



A STUDY ON THE PATTERN OF UVEITIS AND SEASONAL VARIATION IN THE INCIDENCE OF UVEITIS AT A TERTIARY CARE HOSPITAL

Ophthalmology

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ABSTRACT

Purpose: The aim was to study the pattern of uveitis and any seasonal variation in the incidence of uveitis at a tertiary care hospital.

Methods: A observational study was conducted on 150 patients of all new uveitis cases between August 2019 to August 2021 at a tertiary care hospital, J.L.N. medical college and hospital, Ajmer, Rajasthan. We grouped the months into winter, autumn, monsoon, spring and summer according to Indian season. Patients were screened a detailed clinical and laboratory investigation to find out there clinical etiological causes.

Results: There was male predominance (56.7%) with male to female ratio 1.3:1. We found more unilateral (76%) uveitis with more Right eye (38.7%) involvement. Anterior uveitis 97(64.66%) followed by 26(17.34%) Posterior uveitis, 23(15.34%) Intermediate uveitis and rest 4 (2.66%) Panuveitis in anatomical presentation. The incidence of uveitis increases in winter season 49(32.7%) followed by spring 35(23.3%), autumn 33(22.0%), monsoon 26(17.3%) and summer 7(4.7%).

Conclusions: Non-infectious uveitis were more common followed by infectious. Idiopathic and HLA-B27 associated uveitis were most common entity and ocular tuberculosis was leading cause of infectious entity. Seasonally uveitis were more in winter, spring and less in summer.

KEYWORDS

uveitis, seasonal variation, etiology, pattern, HLA-B27, ocular Tuberculosis

INTRODUCTION

Uveitis is a potentially sight threatening disease causes blindness to people all over the world. Around 5%–20% of cases of legal blindness in developed countries and 25% of blindness in the developing countries are due to uveitis.⁽¹⁾ Early detection and timely treatment are of great importance.⁽²⁾

Uveitis is an intraocular inflammatory heterogenous group of disease of uveal tissue (iris, ciliary body and choroid) which also involve other ocular structure like retina, sclera, vitreous, cornea and optic nerve. The study of uveitis is complicated by the fact that the cause of inflammatory reaction of the inner layer can be infectious, traumatic, neoplastic, autoimmune or idiopathic.

The etiology of uveitis is largely affected by multiple factors like racial, geographical, environmental and alimentary factors. Few study showed seasonal variation in uveitis patients. Uveitis have strong impact on socio-economic life on society because it affects all age group people.

Few studies on the pattern of uveitis and seasonal variation in various geographic regions have been published, showing similarities and distinct differences in epidemiological profiles and etiologies of uveitis. The objective of our study was to identify the pattern of uveitis in a tertiary care hospital in Ajmer, Rajasthan (North Western India) and to compare with the others reported studies. Also, to determine if there was a seasonal variation to the incidence rate of uveitis.

METHODS

The observational study included all the new cases of uveitis over the 24 month period from August 2019 to August 2021. The study was conducted after taking an informed consent from patients or their relatives at Department of Ophthalmology, J.L.N. medical college and hospital, Ajmer [Rajasthan (Northwestern India)].

All the patients who attended Outpatient Department of a Tertiary Care Hospital, Ajmer, with signs and symptoms of uveitis and who fulfilled the inclusion criteria were enrolled in the study. The patients were excluded having all types of any conjunctivitis, physical and chemical burn, any current ocular surgery, orbital cellulitis, episcleritis and scleritis.

A detailed demographic and complete systemic examination from all the patients was recorded. Detailed comprehensive local ocular examination of affected eyes was done which included Visual acuity using Snellens visual acuity chart, Anterior segment examination by

slit lamp, Fundus examination (direct and indirect ophthalmoscopy), IOP measurement by Goldman Applanation Tonometry. Relevant Laboratory Investigation like CBC, Erythrocyte sedimentation rate and Montoux test were done. Serological tests for syphilis, HIV, Rheumatoid factor, Serum CRP, ALSO, Widal test was done in all cases. Radiological investigations included X-ray of chest, lumbosacral and SI joints. Other special investigations like HLA B-27, ANCA, ANA, ELISA, ANTI-CCP, SERUM ACE was also considered whenever necessary.

