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The Experience with Uveitis in Pediatric Age Group in Emirate of Abu-Dhabi, United Arab Emirates

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Abstract

Background: Uveitis in children can lead to blindness or other serious complications if there is delay or inadequate treatment.

Objectives: We aimed to describe the cohort of children presenting with uveitis in Abu-Dhabi where we have the two main public pediatric rheumatology centers in the country.

Methods: Cases with the diagnosis of uveitis identified through electronic Medical Record from 1/1/2011 to 31/6/2017 using the International Statistical Classification of Diseases and Related Health Problems. A retrospective analysis was done.

Results: In total, 76 cases with Uveitis identified (40 female, 36 male). 55 patients native Emiratis and 21 patients non-native Emiratis. Mean age of diagnosis of Uveitis is 9.5 years (range 2-17 years). Mean duration from onset to diagnosis of uveitis is 63 days (range 1 day to 730 days). Mean current age of 12.5 years (range 4 to 21 years). Back ground diagnosis: 21 (27.6 %) had juvenile idiopathic arthritis, 19 (25%) had traumatic uveitis, 16 (21%) had idiopathic uveitis. 3 had infection. 17 had other diagnosis.

Out of the 76 patients, 17 patients were under pediatric rheumatology. For treatment 75 out of 76 patients received topical steroids. Methotrexate given in 31 patients, systemic steroids to 31 patients, 19 had disease modifying drugs. Surgery required in 18 patients. For outcome; remission was achieved in 25 (33%) patients. Relapse of Uveitis in 15 patients and 33 patients having ongoing treatment. Secondary complications: cataract 23 (30%) patients, glaucoma 18 (24%) patients, partial loss of vision 21 (28%) patients, complete blindness in 2 (2.6%) patients. Liver fibrosis 1 patient who was on methotrexate with no rheumatology follow-up.

Conclusions: Lengthy duration from onset of Uveitis to diagnosis in some cases and delay in referral to pediatric rheumatology when the case was not of traumatic or infection etiology. First appointment with Pediatric Rheumatologist (average of 152 days with range of 1 day to 3 years). Some patients on methotrexate or biologics did not get to see Pediatric Rheumatologist. Outcome can be improved by managing patients with Uveitis as joint care between pediatric, ophthalmology and pediatric rheumatology.

Keywords: Uveitis; Arthritis; Cataract; Glaucoma

Abbreviations: ACR: American College of Rheumatology; CHAQ: Child Health Assessment Questionnaire; CRF: Clinical Research Form; DMARD: Disease-Modifying Antirheumatic Drug; EE: Emirati-Emiratis (holds Emirati nationality, as stated on Emirates identity card); EMR: Electronic Medical Records; ICD: International Statistical Classification of Diseases and Related Health Problems; ILAR: International League of Associations for Rheumatology; JIA: Juvenile Idiopathic Arthritis; MSK: Musculoskeletal system; Non-EE: Nationality other than Emiratis stated on Emirates identity card; RF: Rheumatoid Factor; UAE: United Arab Emirates

Introduction

Uveitis is the inflammation of the iris, ciliary body and choroid. According to International Uveitis Study Group (IUUG), uveitis can be acute, subacute, chronic or recurrent dependent on time course of the disease and anatomical location as anterior, intermediate and posterior or panuveitis. Additionally uveitis can be unilateral or bilateral. Up to 60 % of childhood uveitis is idiopathic. From the literature; Juvenile Idiopathic Arthritis (JIA) is the most common associated systemic disease in childhood occurring in 15% of cases [1-4]. Uveitis can potentially affect vision to various degrees with more serious complications including cataract, band keratopathy, glaucoma and macular edema. As Children with chronic anterior uveitis associated

with JIA are typically asymptomatic, therefore scheduled ophthalmologic screening is mandatory for detection of any early signs of uveitis and initiation of timely treatment. In recent years there has been significant advance in the treatment of Uveitis in childhood to control the inflammation early and prevent later complications [5].

JIA is the most common systemic association of pediatric uveitis. It is defined as arthritis of at least 6 weeks' duration without any other identifiable cause in children younger than 16 years of age. The uveitis is anterior, chronic, unilateral or bilateral and in most of the cases it is non granulomatous, though a granulomatous inflammation can occur in rare occasions. Risk factors for ocular involvement in patients with JIA include female sex, oligoarticular arthritis, young age at onset of arthritis, Antinuclear Antibody (ANA) seropositivity and RF seronegativity [6].

The prevalence of JAI associated anterior uveitis varies among different countries. While it is the leading cause in Europe and Northern America, it is less frequent in other parts of the world. In Saudi Arabia – the nearest country to United Arab Emirates-Vogt-Koyanagi-Harada is more common [7].

