E-ISSN:2456-6454
P-ISSN:2581-4907
RNI:MPENG/2017/74152
Research Article
Uveitis

Tropical Journal of Ophthalmology and Otolaryngology
2021 Volume 7 Number 4 July-August

Publisher
MEDRESEARCH
www.medresearch.in

Clinical patterns of Uveitis in a Regional Eye Institute of North India

Malhotra P.[1], Kaur M.[2*], Kaur I.[3], Kaur P.[4], Malhotra N.[5]

DOI: https://doi.org/10.17511/jooo.2021.i04.02

[1] Pratibha Malhotra, MS RMO, Department of Ophthalmology, SHC Guru ka Bagh, PHC Ramdass, , Punjab, India.

[2*] Mandeep Kaur, MS, Assistant Professor, Department of Ophthalmology, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar, Punjab, India.

[3] Inderjit Kaur, MS, Ex-Professor & Head, Department of Ophthalmology, Government Medical College, Amritsar, Punjab, India.

[4] Prempal Kaur, MS Professor & Head, Department of Ophthalmology, Government Medical College, Amritsar, Punjab, India.

[5] Neeraj Malhotra, MS Orthopaedics Assistant Professor, Department of Orthopaedics, Government Medical College, Amritsar, Punjab, India.

Background: Uveitis encompasses many conditions, all characterized by inflammation of the uveal tract either directly or indirectly. It can occur at any age but predominantly affects patients in the working-age group. **Objective**: To report the clinical pattern of Uveitis in North India. **Settings and Design:** A prospective study in a regional eye institute. **Methods:** After taking informed consent, 100 patients with Uveitis aged 20–60 years were recruited from eye OPD between 2012- 2014. Detailed history, complete ophthalmic examination, standard diagnostic laboratory tests and radiographic studies wherever required were made. **Statistical analysis used**: Descriptive. **Results:** The mean age being 41.55 years. There were 57% males and 43% females with 32% acute uveitis and 68% chronic uveitis cases. Anterior Uveitis was seen in 83% of patients, followed by posterior Uveitis (7%), pan-uveitis (6%) and intermediate Uveitis (4%). A definite association with the systemic disease was determined in 27% of cases. The most frequently observed systemic diseases were ankylosing spondylitis, Tuberculosis and herpes zoster ophthalmicus (6% cases each). This was followed by HIV (3%), sarcoidosis (3%), ulcerative colitis (2%) and endophthalmitis (1%). No specific aetiology or association with systemic diseases could be established in 73% of cases. In most cases, the systemic disease was not suspected before eye involvement and was recognized only after the subsequent diagnostic procedures. **Conclusion:** The etiological diagnosis of Uveitis is often challenging as there are marked variations in ocular and systemic signs and symptoms. A significant number of cases may unfold with the evolution of advanced techniques.

Keywords: Clinical, Uveitis, Pattern, Diagnosis

Corresponding Author

Mandeep Kaur, MS, Assistant Professor, Department of Ophthalmology, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar, Punjab, India.
Email: sidhumandeep_73@hotmail.com

How to Cite this Article

Pratibha Malhotra, Mandeep Kaur, Inderjit Kaur, Prempal Kaur, Neeraj Malhotra, Clinical patterns of Uveitis in a Regional Eye Institute of North India. Trop J Ophthalmol Otolaryngol. 2021;7(4):62-68.
Available From
https://opthalmology.medresearch.in/index.php/jooo/article/view/204

To Browse

Manuscript Received	Review Round 1	Review Round 2	Review Round 3	Accepted
2019-07-19	2010-07-21	2019-07-30	2019-11-25	2019-12-25

Conflict of Interest	Funding	Ethical Approval	Plagiarism X-checker	Note
No	Nil	Yes	9%	

Introduction

Uveitis is characterized not only by inflammation of the uveal tract but also involves the retina and vitreous either directly or indirectly and is prevalent all over the world. [1] It predominantly affects patients in the working-age group, mainly 20-60 years.[2] The average annual incidence of Uveitis is estimated to be approximately 14–17 per 1,00,000 and increases to a peak in the 20–50 age group, after which it declines. [3-6] Geographically, the prevalence of Uveitis varies worldwide and is estimated to be 730 per 100 000 in India.[7] Uveitis can cause devastating visual loss, and in the developed countries, it's the fifth commonest cause of visual loss.

