Aetiology of uveitis in the Gambia, West Africa

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ABSTRACT

Objective: To determine the causes of uveitis in the Gambia.
Background: Uveitis is diverse group of disease entities leading to the inflammation of the uveal tract and are estimated to cause about 10% of blindness worldwide. The condition is often idiopathic but can be triggered by autoimmune, genetic, post traumatic or from infectious diseases. Uveitis is broadly classified into anterior, intermediate, posterior and panuveitis, based on the anatomical involvement of the eye.
Methods: The patients recruited for this study for a period of one year were initially diagnosed by the cataract surgeons in the regional hospitals, and the tertiary hospital. These suspected cases were referred to the Sheikh Zayyed Regional Eye Care Centre, Banjul where the only ophthalmologist works and were further examined. Only those with established clinical findings were included in the study. A prepared proforma with patients' demographics such as age, name, sex and address were included. Others were presenting complaints, duration, medical and drug history, and exposure to pets. Patients had both general and ocular examinations. Patients with symptoms were sent for various investigations according to the needs, such as X-rays, blood for retroviral screening, VDRL and ESR.
Results: A total of 9,513 patients presented in the outpatient clinic of the hospital between January 2010 and December 2010 out of which 63 (0.66%) were diagnosed with uveitis. Thirty-two (50.8%) patients were males, with a mean age of 36.7 years at presentation. The most common type of uveitis was anterior uveitis seen in 40 (63.5%) patients, followed by posterior uveitis. Nine (14.3%), intermediate uveitis 8(12.7%) and panuveitis 6(9.5%) patients. The aetiology was unknown for 42.9% of the cases, HIV-related cases were 12 (19.0%), while toxoplasmosis and trauma accounted for 11 (17.5%) and 7 (11.1%) cases respectively.
Conclusion: Most of the uveitis seen in our study is of unknown cause, others were HIV-related, toxoplasmosis and trauma. More facilities are needed for better diagnosis in the eyes centres.

Key words: Uveitis, Aetiology, The Gambia

INTRODUCTION

The uvea consists of the iris, the ciliary body and choroid. The choroid provides most of the blood supply to the retina[1]. Uveitis is the inflammation of this middle layer or the uvea. Uveitis is composed of a diverse group of disease entities which have been estimated to cause about 10% of blindness[2,3]. The condition is often idiopathic, but can be triggered by autoimmune diseases; it could be genetic, may be from trauma, infections or even drugs[1]. Uveitis is broadly classified into anterior, intermediate, posterior and panuveitis, based on the anatomical involvement of the eye[3].

Anterior uveitis is the commonest form of the intraocular inflammation with varying incidence in the general population of various countries around the world. It is characterized by unilateral pains which may be associated with increased intraocular pressure, blurring of vision due to turbidity of the aqueous, and photophobia from ciliary spasm. Presence of flares and cells results in turbidity of the aqueous humour and circumscribed redness around the conjunctivae[3].

Intermediate uveitis is the inflammation of the anterior vitreous, the ciliary body and the peripheral retina. The prevalence is about 5.9/100,000. It affects patients of all age groups but is predominantly seen in 3rd and 4th decades of life. Bilaterality occurs in about 70-90% of cases. It may present with minimal symptoms of blurred vision due to floaters, but in severe cases there may be visual loss due to aggregation of floaters in the vitreous. Other signs may be quiet anterior chamber, or flares, cells and keratic prescipitates which are usually minimal. Posterior synechiae if present usually involves the inferior iris. Vitritis is a characteristic feature of intermediate uveitis, seen as vitreous haze ranging from trace to +4. In some cases vitreous snowballs may be seen in the mid vitreous and inferior periphery. Snowbanking is also not uncommon and is seen as exudates in the pars plana. Retinal changes may be seen as tortuosity in the arterioles and venules, sheathing of the peripheral veins, neovascularisation and retinal detachments[4].

Posterior uveitis is the inflammation of the adjacent structures such as the posterior vitreous, retina and optic nerve head[5]. Posterior uveitis may present with a quiet or inflamed eye, or patients may report floaters, reduced vision, metamorphopsia, scotoma or ocular discomfort. Ocular toxoplasmosis is the most common cause of

posterior uveitis accounting for about 90% of cases[2,6]. Others are herpes, toxocara, brucella and Behcet's disease[2].

The international Uveitis Study Group defined panuveitis as generalized inflammation of all three parts of the uvea, i.e the iris, ciliary body and choroid. It covers a large group of diverse diseases which affect the retina and vitreous humour. It is characterized by choroidal or retinal inflammation such as choroiditis, necrotizing retinitis, vitritis and anterior uveitis[7].