UAE's population of 9,346,129 is diverse: 19% of residents are native Emiratis (19%), and the rest are non-native (81%) [8]. These children were either born in the UAE or are migrants with their parent from countries. The non-UAE population includes 23% other Arabs, 50% South Asians, and 8% other expatriates, including Westerners, North American sand East Asians [9]. Abu-Dhabi is the capital city of the UAE with a population of 2.3 million[8].The primary objective of this study is to describe clinical features and back ground diagnosis of our patients in the Emirate of Abu Dhabi who were diagnosed with Uveitis. The secondary objective is to look at outcome of our patients with the diagnosis of Uveitis with focus on children with inflammatory arthropathy.

Methods

Cases with the diagnosis of uveitis identified through electronic Medical Record from 1/1/2011 to 31/6/2017 using the International Statistical Classification of Diseases and Related Health Problems, i.e. International Classification of Disease version 10 (ICD 10 code) of H20.0, H20.011, H20.012, H20.013, H20.041, H20.042, H20.043, H20.10, H20.11, H20.12, H20.13, 47307, 809078, 809537, 809532, 809534, 84478, 84479, 40591, 845023, 845024, 845025, 809533, 16801, 16796, 1630604, 1629868 and 1623122. We sought out all patients under 16 years of age with the diagnosis of uveitis. A retrospective review of the Electronic Medical Records (EMR) and paper case notes of the patients who presented to the public hospital in Abu-Dhabi.

For the primary objective we described demographics, type of uveitis (anterior, intermediate, posterior, and uveitis pan uveitis), laterality (Unilateral or bilateral), underlying clinical diagnosis and chronicity. We also looked at different clinical presentation: red eyes, blurred vision, photophobia, foreign body sensation, tearing, discharge and other presentations. The laboratory investigations were identified including: ANA, HLA-B27, and B51. Different ophthalmic and systemic treatment given were recorded from the presentation and during the course of the disease. For the secondary objective; we looked at number of patients who had complete remission of disease and number of patients who developed ophthalmic complications including secondary glaucoma, cataract, partial or complete loss of vision. We also looked at the referral source – being ophthalmologist, rheumatologist or from the primary health care.

Data from CRF were entered in to database (Microsoft Office excel, Microsoft, USA). Descriptive analysis was then performed and descriptive analysis performed by SPSS IBM, USA.

Results

In total, 76 cases with Uveitis identified. (40 female, 36 male). 55 patients native Emiratis and 21 patients non-native Emiratis. Mean age of diagnosis of Uveitis is 9.5 years (range 2-17 years). Mean duration from onset of eye symptoms to diagnosis of uveitis is 63 days (range 1 day to 730 days). Mean current age of 12.5 years (range 4 to 21 years).

Type of Uveitis: 51 anterior Uveitis, 4 intermediate, 12 panuveitis, 3 posterior and 6 patients did not have clear classification. Unilateral 29 patients and 47 had bilateral uveitis.

Back ground diagnosis included: 21 (27.6 %) had juvenile idiopathic arthritis, 19 (25%) had traumatic uveitis, 16 (21%) had idiopathic uveitis. 4 patients had sarcoid, 2 had Behcet's disease. Three had infection (2tuberculosis and 1 toxoplasmosis). 2 had Vogt Koyanagi Harada syndrome. 1 patient each had Tubulointerstitial Nephritis and Uveitis Syndrome (TINU), Primary Microcephaly and Primordial Dwarfism, multiple sclerosis and 1 Fuch's heterochromic iridocyclitis. 5 of unknown cause.

For autoimmune blood serology; ANA positive in 11 patients and negative in 34 patients of the total 76 patients. Rest of the patients did not have laboratory investigation. HLA-B27 positive in 1 patient and negative in 15 patients B51 positive in 6 patients and negative in 3 patients.

Out of the 76 patients, 17 patients were under pediatric rheumatology as the primary care physician. 59 patients under ophthalmology as the primary care physician. 44 out of the 76 patients seen by a rheumatologist. The average duration from first assessment by ophthalmologist to appointment with rheumatology is 152 days (range of 1 day to 1095 days).

For treatment 75 out of 76 patients received topical steroids. Methotrexate given in 31 patients, systemic steroids to 31 patients, Adalimumab to 19 patients, Mycophenolate to 5 patients, Tocilizumab to 5 patients, Infliximab to 4 patients, Abatacept to 3 patients and Etanercept to 3 patients.

Surgery was done in 18 patients. 6 patients needed Intraocular Lens implantation, 6 patients had vitrectomy, three patients needed Capsulotomy, 2 patients had Phacoemulsification, one patient had trabeculectomy with mitomycin c.

In regards to outcome: remission was achieved in 25 (33%) patients.Relapse of Uveitis in 15 patients and 33 patients having ongoing treatment. Secondary complications: cataract 23 (30%) patients, glaucoma 18 (24%) patients, partial loss of vision 21 (28%) patients, complete blindness in 2 (2.6%) patients. Liver fibrosis 1 patient who was on methotrexate with no follow up in the rheumatology clinic and blood monitoring according to guidelines.