It accounts for about 10–15% of the cases of total blindness according to WHO definition and up to 20% of legal blindness. [3,1] Uveitis may be induced by infection, autoimmune disease, trauma or malignancy.[2] Standardization of Uveitis Nomenclature (SUN) has divided Uveitis into four types – anterior, intermediate, posterior and panuveitis, according to their anatomical location. [8] The pattern of Uveitis is mainly influenced by many factors, including genetic, ethnic, geographic distribution, environmental factors, diagnostic criteria and referral patterns.[9] The pattern, diagnosis, pathogenesis and presentations of Uveitis vary due to the appearance of newer uveitic entities and even with improved and advanced diagnostic techniques.

However, in approximately 30–40% of newly diagnosed uveitis patients, it's still challenging to reach a definite diagnosis. [10-13] The results of various epidemiological studies on Uveitis in different geographical regions provide relevant clinical and research applications. Several studies have been published on the pattern of Uveitis in various geographic areas from Western and Asian countries that show similarities and differences in epidemiological profiles and aetiologies of Uveitis. [3-7,9-14,16-25] Hence, we plan a study to identify the clinical pattern of Uveitis and evaluation of the etiological factors in the regional institute in Punjab and its surrounding areas.

Materials and methods

Study setting: Department of ophthalmology in a regional eye institute of North India

Study duration: Jul 2012 to Jan 2014

Ethical considerations and permission: Ethical approval from the ethical committee of the institute was taken before the commencement of the study. Also, written informed consent from each subject participating in the survey was taken after explaining the purpose of the study.

Study Type: A prospective cross-sectional study

Sampling method and size: A convenient sample of 100 patients with Uveitis in the working-age group of 20–60 years from the outpatient department.

Inclusion criteria:

- Diagnosed cases of Uveitis
- Age group 20-60 years
- Both sexes

Exclusion criteria:

- Cases < 20 or > 60 years
- Cases with previous surgery, trauma or other ocular diseases.

Methodology

All subjects underwent complete ophthalmological examination, including best-corrected visual acuity using Snellen's chart, slit lamp examination, anterior chamber depth assessment using Van Herick technique, IOP measurement (Schiotz/ applanation tonometer), fundus examination using +90 D lens, and indirect ophthalmoscope was used to examine the periphery. The diagnosis was made according to the criteria for Uveitis by the International Uveitis Study Group (IUSG) in 2008 [15] and The Standardization of Uveitis Nomenclature (SUN) working group.[8] The inflammation was defined as acute if symptoms were present for less than three months, chronic if symptoms were present for three months or more and recurrent if there were two episodes of inflammation separated by a disease-free period. Each patient's demographic data, laterality, anatomical site of inflammation, aetiology, course and duration of follow up was recorded in a tabulated form. The information thus obtained was analyzed and compared with other studies using descriptive statistics.

Results

In our study, we found 57% males (57 out of 100) and 43% females. The mean age was 41.55years (males: 41.58 years, females: 41.39 years).

The most common (30% cases) age group was 41-50 years and included 28% males and 32.55% females. Uniocular involvement was observed in 68%, whereas 32% of cases showed bilateral involvement. Acute Uveitis was diagnosed in 32% of patients, and chronic Uveitis in 68% of cases. According to anatomical classification, the most common type of Uveitis was anterior Uveitis (83%), Followed by posterior Uveitis (7%), panuveitis (6%) and intermediate Uveitis (4%), as shown in Table 1.A definite association with the systemic disease was determined in 27% of cases. However, no specific aetiology or association with systemic diseases could be established in 73% of cases. In most cases, the systemic disease was not suspected before eye involvement and was recognized only after the subsequent diagnostic procedures.

Table 1: showing Distribution according to the anatomical and aetiological classification of Uveitis in Percentage

Aetiology of Uveitis	Anterior Uveitis (Out of 83)		Intermediate Uveitis (out of 4)		Posterior Uveitis (out of 7)		Panuveitis (out of 6)	
Idiopathic	64	77.11%	03	75%	04	57.13%	02	33.33%
Ankylosing Spondylitis	06	7.23%	-	-	-	-	-	-
Herpes zoster	06	7.23%	-	-	-	-	-	-
Tuberculosis	03	3.61%	-	-	02	28.57%	01	16.67%
HIV	01	1.21%	-	-	01	14.30%	01	16.67%
Sarcoidosis	01	1.21%	01	25%	-	-	01	16.67%
Ulcerative Colitis	02	2.41%	-	-	-	-	-	-
Endophthalmitis	-	-	-	-	-	-	01	16.67%
Total	83	100%	04	100%	07	100%	06	100%