Medical drugs are recognized as an important cause of uveitis. A number of medical drugs encompassing various forms of administration including topical formulations, periocular and intraocular injections and recent availability of treatments for neovascular diseases of the retina and choroid, anti Vascular Endothelial Growth Factor (VEGF) and systemic medications have been implicated[8,9].

Studies done in Sierra Leone shows that toxoplasmosis was the commonest cause while HIV, tuberculosis and sarcoidosis were the other causes[10]. While in Saudi Arabia, the commonest cause was undetermined uveitis followed by Behcets disease[11].

This prospective study, which spanned for about one year was done to determine the aetiology of uveitis in the Gambia, a West African state. The information obtained will be useful in planning eye care services with respect to training of cataract surgeons who oversee the affairs of the secondary centres.

MATERIALS AND METHODS

The Gambia is the smallest country in West Africa with a population of about 1.6 million. It is divided into 6 regions each with a hospital which serves as secondary centres. The Eye unit in each of these centres is headed by a cataract surgeon. These are trained ophthalmic nurses with added qualifications to carry out cataract surgery and other basic eyelid surgeries. The patients recruited for this study for a period of one year were initially diagnosed by the cataract surgeons in the Regional hospitals, and the tertiary hospital. These suspected cases are referred to the Sheikh Zayyed Regional Eye Care Centre, Banjul where the only ophthalmologist works and are further examined. Only those with established clinical findings are included in the study. The Ethical Committee of the hospital approved the study. Those excluded in this study were patients who were previously diagnosed and were already on treatment.

A prepared proforma with patient's demographics such as age, name, sex and address were included. Others were presenting complaints, duration, medical and drug history, and exposure to pets. Patients had both general and ocular examinations. General examinations included inspection of the skin for rashes as seen in HIV/AIDS patients, oral lesions (aphthous or herpetiform) and erythema nodosum as seen in patients with Behcet's disease. All patients were examined with the slit lamp after a visual acuity had been taken. The lids were examined with particular attention to the periocular skin for rashes, psoriasis, erythema nodosum, keratoderma, blennorhagia, lupus pernio and vitiligo. The lacrimal glands were examined for any enlargements or tenderness. Other examinations included the conjunctivae and sclera for scleritis, episcleritis, circumcilliary congestion, sarcoid nodules and phlyctenulosis. The corneal endothelia for keratic precipitates and puctate keratis. The anterior chambers were examined for flares and cells while the irides for anterior and posterior syneshiae, iris atrophy, heterochromia, bussaca and koeppe nodules, rubeosis and papillary signs and reactions. The lenses were checked for opacities, and pigmentary deposits, while the vitreous body was examined for cells or inflammatory cells. Fundoscopy was done to check for retinal lesions due to toxoplasmosis and toxocara gondii with a 90D lens. Gonioscopy was performed on all the patients to check the anterior chamber angles for synechiae, patency of the angles and presence of cells. Intraocular pressures were taken with the Goldman applanation tonometer. Patients with symptoms were sent for various investigations according to the needs, such as X-rays, blood for retroviral screening, VDRL and ESR.

RESULTS

A total of 9,513 patients presented in the outpatient clinic of the hospital between January 2010 and December 2010 out of which 63 (0.66%) were diagnosed with uveitis. Thirty-two (50.79%) patients were males, while 31(49.2%) were females. The age range was from 11 to 90 years (Table 1), with a mean age of 36.7 years at presentation.

Table 2 shows that anterior uveitis was the most common cause of uveitis as seen in 40 (63.5%) patients with a high preponderance among patients between the ages of 21-30 years. Nine (14.3%) patients had posterior uveitis and this was closely followed by intermediated uveitis accounting for 8(12.7%) patients. Patients with panuveitis were 6 (9.5%).

The aetiology of most of the cases as illustrated in Figure 1 was unknown accounting for 42.9% of the cases, while HIV related conditions accounted for 12 (19.0%). Toxoplasmosis was diagnosed in 11 (17.5%) patients and trauma in 7 (11.1%) patients.

