was associated with posterior segment involvement and complications. All patients who were identified as legally blind had Behcet's disease. These results suggested that effective control of uveitis activity among patients with Behcet's disease might markedly reduce the risk of visual loss. The present study showed that the most frequent infectious cause for uveitis was herpetic but with low risk for moderate or severe visual loss. Herpetic uveitis is the most common cause of infectious uveitis in Saudi Arabia, China, and Japan (19,21,22). Moreover, the most common form of uveitis encountered in the study was chronic anterior non-infectious non- granulomatous uveitis.

About 69% of the eyes with severe visual impairment had uveitis for ≥4 years as compared to the 8% and 17% of eyes with normal vision and mild visual impairment, respectively. On the other hand, 85% of the patients with normal vision showed that the duration of uveitis was <2 years as compared to only 16% of patients with severe visual impairment for the same duration. These results postulated that a prolonged duration of uveitis was associated with a significantly higher risk for visual impairment (P-value <0.05). The longer duration of uveitis was associated with an increased chance of active episodes that may result in ocular complications further interfering with vision. Durrani et al. reported a strong association between increasing the duration of visual morbidity and poor visual acuity (4).
astrong association was detected between increased interval of the onset of uveitis and the severity of visual impairment (P-value <0.05); 64% of eyes with severe visual impairment had >2 years before starting the systemic treatment as compared to only 18% of the eyes in which the systemic treatment was used within the initial years from the onset of the disease. The main cause of increasing the interval of starting systemic treatment was the delay in the referral of uveitis cases which increased the chance of complications and morbidities. The delay in starting the systemic treatment was associated with a high risk for visual impairment that could be markedly minimized by early referral of uveitis patients. This phenomenon was supported by the marked difference between the mean duration of uveitis (3.1 years) and the mean duration of follow-up at KHMC (1.9 years).

Despite the dynamic nature of uveitis which may result in variability in best corrected visual acuity upon each visit to the ophthalmology clinic this study showed that visual impairments are common among Jordanian uveitis patients. The risk factors for severe visual impairment in uveitis include chronic uveitis, pan and posterior uveitis, long duration of uveitis, Behcet's disease, posterior

segment complication involving the macula and the optic nerve, and delay in referrals and beginning the systemic treatment.

Although the patient sample size was relatively small, this study presented a comprehensive idea regarding the uveitis profile in Jordan and highlighted the major risk factors associated with poor vision among uveitis patients. Furthermore, a collaboration of all medical sectors in Jordan is essential to explore the actual prevalence of uveitis in the country.

Conclusion

Behcet's disease and HLA B27-related uveitis are the most common causes of uveitis at KHMC. Visual impairments are common among uveitis patients. The risk factors for severe visual impairment in uveitis include chronic uveitis, pan and posterior uveitis, long duration of uveitis, Behcet's disease, posterior segment complication involving the macula and the optic nerve, delay in starting systemic treatment, and late referrals.

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