

Pattern of Uveitis in Saudi Female Patients in Western Region of Saudi Arabia

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Abstract. The purpose of this study is to determine the pattern of uveitis in Saudi female patients in the western region of Saudi Arabia. Retrospective analysis of the records of patients with uveitis referred to uveitis clinics in Magraby Eye Hospital and in King Abdulaziz University Hospital, Jeddah, Saudi Arabia, showed 124 female Saudi patients among 519 patients with uveitis out of 50,000 new cases from 1999-2008. The native Saudi patients constituted 50% of total patients (260/519). Acute idiopathic anterior uveitis was found to be 61 (49%) among 124 patients. There were 14 patients (10.3%) of Vogt-Koyanagi-Harada syndrome, 10 cases (8%) of Toxoplasmosis, 7 patients (5.6%) of Behçet's disease, and 6 patients (4.8%) of Fuchs' heterochromic iridocyclitis. Anterior uveitis was found to be 58.8% of total cases, panuveitis 21.4%, posterior uveitis 11.2%, and intermediate uveitis 8%. In conclusion, the most common cause of uveitis among Saudi female patients was idiopathic anterior uveitis followed by Vogt-Koyanagi-Harada syndrome, Toxoplasmosis and Behçet's disease. The most common cause of posterior uveitis was Toxoplasmosis. The most common cause for panuveitis was found to be Vogt-Koyanagi-Harada syndrome.

Keywords: Saudi females, Causes of uveitis, Anterior uveitis, Vogt-Koyanagi-Harada syndrome, Toxoplasmosis, Behçet's disease.

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Accepted for publication: 28 February 2012. Received: 14 October 2011.

Introduction

Inflammation of uveal tract grossly referred to as uveitis, encompasses a large number of intraocular diseases of diverse etiologies^[1]. Pattern of uveitis is influenced by the time with the emergence of new uveitic entities and influenced by various genetic, ethnic, demographic and environmental factors^[2,3]. In addition, gender remains an important factor in the differential diagnosis of uveitis. Uveitis due to pauciarticular juvenile rheumatoid arthritis, sarcoidosis and Vogt-Koyanagi-Harada syndrome (VKH syndrome) are more common in female patients^[2-6]. Anterior uveitis, intermediate uveitis and posterior uveitis were also noted to be more prevalent in female patients^[5].

The studies evaluating the prevalence of uveitis from our part of the world are limited^[4,7,8]. Even in those studies published, general population was taken into account in estimating the prevalence of various uveitic entities.

Epidemiological studies of a particular ethnic population help the physicians in arriving at a suitable differential diagnosis, modifying the work up and thereby, improving the quality of patient care^[4]. The studies regarding the prevalence of uveitis in ethnic Saudi population (male or female) are nonexistent in the literature. The aim of this study was to ascertain the pattern of uveitis in Saudi female patients in the Western region of Saudi Arabia.

Patients and Methods

A retrospective analysis was done from the data of consecutive female patients who were seen in the tertiary referral uveitis clinics in Maghraby Eye Hospital and in King Abdulaziz University Hospital, Jeddah from 1999 until 2008. The information regarding age, race was recorded. The details about the ocular and systemic examination, investigations and ocular and systemic disease, if any, were recorded for all patients. The patients with post-traumatic (including post operative) uveitis, Eales disease, infective endophthalmitis and lens-induced uveitis were excluded.

The specific ocular uveitis diagnosis or systemic disease association based on a detailed clinical history, ophthalmological examination, general and physical examination, and laboratory tests. Ocular

examination included external examination, slit lamp biomicroscopy, applanation tonometry, fundus examination with 90/78 D, dilated and indented indirect ophthalmoscopy. Ultrasonography and fundus fluorescein angiography were carried out when needed.