The most common specific diagnosis for anterior Uveitis was ankylosing spondylitis and herpes zoster in 6 patients each (7.23% of anterior uveitis patients), followed by Tuberculosis (3 out of 83 patients). [Table1] In posterior Uveitis, the most common specific diagnosis was Tuberculosis (28.57% of posterior uveitis patients). [Table1] In panuveitis, the particular diagnosis could be established in 4 patients, and in intermediate Uveitis, only one patient was diagnosed having HIV. [Table1]

Discussion

Our study provides information about the pattern of Uveitis in a regional eye institute and identifies the uveitic entities typical for this region. Adults are most often affected with Uveitis in both the developed and developing world. [16,18] The previous clinical studies showed mean age between 35 and 45years [16-18], and approximately 60%-80% of all patients were in 30-60-years of life. [17,18] In our study, the commonest age group affected with Uveitis was between 41-50 years, and the mean age was 41.55 years at first presentation. Among males, the mean age was 41.58 years, and in females, 41.39 years. Table 2 shows the comparative values of mean age found in various studies carried out in different regions. [19-23]Mercanti et al. found the mean age of 44.36 years in their study [19], and these findings were very close to our research. One of the studies found that the mean age in males was 34.4 years and in females 31.7 years. [21] Other studies found a mean age of 32.5 years in males and 30.8 years in females, respectively.[22] Most published reports showed a relatively equal gender distribution in uveitis patients. However, we found male predominance (57%) in our study compared to other studies. [19,21,24] Table 2 compares various studies [19-23] regarding the anatomical distribution of Uveitis.

Table 2. Comparison of the anatomical distribution of Uveitis (% of the total patients)

Study	Present Study 2014	Mercanti et al [19] 2001	Khairallah M et al [20] 1992-2003	Singh R et al [21] 2004	Das D et al [22] 2005	Shirahama et al [23] 2013-15
Total Patients	100	655	472	1233	308	750

Mean age in years	41.55	44.36	34	31- 34	30 - 32.5	56.4± 18.9
Anterior Uveitis	83	58.01	35.2	49.23	47.07	38.5
Intermediate Uveitis	4	2.9	15.5	16.06	12.98	1.6
Posterior Uveitis	7	26.11	28.2	20.03	29.87	12.5
Panuveitis	6	12.98	21.2	14.68	10.06	47.3

In our study, anterior Uveitis (83%) was the predominant anatomical type of Uveitis. It was higher than that reported in other studies. [19-23, Table 2] In contrast, Shirahama et al. [23] reported Panuveitis (47.3%) as a joint entity in their study at central Tokyo (Table 2) difference in the pattern might be because of geographic, nutritional and socioeconomic differences.

Table 3. Comparison of studies according to the aetiological distribution of cases in Percentage

Diagnosis	Aetiology	Present Study 2014	Mercanti et al [19] 2001	Khairallah M et al [20] 1992 -2003	Singh R et al [21] 2004	Das D et al [22] 2005	Zheng Y et al [24] 2008- 2011
Anterior uveitis	Idiopathic	64	33.5	35.5	30.2	45.51	33.7
	Ankylosing Spondylitis	6	1.6	4.8	8.8	23.44	2.0
	Herpes Simplex/ Zoster	6	---	33.7	---	0.3	4.0
	Tuberculosis	3	3.6		3.9		
	HIV	1					
	Sarcoidosis	1		1.2			
	Ulcerative colitis	2		0.6			
Intermediate uveitis	Idiopathic	3	1.06	86.3	14.6	77.5	
	Tuberculosis	---		1.4	0.6	1.3	
	HIV	--		---	---		
	Sarcoidosis	1		8.2	0.6	12.5	
Posterior uveitis	Idiopathic	4	5.4	10.5	4.9	19.56	11.6
	Tuberculosis	2	2.5		1.8	1.6	
	HIV	1	---		---	---	
	Toxoplasmosis	---	15.7	38.3	1.6	40.21	1.0
Panuveitis	Idiopathic	2		30	---	1.6	4.5
	Tuberculosis	1	0.7	3	3.8	--	1.0
	HIV	1				--	
	Sarcoidosis	1	0.4		1.3	1.6	--
	VKH	---	1.3	15	3.5	2.9	
	Endophthalmitis	1					1.5