Discussion

We have reported 76 cases of Uveitis in total in children of the Emirate of Abu Dhabi in the United Arab Emirates. The population of Abu Dhabi is 2.33 million. Native Emiratis represent 475,000 as per latest statistics from the Statistics Center Abu Dhabi (SCAD)[8].Compared to documented western literature, uveitis prevalence of 27.9 per 100,000 in children in one study from Finland[10].In AbuDhabi 20% of the total Emirati population is under 16 years of age which would be 95000 children. We have identified 55 cases in Emirati children. This would give a higher prevalence compared to western literature. It is difficult to calculate the prevalence in Non Emirati children as 71 % of Non-Emiratis are male emigrant workers [9].

Breaking down by etiology, 21 (27.6 %) of our cases had juvenile idiopathic arthritis out of the total 76 cases. Previous documented western literature is 16 to 67%in Europe and North America [11-13].This is very wide and although ours is within documented range we still believe some children are being referred late and hence delay in diagnosis. Juvenile idiopathic arthritis was the commonest cause of Uveitis in our cohort of patients. In comparison to other countries, for example Tunisia and Turkey, we found that the most common cause of uveitis is idiopathic [14-15].The average duration from getting diagnosed with uveitis to seeing a pediatric rheumatologist is 152 days which is excessively long. This delay in presentation to pediatric rheumatology maybe explained by difficult access to care, lack of awareness, poor clinical skills, professional networks and/or geographical factors[16].Current recommendations for uveitis screening in Juvenile Idiopathic Arthritis should occur as soon as possible and not later than 6 weeks from referral with symptomatic patients should be seen within one week [17].

We had 20 patients who presented with uncommon eye symptoms of Uveitis. 20 patients of the total 76 did not have red eye, blurred vision, eye pain or photophobia. They presented with foreign body sensation, eye discharge, abnormal movement of the eye, ptosis and periorbital edema (Table 1). One child presented with white pupil as already had cataract. This finding highlights the importance of screening guidelines for patients with JIA.

In regards to treatment of uveitis, we had a total of 30 patients with rheumatic illness (Table 2). All patients received topical steroid which is the first line of treatment for both acute and chronic anterior uveitis [18].Twenty five patients (83%) treated with methotrexate. Seventeen patients (56%) received Adalimumab. Out of these 5 patients received tocilizumab and 3 patients required other treatment including abatacept and Mycophenolate, two patients treated with infliximab (Table 3). There was no delay in giving biologic therapy once the child was referred and seen by pediatric rheumatology.

Significant number of patients developed secondary complications. 23 children (30%) developed cataract. Glaucoma was a complication in 18 patients (24%). Partial loss of vision in 21 patients (28%) and complete blindness in 2 patients (2.6%). Liver fibrosis developed in one child on methotrexate under ophthalmology with no pediatric rheumatology input and regular blood monitoring (Table 4).

Table 1: Main Symptom at Presentation

Clinical Presentation	Number of Patients
Red Eyes	33
Blurred / Changed Vision	27
Eye Pain	26
Photophobia	10
Foreign Body Sensation	9
Tearing	5
Discharge	2
Abnormal Movement	1
White Pupil	1
Ptosis	1
Periorbital Edema	1

Table 2: Uveitis with rheumatic illness background

Inflammatory Condition	Number of Patients 0f 30	Percentage
Juvenile Idiopathic Arthritis related Uveitis	21	70
Sarcoid Uveitis	4	13
Behcet's Disease	2	7
Vogt Koyanagi Harada Syndrome Uveitis	2	7
Tubulointerstitial Nephritis and Uveitis	1	3
Total	**30**	**100**

Table 3: Treatment of Uveitis of due to rheumatic illness

Name of Drug	Number of Patients Out of 30	Percentage
Topical steroid	30	100
Methotrexate	25	83
systemic steroid	19	63
Adalimumab	17	56
MMF	3	10
Tocilizumab	5	16
Abatacept	3	10
Infliximab	2	7

Table 4: Complications	
Type	**Number**
Cataract	23
Glaucoma	18
Partial Loss Of Vision	21
Complete Blindness	2
Liver Fibrosis	1

Conclusion

Lengthy duration from onset of Uveitis to diagnosis in some cases and delay in referral to pediatric rheumatology when the case was not of traumatic or infection etiology. First appointment with Pediatric Rheumatologist (average of 152 days with range of 1 day to 3 years). Some patients on methotrexate or biologics did not get to see Pediatric Rheumatologist. Outcome can be improved by managing patients with Uveitis as joint care between pediatric, ophthalmology and pediatric rheumatology.

Declarations

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Availability of data and materials

All data included in the manuscript are available upon request.

Authors' Contributions

Khulood Khawaja: Design of study, review of data, writing manuscript.

Ihab Elkadry: Data collection, analysis of results

Habibullah Eatamadi: Review of manuscript

Elsadeg Sharif: review of manuscript

Competing interests

The authors declare they have no competing interests of care.

Ethics approval and consent to participate

Ethical approval was obtained from ethics committee.

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