Anatomical classification of uveitis was done based on the Standardization of Uveitis Nomenclature (SUN) Working Group classification^[9]. The laboratory tests included; complete blood counts, erythrocyte sedimentation rate, Treponema pallidum hemagglutination assay (TPHA), serum angiotensin converting enzyme (ACE) levels, enzyme linked immunosorbent assay (ELISA) for *Toxoplasma*, toxocara, human immunodeficiency virus (HIV) and human leukocyte antigen (HLA) typing. Radiological investigations included x-rays of the chest and sacroiliac joints. The diagnosis of presumed ocular herpes was considered when there is clinical evidence of unilateral anterior iritis with sectoral iris atrophy, healed stromal keratitis and decreased corneal sensation^[10]. Tuberculin skin testing performed on all patients. If the reading is indeterminate^[11], QuantiFERON-TB Gold test was ordered. Ocular tuberculosis was presumed in patients with positive tuberculin test, exclusion of other causes of uveitis and clinical response with multi drug anti-tuberculous treatment without steroids^[11]. Rheumatologist and internist were consulted whenever required for the diagnosis. The diagnosis was declared 'idiopathic' whenever the uveitis could not be attributed to specific ocular or any underlying systemic disease.

Results

The study encountered 124 female ethnic Saudi patients among 519 patients with uveitis out of 50,000 new cases from 1999-2008. The native Saudi patients constituted 50% of total patients with uveitis (260/519). Acute idiopathic anterior uveitis was found to be 61 among 124 patients (Table 1). There were 13 patients of VKH syndrome, 10 cases of Toxoplasmosis, 7 patients of Behçet's disease, and 6 patients of Fuch's heterochromic iridocyclitis. Anterior uveitis was found to be 58.9% of total cases, panuveitis 21.8%, posterior uveitis 11.3% and intermediate uveitis 8%.

Idiopathic anterior uveitis was the most common among anterior uveitis, followed by Fuchs' heterochromic iridocyclitis and sarcoidosis. All cases of intermediate uveitis were idiopathic. Toxoplasmosis was the

most common cause for the posterior uveitis. VKH syndrome was the most common cause for the panuveitis followed by Behçet's disease and sarcoidosis.

Table 1. Etiological classification of our female patients with uveitis.

Etiology	Anterior Uveitis 73/124 (58.8%)	Intermediate Uveitis 10/124 (8%)	Posterior Uveitis 14/124 (11.2%)	Panuveitis 27/124 (21.4%)
Idiopathic	61 (49%)	10 (8%)		3 (2.4%)
Adenovirus	1 (0.8%)			
Ankylosing Spondylitis	1 (0.8%)			
Behçet's Syndrome				7 (5.6%)
Birdshot Retinochoroiditis			1 (0.8%)	
Fuchs' Heterochromic Iridocyclitis	6 (4.8%)			
Herpes Simplex Virus (HSV)	1 (0.8%)			
Herpes Zoster Virus (HZV)				
HLA-B27*				
Multifocal Choroiditis			1 (0.8%)	
Multiple Sclerosis (MS)	1 (0.8%)			
Psoriasis				
Posner-Schlossman Syndrome				
Sarcoidosis	2 (1.6%)			3 (2.4%)
Reiter's Syndrome				
Serpiginous Choroidopathy				
Toxoplasmosis			10 (8%)	
Tuberculosis			1 (0.8%)	1 (0.8%)
VKH Syndrome [†]			1 (0.8%)	13 (10.4%)

*HLA-B27 = Human Leukocyte Antigen B27; [†]VKH Syndrome = Vogt-Koyanagi-Harada Syndrome

During the study, patients with uveitis secondary to cytomegalovirus (CMV), inflammatory bowel disease (IBD), and herpes zoster (HZV) were not identified. Not encounter patients with uveitis related to HLA-B27, Reiter's syndrome, psoriasis, Posner-Schlossman syndrome and Serpiginous Choroidopathy in our series.