Final etiological diagnosis was made based on history, clinical features, laboratory investigations and systemic evaluation with physician consultation whenever needed. The term idiopathic uveitis was used when clinical examination and laboratory test failed to establish any diagnosis.

The Anatomical location of the inflammation and classification was assigned based on the Standardization of Uveitis Nomenclature (SUN) Criteria.

We group month of year into seasons winter (November to February), spring (March to April), Summer (May to June), Monsoon (July to August) and autumn (August to October) according to Indian season. This study was ethically cleared from the institutional ethics committee.

STATISTICAL ANALYSIS

The data obtained were subjected to statistical analysis in a prepared master with subdivided data. Statistical analysis was done by using Statistical Package of Social Science software (SPSS Version 20).

RESULTS

The study contain 150 patients newly diagnosed with the uveitis during the study period.

Demographic distribution

Out of total cases, 65 (43.3%) of patients were female and rest of the patients about 85 (56.7%) were male, the male:female ratio was 1.30:1. Most of cases of uveitis occurred in the 2nd and 3rd decade of life constituted 35.3% of the study group. The mean age of presentation was found to be 37.72±13.25. 114 (76.0%) of patients belongs to urban area and rest of patients 36 (24%) belongs to rural area.

Anatomical and Laterality distribution

The laterality were 36 (24.0%) patients had bilateral involvement and 114 (76.0%) had unilateral involvement in which 58 (38.7%) patients

have right eye involvement while 56 (37.3%) patients have left eye involvement. out of 150 patients (according to SUN classification), 97 (64.66%) had anterior uveitis, 26 (17.34%) patients had posterior uveitis, 23 (15.34%) patients had intermediate uveitis and rest 4 (2.66%) had panuveitis (Table 1).

Table 1: Comparison of anatomical distribution of uveitis with other studies (percentage of total cases)

Anatomical distribution	Present study	Palsule et al. ⁽³⁾	Singh et al. ⁽⁴⁾	Das et al. ⁽⁵⁾	Mercanti et al. ⁽⁶⁾	Rodriguez et al. ⁽⁶⁾
Total cases	150	198	1233	308	655	1237
Anterior	64.66	41.4	49.23	47.07	58.01	51.6

Intermediate	15.34	16.66	16.06	12.98	2.9	13
Posterior	17.34	20.7	20.23	29.87	26.11	19.4
Panuveitis	2.66	21.2	14.68	10.06	12.98	16

Etiological distribution

Out of total cases, In anterior uveitis group, 37 patients found to be idiopathic etiology, 24 patients associated with HLA-B 27, 7 patients have ocular TB and 4 patients had herpes associated uveitis. In intermediate uveitis group equally 8 patients had idiopathic origin Andre patients had ocular TB respectively. In posterior group, 9 and 7 patients were affected with multifocal chorioiditis and viral infections respectively followed by 2 patients affected with TB in Panuveitis group.(Table 2)

Table 2: Comparison of Etiological presentation of anterior, intermediate, posterior, and panuveitis with other Indian studies