Figure 2 shows that cataract had the highest number of ocular complications accounting for 24 (38.1%) patients, while 14 (22.2%) patients had glaucoma. Hypotony occurred in 4 (6.3%) patients. Six (9.5%) patients had associated refractive error. Uveitis due to post cataract surgery occurred in 3 (4.8%) patients. Others such as, optic atrophy and heterochromia were seen in 5 (7.9%)

patients. Four (6.3%) patients had hypotony while 19(30.2%) were not found to have any associated ocular complications. Majority of the patients, 46 (73%) were not found to have any systemic diseases. Twelve patients (19%) patients had HIV/AIDS with tuberculosis; while renal disease, urethritis, and arthritis also had 1(1.6%) case each. There were 4(6.3%) patients who presented with other conditions like diarrhoae, urinary tract infection, diabetes and deafness.

Forty-three (68.3%) patients had unilateral uveitis, while 20(31.7%) cases were bilateral. A total of 23 (36.5%) patients lived with pets out of which 17 (27%) lived with cats only, 2 (3.2%) with dogs only and 4(6.4%) with both cats and dogs.

Table 1: Age and sex of patients at presentation

Age (years)	Males (n %)	Females (n %)	Total (n %)
11- 20	4 (6.5)	3 (4.8)	7 (11.1)
21- 30	11(17.5)	13(20.6)	24(38.1)
31- 40	6 (9.5)	5 (7.9)	11(17.5)
41- 50	3 (4.8)	4 (6.3)	7 (11.1)
51- 60	2 (3.8)	3 (4.8)	5 (7.9)
61- 70	4 (6.3)	3 (4.8)	7 (11.1)
71- 80	1 (1.6)	0 (0)	1 (1.6)
81- 90	1 (1.6)	0 (00)	1 (1.6)
>90	0 (0)	0 (0)	0 (0)
	32 (50.8)	31 (49.2)	63 (100)

There were no patients in the 0-10 age group with uveitis

Table 2: Types of uveitis in various age groups

Age (years)	Anterior (n %)	Intermediate (n %)	Posterior (n %)	Pan uveitis (n %)	Total (n %)
11 – 20	5 (7.9)	2 (3.2)	6 (9.5)	0 (0)	13 (20.6)
21 – 30	16 (25.4)	3 (4.8)	3 (4.8)	1 (1.6)	23 (36.5)
31 – 40	4 (6.3)	1 (1.6)	0 (0)	1 (1.6)	6 (9.5)
41 – 50	5 (7.9)	0 (0)	0 (0)	1 (1.6)	6 (9.5)
51 – 60	3 (4.8)	0 (0)	0 (0)	1 (1.6)	4 (6.3)
61 – 70	6 (9.5)	O (0)	0 (0)	1 (1.6)	7 (11.1)
71 – 80	0 (0)	0 (0)	0 (0)	1 (1.6)	1 (1.6)
81 - 90	1 (1.6)	0 (0)	0 (0)	0 (0)	1 (1.6)
Total	40 (63.5)	8 (12.7)	9 (14.3)	6 (9.5)	63 (100)

Figure 1: Aetiology of uveitis

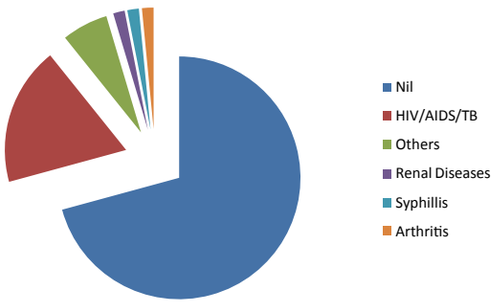
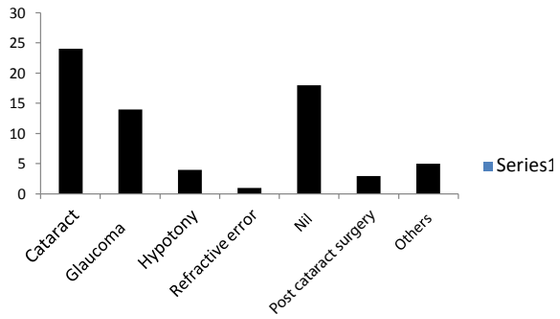


Figure 2: Associated ocular complications



DISCUSSION

Uveitis is a relatively common ocular condition with epidemiology varying with both age and geographical location; although the disease is regarded as a disease of the adults of working age (20-50 years) an American study found the incidence of uveitis in the elderly to be substantially high[12]. It has been estimated that over 90% of the diagnosis can be made on the basis of medical history and clinical examination alone[13], this is similar to this study where most of the diagnosis were made on history and clinical examination, and except where indicated, laboratory tests, and radiological investigations were done.