Discussion

Gender is an important factor in the differential diagnosis of Uveitis^[2]. Furthermore, the causes of uveitis vary according to many factors including ethnicity^[1,2]. The data regarding the causes of uveitis in

our part of the world is limited and thus, the data regarding uveitis in Saudi female population^[4,7,8]. According to this study - referral pattern of uveitis in a tertiary centre in the Western region of Saudi Arabia, which was partially presented in the American Academy of Ophthalmology in 2009, the most common cause of uveitis was idiopathic anterior uveitis followed by Behcet's disease and VKH syndrome in general population. Furthermore, it was established that the most common cause of posterior uveitis was Toxoplasmosis and of panuveitis was Behçet's disease^[12]. This study attempts to list the causes of uveitis in a homogeneous ethnic Saudi female population from a tertiary care ophthalmology centers.

According to the published reports from Saudi Arabia regarding uveitis among their female patients, Idiopathic anterior uveitis is the commonest type of uveitis followed by VKH syndrome, Herpes, Toxoplasmosis, tuberculosis and Behçet's disease^[4,7,8] (Table 2). These studies have non-Saudi patients as well. Hence, this is the first study, which tried to enlist the causes of uveitis in homogeneous Saudi female population.

Table 2. Comparison of the most common uveitic entities among various studies involving female patients with uveitis. Number (percentage).

Comparison	Present Study (N = 124)	Riyadh ^[7] N = 80	Riyadh ^[4] N = 224	Riyadh ^[8] N = 292	Finland N = 218	Boston N = 725
AAU*	61 (48.4%)	30 (37.5%)	79 (35.26%)	63 (21.5%)	162 (74%)	271 (37.37%)
Behçet's Syndrome	7 (5.5%)	1 (1.25%)	5 (2.23%)	15 (5.1%)	0	2 (0.27%)
VKH Syndrome [†]	13 (10.3%)	3 (3.75%)	27 (12.0%)	86 (29.5%)	0	6 (0.82%)
Toxoplasmosis	10 (7.9%)	7 (8.75%)	13 (5.8%)	16 (5.6%)	5 (2.29%)	30 (4.1%)
Sarcoidosis	5 (3.8%)	5 (6.25%)	8 (3.57%)	10 (3.4%)	7 (3.2%)	61 (8.41%)
Herpes	1 (0.78%)	10 (12.5%)	21 (9.3%)	3 (1.0%)	11 (5.0%)	32 (4.41%)
Fuchs' Heterochromic Iridocyclitis	6 (4.76%)	1 (1.25%)	4 (1.78%)	6 (2.1%)	2 (0.9%)	17 (2.344%)
Tuberculosis	2 (1.58%)	6 (7.5%)	10 (4.46%)	74 (25.3%)	1 (0.4%)	1 (0.13%)

*AAU = Acute Anterior Uveitis; [†]VKH Syndrome = Vogt-Koyanagi-Harada Syndrome

The present study encountered an acute anterior uveitis (AAU) of unknown origin, which is the most common followed by VKH syndrome, Toxoplasmosis, Behçet's disease and Fuchs' heterochromic iridocyclitis.

Anterior uveitis is the most frequent type of uveitis as reported in all studies. In this study, it accounted for 58.8% cases. Similarly Hamade *et al.*^[4] reported it to be 60% from Riyadh, Saudi Arabia.

Acute anterior uveitis (AAU) is the most common type (49%) of uveitic entity in this study. Except for the Al Mezaine *et al.*^[8] study, all other studies reported it be the commonest uveitic entity^[4-7] (Table 3). The study from Finland however, reported it to be 74 %^[6]. Al Mezaine *et al.*^[8] reported it to be the third most common uveitic entity in their female population. In their study VKH syndrome was the most common cause of uveitis. In the present study, it was found VKH syndrome to be the second most common type of uveitic entity. It is similar to the study by Hamade *et al.*^[4]. VKH syndrome is commonly seen in patients with pigmented skin^[3-8].

Table 3. The most common causes of uveitis among the various studies.