Type of uveitis	Etiology	present study (North western India)	Borde et al. ⁽¹⁰⁾ (Central India) (n=210)	Singh et al. ⁽⁴⁾ (North India) (n=1233)	Das et al. ⁽⁵⁾ (North East India) (n=308)	Aratee et al. ⁽³⁾ (Western India) (n=198)	Biswas et al. ⁽¹⁵⁾ (South India) (n=1273)
Anterior uveitis		97(64.66%)	99 (47.14%)	607 (49.23%)	145 (47.07%)	82 (41.4%)	500 (39.28%)
	Idiopathic	37(24.66%)	37 (37.37%)	372 (61.3%)	66 (45.51%)	44 (53.7%)	293 (58.60%)
	Spondyloarthropathy (seronegative/HLA B27+)	24(16%)	15 (15.15%)	80 (13.2%)	34 (23.44%)	24 (29.3%)	43 (8.6%)
	Fuch's heterochromicyclitis	2(1.33%)	3 (3.03%)	31 (5.1%)	7 (4.82%)	1 (1.2%)	28 (5.6%)
	JIA	2(1.33%)	4 (4.04%)	20 (3.3%)	-	1 (1.2%)	10 (2%)
	Herpes- related	4(2.66%)	18 (18.18%)	-	1 (0.6%)	-	6 (1.2%)
	Rheumatoid arthritis	2(1.33%)	1 (1.01%)	-	-	-	-
	Leprosy	1(0.66%)	2 (2.02%)	5 (0.8%)	1 (0.6%)	1 (1.2%)	3 (0.6%)
	Traumatic	5(3.33%)	8 (8.08%)	-	25 (17.24%)	3 (3.7%)	17 (3.4%)
	Tuberculosis	7(4.66%)	5 (5.05%)	48 (7.9%)	-	4 (4.9%)	3 (0.6%)
	Lens induced	9(%)	5 (5.05%)	-	10 (6.89%)	-	44 (8.8%)
	Posner- Schlossman	-	1 (1.01%)	-	-	-	-
Intermediate uveitis		23(15.33%)	67 (31.90%)	198 (16.06%)	40 (12.98%)	33 (16.66%)	222 (17.44%)
	Idiopathic	8(5.33%)	52 (77.61%)	181 (91.4%)	31 (77.5%)	23 (69.7%)	213 (95.9%)
	Tuberculosis	10(6.66%)	10 (14.92%)	8 (4%)	4 (10%)	8 (24.30%)	-
	Sarcoidosis	2(1.33%)	1 (1.49%)	-	5 (12.5%)	1 (3%)	-
	JIA- associated	3(2%)	2 (2.98%)	-	1 (3%)	-	-
	Toxoplasma	-	2 (2.98%)	-	-	-	-
Posterior uveitis		26(17.33%)	27 (12.85%)	247 (20.23%)	92 (29.87%)	41 (20.7%)	366 (28.75%)
	Idiopathic	2(1.33%)	7 (25.92%)	61 (24.7%)	18 (19.56%)	13 (31.7%)	150 (40.98%)
	Multifocal chorioiditis	9(6%)	5 (18.51%)	51 (20.7%)	4 (4.34%)	1 (2.4%)	-
	Serpiginous choroidopathy	6(4%)	4 (14.81%)	62 (25.1%)	14 (15.21%)	-	69 (18.85%)
	Toxoplasmosis	2(1.33%)	2 (7.4%)	20 (8.1%)	37 (40.21%)	8 (19.5%)	102 (27.87%)
	Viral retinitis	7(4.66%)	3 (11.11%)	-	2 (2.17%)	2 (4.9%)	2 (0.55%)
	Toxocara	-	-	-	4 (4.34%)	-	21 (5.74%)
Pan uveitis		4(2.66%)	17 (8.09%)	181 (14.68%)	31 (10.06%)	42 (21.2%)	185 (14.53%)
	Idiopathic	-	5 (29.4%)	17 (9.4%)	10 (32.25%)	18 (42.9%)	95 (51.35%)
	Tuberculosis	2(1.33%)	4 (23.58%)	47 (26%)	-	9 (21.4%)	4 (2.16%)
	VKH	1(6.66%)	2 (11.76%)	44 (24.3%)	14 (45.16%)	6 (14.3%)	39 (21.08%)
	Sympathetic ophthalmia	1(6.66%)	1 (5.88%)	26 (14.4%)	1 (3.2%)	1 (2.4%)	10 (5.41%)

SEASONAL VARIATION

The incidence of uveitis cases showed 49 (32.7%) cases found in winter season followed by spring 35(23.3%), autumn 33(22.0%), monsoon 26(17.3%) and summer 7(4.7%). But no season has conferred statistical significance.(Table 3)(Figure 1)

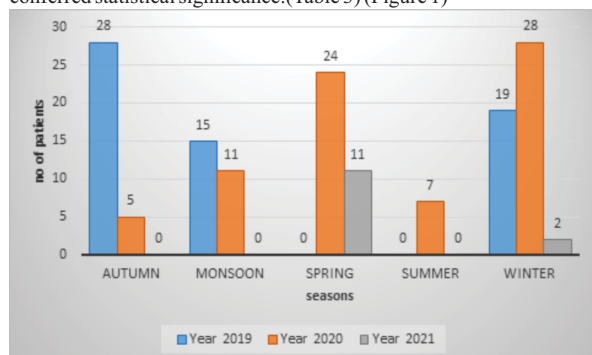


Figure 1: Season Wise Presentation Of Uveitis Incidence

Table 3: Season Wise Presentation Of Uveitis Incidence

	Year			Total	P value
	2019	2020	2021		
AUTUMN	28	5	0	33 (22%)	0.56
MONSOON	15	11	0	26 (17.3%)	0.74
SPRING	0	24	11	35 (23.3%)	0.66
SUMMER	0	7	0	7 (4.7%)	--
WINTER	19	28	2	49 (32.7%)	0.29
Total	62	75	13	150 (100%)	0.06