Both males and females were equally affected in this study. This agrees with a study on the pattern of uveitis in a referral centre in Tunisia, having a male to female ratio of 1:1.1[14]. In China and Saudi Arabian hospitals, a similar study showed same ratios[15,16]. But a study done in Switzerland showed a male preponderance[17]. The mean age at presentation was 36.7 similar to other studies[14, 16,18]. Forty-three (68.3%) of our patients had the disease in one eye only, while 20 (31.7%) had bilateral involvement. Khairaillah *et al*[14] also recorded the disease to be unilateral in 59.7% and bilateral in 40.3%. Other studies by Kinouchi *et al*[19] and Nizamuddin *et al*[20] also had 40% bilateral involvement. This is unlike findings by BenEzra *et al*[21] who had 70.3% in both eyes.

The pattern of uveitis is influenced by a combination of geographical, environmental and genetic factors[22]. A similar study in Sierra Leone[10], with same geographical location as Gambia showed that toxoplasmosis accounted for 43% of the causes of uveitis, while in the Gambia, it accounted for only 17%. This could be due to the fact that only 23(36.5%) of the patients lived with pets of which 17 (27.0%) lived with cats only, 2 (3.8%) lived with dogs only while 4 (6.3%) lived with both. Another reason for the low record could be due to the fact that there are no facilities to detect serum antibodies in the centre. All the diagnoses were purely on clinical basis. This may explain why majority of the patients, 27 (42.8%) had no known cause, as against studies done in other centres where facilities are available to make laboratory diagnosis had only 14% undetermined uveitis[11] and 27% idiopathic[15]. Other causes were HIV/HAART induced uveitis, 12(19%) and trauma 7(11.1%). No patient was diagnosed with juvenile idiopathic arthritis despite the number of children seen in this study.

There were other ocular complications associated with the uveitis such as cataract. Most uveitics enjoy good vision despite potentially sight-threatening complications including cataract[23]. Cataract is the most common complication affecting up to 40% of uveitic patients[24]. Cataract development results from chronic inflammation and also as a consequence of long term use of corticosteroids[2,24]. The large number of cataract patients, 38.1% could be attributed to the chronicity of the disease and also the long term use of both topical and systemic steroids.

Inflammatory glaucoma also known as uveitic glaucoma is a condition in which ocular inflammation causes persistent or recurrent intraocular pressure elevation[25]. Glaucoma is one of the many potentially devastating complications of uveitis[26,27]. The pathogenesis of uveitic glaucoma relates to alterations in aqueous production and composition, changes to the anterior chamber angle and the effects of corticosteroid treatment[27]. The overall prevalence of glaucoma in eyes with uveitis varies from 10-20%[25,27], but is much common in chronic uveitis and can be as high as 46%[27]. We had a prevalence of 22.2% which is consistent with other studies with similar figures of 22.2%[28] and 23%[29].

Ocular hypotony is defined as intraocular pressure of 5mmHg or less. Hypotony occurs when aqueous humour production does not keep pace with outflow. Conditions such as iridocyclitis, hypoperfusion or tractional ciliary body detachment may cause inadequate aqueous humour production[30]. Low intraocular pressure can adversely affect the eye in many ways including corneal decompensation, accelerated cataract formation, maculopathy and choroidal detachment[30]. Hypotony associated with uveitis has been found to be more common in African-Americans with a prevalence of 8.3%[31], while we had 6.3%, other studies by Daniel *et al*[32], had an incidence of 1.83% in patients with non-infectious uveitis.

Uveitis is not always a single disease entity but includes ocular involvement related to various systemic disorders as well as primary ocular conditions. The association of uveitis and systemic disease is well known[33]. Several studies[32,34,35], have shown that systemic diseases such as tuberculosis, sarcoidosis, juvenile arthritis, HIV/AIDs, multiple sclerosis, optic nerve inflammation, inflammatory bowel disease, isolated thyroid abnormalities and several others are associated with uveitis.

Most types of uveitis tend to become bilateral as it evolves over weeks, and months, even though the initial presentation maybe unilateral[36]. This may explain the large number of patients with bilateral involvement as seen in majority of patients seen with ocular uveitis as initial presentation of syphilis as reported by Tran *et al*[37]. Our findings showed that 68.3% of our patients had unilateral involvement at presentation.

CONCLUSIONS

Most of the uveitis seen in our study is of unknown cause. Other causes were HIV-related, toxoplasmosis and trauma. Little attention has been given to this condition as evidenced by the paucity of literature from Africa. There is the need to put a lot of emphasis in the diagnosis and treatment of uveitis in the curriculum of the cataract surgeons in the Gambia because a lot of these patients were referred from the secondary centres managed by the cataract surgeons. More facilities should be provided in the centres for diagnosis.

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