	Present Study (N = 124)	Riyadh ^[7] N = 80	Riyadh ^[4] N = 224	Riyadh ^[8] N = 292	Finland N = 218	Boston N = 725
1	AAU*	AAU*	AAU*	VKH Syndrome	AAU*	AAU*
2	VKH Syndrome [†]	Herpes	VKH Syndrome [†]	Tuberculosis	Herpes	Sarcoidosis
3	Toxoplasmosis	Toxoplasmosis	Herpes	AAU*	Sarcoidosis	Herpes
4	Behçet's	Tuberculosis	Toxoplasmosis	Toxoplasmosis	Toxoplasmosis	Toxoplasmosis
5	Fuchs' [‡]	Sarcoidosis	Tuberculosis	Behçet's	Fuchs' [‡]	Fuchs' [‡]
6	Sarcoidosis	VKH Syndrome [†]	Sarcoidosis	Sarcoidosis	Tuberculosis	Tuberculosis

*AAU = Acute Anterior Uveitis; [†]VKH Syndrome = Vogt-Koyanagi-Harada syndrome; Fuchs' = [‡]Fuchs' Heterochromic Iridocyclitis

In another study published from Riyadh by Islam *et al.*^[7], VKH syndrome comes as sixth in the list. In their series, Herpes was found to be the second commonest uveitic entity, which is similar to the study reported from Finland^[6]. In Hamade *et al.*^[4] series Herpes comes as third commonest cause as was the study reported from Boston^[5]. In this study, only one case of anterior uveitis due to Herpes simplex virus was reported.

Toxoplasmosis was found to be third commonest in our series. It is similar to the study reported from Riyadh^[7]. Toxoplasmosis comes fourth commonest in other studies^[4-6,8].

Behçet's disease comes as the fourth common cause of uveitic entity in our series. Hamade *et al.*^[4] reported it to be seventh common cause. Islam *et al.* reported only one case of Behçet's disease in their female patient population^[7]. Al Mezaine *et al.*^[8] reported it to be the fifth most

common cause of uveitis. Behçet's disease is common in Middle East and Far East countries. Behçet's disease was not seen in the study reported from Finland^[6] and was rare (2/725 cases) in the study from Boston^[5].

Fuchs' heterochromic iridocyclitis was the fifth most common cause of uveitis in this series, which is similar to the studies reported from Finland^[6] and Boston^[5]. The other studies from our part of the world did not find it that common^[4,7,8].

Sarcoidosis was the sixth most common uveitic entity in Saudi female population in our series as was reported in study by Hamade *et al.*^[4]. Islam and Tabbara^[7] found it to be fifth common cause in their series. The studies from Boston and Finland found sarcoidosis as the second and the third most common cause of uveitis, respectively^[5,6].

The presumed tuberculous etiology was the fourth and fifth while the first common cause of uveitis in other studies reported from Riyadh^[4,7,8]. However, only two cases of uveitis (one posterior and another panuveitis) secondary to tuberculosis were reported. In a retrospective study from Riyadh, Saudi Arabia, Islam and Tabbara^[7] reported tuberculous etiology in 10.5% of cases in 200 referred cases. Recently, Al Mezaine *et al.*^[8] found out 28.2% (25.3 % in female patients) of patients with diagnosis of presumed tuberculous in a study from Riyadh. This high incidence of tuberculous uveitis in these series might be due to an increase in the number of expatriates from endemic areas, and a high index of suspicion in patients with unexplained chronic uveitis. Because of the difficulty in obtaining microbiologic evidence from ocular fluids, in nearly all reported cases, the diagnosis of intraocular TB was only presumptive^[11].

In the present study, the criteria for diagnosing presumed tuberculous uveitis were:

1. Ocular findings consistent with possible intraocular TB with no other cause of uveitis suggest by history of symptoms, or ancillary testing.
2. Strongly positive tuberculin skin test results (≥ 15 mm area of induration / necrosis). QuantiFERON-TB Gold test performed in selected cases where tuberculin skin test was 10-15.