DISCUSSION

In our study population, the disease had a mean age of presentation 37.72±13.25 which supported by the study Ranju Kharel et al⁽⁸⁾, the mean age of the patient was 37.91 years. In another study, Palsule AC et al⁽³⁾, the mean age at presentation of disease was 39.70±14.06 years, which is slightly higher than our study population. Similarly, Hina Kauser et al⁽⁹⁾, the mean age at presentation of disease was 35.4 years appeared to be less than our study.

These variations in age could be due to the inter-individual variation in controlling the disease till certain age and losing the tolerance after the

susceptibility factors and even ethnicity also matters.

Our study had male predominance (56.7%) which was accordance with the study, Borde et al⁽¹⁾ discussed that males were 107 (50.95%) and 103 female patients (49.04%). Similarly, Hina Kauser et al⁽⁹⁾, where 62% were males than 38% females.

Our study shows unilateral uveitis (76%) more common which was accordance with the study, Borde et al⁽¹⁰⁾, reported uveitis was unilateral in 119 patients (56.66%) and bilateral in 91 patients (43.33%). However, Palsule AC et al⁽³⁾, reported 96 (48.5%) patients had unilateral disease and 102 (51.5%) had bilateral disease. Another study done by Grajewski RS et al⁽¹¹⁾, reported 164 (56%) bilateral involvement in uveitis cases which was contraindicating our results.

Our study shows incidence of uveitis patients were more in winter season which was accordance with the observational study, Kawali A et al.⁽¹²⁾ Similarly, Hina Kauser et al⁽⁹⁾, in their study reported higher number of cases found in winter followed by transitional season and minimum in summers in both the consecutive years. A study done by Päivönsalo-Hietanen T et al⁽¹³⁾ reported increased incidence of uveitis cases in the warm and transitional seasons.

This could be due to regional temperature variation which may not be similar in different seasons in different places over the planet. We assumed this shift may be have a relation with the global climate changes seen over years. This was one of the reasons that we studied the incidence in the last 2 years.

Our study shows various etiological presentation of uveitis (Table 2) which was accordance with the study done by Borde et al⁽¹⁰⁾, diagnosed infectious etiology in 54 patients (25.71%), of which ocular tuberculosis (46.29%) was the most common infection. Further, HLAB27-positive spondyloarthropathy in 15 patients (27.27%) followed by traumatic etiology in 8 (14.54%) patients was observed. Palsule AC et al⁽³⁾, 98 (49.5%) were idiopathic and 100 (50.5%) patients with specific etiology. infectious ocular tuberculosis which was the most common infection observed. Among the noninfectious 45 patients, HLA B-27-associated uveitis was the most common etiology seen in 24 (53.3%) followed by Vogt-Koyanagi-Harada (VKH) syndrome in 5 (13.3%) patients. Among patients with specific etiology, patients with anterior uveitis had maximum (78.9%) noninfectious etiology whereas posterior uveitis patients had maximum, i.e., 26 (92.85%) infectious etiology. Hina Kauser et al⁽⁹⁾, studied 100 patients, and observed that 79% were idiopathic, 10% cases were positive for HLAB27, and 5% were positive for tuberculosis.

Higher incidence of anterior uveitis 23 (15.33%) associated with HLA-B27 was seen in our study when compared with Henderly et al⁽¹⁴⁾ (27.8%) and Biswas et al⁽¹⁵⁾ (39.28%). Chang JH et al⁽¹⁶⁾ found that anterior uveitis is relatively less frequent in South Africa, Japan and Korea.