3. Response to antituberculous therapy with absence of recurrences.

Only two cases of tuberculous uveitis encountered in this study. These low rates could be due the study of a discrete group of ethnic Saudi female population and excluded the expatriate patients from endemic countries. Unknown is the exact incidence of ocular tuberculosis in the ethnic Saudi population as it could not be found in the relevant studies in Medline search. In addition, patients with CMV, HZV in our Saudi female population were not encountered in this study.

HLA-B27 related uveitis was not found in our series. Uveitis associated with Reiter's, Psoriasis was not seen. Not encounter Serpiginous Choroidopathy and uveitis secondary to Posner-Schlossman syndrome in our case series.

The limitation of the present study is that it does not represent the general population in Saudi Arabia. Nevertheless, this study can be used as an indicator of the pattern of uveitis in the ethnic Saudi female population in our part of the world. Currently, updating the data regarding the pattern of uveitis with respect to age, ethnicity and gender for a future comparative retrospective study is being conducted.

In conclusion, this study well-defines a homogeneous Saudi female population, and found out that AAU is as common as reported in other studies, followed by VKH syndrome, Toxoplasmosis, Behçet's disease and Fuch's heterochromic uveitis. Herpes and tuberculosis that was common in our study population were not encountered.

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أسباب التهاب العنابية عند السيدات في المنطقة الغربية للمملكة العربية السعودية

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المستخلص. تحديد أسباب التهاب العنابية عند النساء في مركز تخصصي في المنطقة الغربية من المملكة العربية السعودية. تم التحليل بطريقة المراجعة لملفات المرضى المصابين بالتهاب العنابية في العيادة التخصصية لالتهابات العنابية في مستشفى المغربي بجدة. تم تشخيص ١٢٤ حالة التهاب عنبي عند السيدات السعوديات من أصل ٥١٩ حالة إصابة بالتهاب العنابية وذلك من ضمن ٥٠٠٠ حالة مريض جديدة تم الكشف عليهم في المستشفى من الفترة الواقعة ما بين عامي ٢٠٠١ و ٢٠٠٩م. حيث يشكل المرضى السعوديون ٥٠% من إجمالي المصابين بالتهابات العنابية (٢٦٠/٥١٩) وتبين أن التهاب العنابية الأمامي الذاتي المنشأ يمثل ٤٩% من الحالات أي ٦١ مريض من أصل ١٢٤ مريض، ومن ثم يليه التهاب العنابية المعروف بداء فوقت كوياناقي هارادا، ونسبة ١٠,٤% أي ١٣ مريض، ومن ثم التهاب العنابية بالتوكسوبلازما ونسبة ٨% أي ١٠ مرضى، ومن ثم داء بهجت بنسبة ٥,٦% أي ٧ مرضى، وأخيراً التهاب القرنية والجسم الهدبي المتغاير الصباغ لفوكس بنسبة ٤,٨% أي ٦ مرضي. أما من حيث التصنيف التشريحي لالتهاب العنابية فكان التهاب العنابية

الأمامي يمثل النسبة الأعلى وهي ٥٨,٨% من مجمل الحالات، ويليه التهاب العنبيّة الشامل بنسبة ٢١,٤%، ومن ثمّ التهاب العنبيّة الخلفي بنسبة ١١,٢%، وأخيراً التهاب العنبيّة المتوسّط بنسبة ٨%. إن أكثر الأسباب شيوعاً لالتهاب العنبيّة عند السيدات السعوديات هو التهاب العنبيّة الأمامي الذاتي المنشأ ويليه التهاب العنبيّة المعروف بفوق كوياناقي هارادا، ومن ثمّ التهاب العنبيّة بالتوكسوبلازما، وأخيراً داء بهجت. أما أكثر الأسباب شيوعاً لالتهاب العنبيّة الشامل هو داء فوق كوياناقي هارادا.