CONCLUSION

As uveitis disease is a significant cause of socio-economic blindness, we believe that periodic surveys such as our study will provide us with essential and useful data for obtaining the correct diagnoses of uveitis and medical modalities for management and reducing the socioeconomic burden on our society as it usually affects young adults. We concluded Specific etiology in a majority of uveitis cases. Although the difference in the incidence of new acute uveitis among the seasons was not statistically significant in our study, a distinctly higher number of cases were seen in winters. The variation in anatomical and etiological distribution of uveitis is largely due to complex geographic, ecological, racial, nutritional, socioeconomic differences and other environmental factors (e.g., prevalent infectious agents). Further investigation of the patterns and detailed etiologies of uveitis from different parts of India and Awareness of such regional difference is important in diagnosing disease entity and also the predictive value of diagnostic tests. As our study have a small sample size and short period, studies having larger sample size and a longer period would be required for better evaluation of the pattern of uveitis and determine seasonal variation to the incidence rates.

Declaration of patient consent

The authors certify that they have all appropriate patients consent forms in written. In the form the patient(s) has/have given his/her/their

consent for his/her/their images and other clinical information to be reported in the article.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Miserocchi E, Fogliato G, Modorati G, Bandello F. Review on the worldwide epidemiology of uveitis Eur J Ophthalmol. 2013;23:705-17
- Rao N, Cousins S, Froster D, Oprohmcol M American Academy of Ophthalmology. . Clinical approach to uveitis Basic and Clinical Science Course, Section 9: Intraocular Inflammation and Uveitis. 2010-2011 San Francisco American Academy of Ophthalmology:100-46
- Palsule AC, Jande V, Kulkarni AA, Beke NN. Pattern of uveitis in a tertiary eye care center in Western India. J Clin Ophthalmol Res 2017;5:127-3
- Singh R, Gupta V, Gupta A. Pattern of uveitis in a referral eye clinic in North India. Indian J Ophthalmol 2004;52:121-5.
- Das D, Bhattacharjee H, Bhattacharyya PK, Jain L, Panicker MJ, Das K, et al. Pattern of uveitis in North East India: A tertiary eye care center study. Indian J Ophthalmol 2009;57:144-6
- Mercanti A, Parolini B, Bonora A, Lequaglie Q, Tomazzoli L. Epidemiology of endogenous uveitis in North-Eastern Italy. Analysis of 655 new cases. Acta Ophthalmol Scand 2001;79:64-8
- Rodriguez A, Calonge M, Pedroza-Seres M, Akova YA, Messmer EM, D'Amico DJ, et al. Referral patterns of uveitis in a tertiary eye care center. Arch Ophthalmol 1996;114:593-9
- Kharel R (2019) Patterns of uveitis among Nepalese population presenting at a tertiary referral eye care centre in Nepal. New Front Ophthalmol 5: DOI: 10.15761/NFO.1000238
- Hina Kauser, Farzana Islam, Taskin Khan, V.S. Gupta, Shivani Kochar A Study on the Pattern of Uveitis and Any Seasonal Variation in the Incidence of Uveitis at a Tertiary Care Hospital of Delhi, India. IJO 2019;29:30-34
- Borde, Prashant; Priyanka, Kumar, Kavita; Takkar, Brijesh; Sharma, Bhavana, Pattern of uveitis in a tertiary eye care center of central India, Indian J Ophthalmol 2020 68-3
- Grajewski RS, Caramoy A, Frank KF, Rubbert-Roth A, Fatkenheuer G, Kirchhof B, et al. Spectrum of uveitis in a German tertiary center: Review of 474 consecutive patients. Ocul Immunol Inflamm 2015;23:346-52.
- Kawali A, Zulaikha V, Srinivasan S, Mahendradas P, Kumar J, Shetty R. HLA-B27-related uveitis and seasonal variation-an Indian perspective. Indian J Ophthalmol. 2020; 68(9):1863-1866.
- Paivonsalo-Hietanen T, Tuominen J, Saari KM. Seasonal variation of endogenous uveitis in south-western Finland. Acta Ophthalmol Scand. 1998;76:599-602.
- Henderly DE, Genstler AJ, Smith RE, Rao NA. Changing patterns of uveitis. Am J Ophthalmol 1987;103:131-6
- Biswas J, Narain S, Das D, Ganesh SK. Pattern of uveitis in a referral uveitis clinic in India. Int Ophthalmol 1996-1997;20:223-8.
- Chang JH, Wakefield D. Uveitis: A global perspective. Ocul Immunol Inflamm 2002; 10:263-79.