In our study, the most frequent entity diagnosed was idiopathic anterior Uveitis (64% of total cases) which was similar to a study conducted in Southern China by Zheng Y et al. [14], who found 65% of anterior uveitis cases to be idiopathic. Our study observed ankylosing spondylitis and Herpes zoster (6% each) as the most common underlying cause for non-infective anterior Uveitis, similar to studies by Dipankar Das et al. [22], who found 23.44% of cases with ankylosing spondylitis and Singh et al. [21] found 8.8% cases with ankylosing spondylitis as the most frequent non-infective cause for Anterior Uveitis. (Table 3) Khairallah et al. [20] found Herpes (33.7%) as the most common non-infective cause for anterior Uveitis, followed by ankylosing spondylitis. (Table 3) Amongst infective causes for anterior Uveitis, Tuberculosis (3%) was a common cause consistent with studies conducted in North India [21] and Italy. [19] The prevalence of intermediate Uveitis in our study was very low (4%), which was similar to the study conducted in Italy [19] that showed 2.9% prevalence (Table 2), except the studies conducted in other parts of India that showed approximately 13 to 16% cases of intermediate Uveitis. [21,22]

In our study, no aetiological cause for intermediate Uveitis was found. The results were similar to other studies that found that various systemic disorders, including sarcoidosis, TB and multiple sclerosis, are associated with intermediate Uveitis. [16-18] We found sarcoidosis as an infective cause for intermediate Uveitis in 1% of cases. (Table3) The leading cause for posterior Uveitis was also idiopathic (4%) in our study, consistent with studies by R Singh et al. [21] and Zheng Y et al. [24]. In contrast, other studies [19,20,22] found toxoplasmosis as the leading cause.

Das et al. found 40.21% cases of toxoplasmosis as a causative agent in posterior Uveitis. [22, Table 3] Another infective cause for posterior Uveitis was Tuberculosis in 2% of patients in our study (Table 3), comparable to other studies. [19,21,22] The incidence of HIV retinopathy was 1% in our study compared to 0.55% (2 out of 366) cases reported by Biswas et al. [25]. Panuveitis is relatively uncommon in the Western region. [17,18,26] We found no aetiological cause in 33.33% (2 out of 6 cases, Table 1), which was consistent (30 out of 472) with a study conducted in Tunisia.[20] Other infective causes for panuveitis were Tuberculosis, HIV, sarcoidosis and endophthalmitis (1% each) in our study.

Tuberculosis was found to be one of the causative factors in panuveitis in various studies. [19-21,24, Table 3] However, Mercanti et al. [19] and Das D et al. [22] found VKH as a common infective entity in panuveitis, and Khairallah et al. [20] and R Singh [21] found VKH as the second common infective cause for panuveitis. (Table3) Sarcoidosis was also one of the causes for panuveitis in our study and other compared studies in Table 3. [19,21,22]. Our study also found metastatic endophthalmitis as a cause for panuveitis, similar to findings in a study by Zheng Y et al. [24] In.

In our study, the most common cause for Uveitis was idiopathic in all forms of Uveitis which was inconsistent with most of the studies conducted in different parts of the world. [19-22,24] There were differences in respect to the aetiological distribution of Uveitis according to the regional and ethnic variation throughout the world [19-23] and also between secondary, tertiary and regional institutes in India itself. [21,22,25] Small sample size and the referral bias amongst the cases may be limitations in our study, but consistent results with other extensive studies were encouraging.

Conclusion

Uveitis is a complex intraocular inflammatory disease resulting from several aetiological entities, and causes of Uveitis vary depending upon ecological, nutritional, racial and socioeconomic conditions in different populations. Hence the correct diagnosis of Uveitis is often challenging due to varied pathogenesis and presentations within a community.

What this study adds to the existing knowledge

Awareness of regional differences in the disease pattern is essential as these are continuously changing. This will help in facilitating the clinician to reach the final diagnosis and deriving a region-specific list of differential diagnoses.

Contribution details

Dr Inderjit Kaur has conceptualized the study, prepared, verified all the drafts and approved the final draft. **Dr Pratibha Malhotra** has designed the study protocol, conducted the ophthalmological examination and data collection. **Dr Mandeep Kaur** has done the manuscript writing and all correspondence. **Dr Prempal Kaur and Dr Inderjit Kaur** have provided vital inputs and supported the study. **Dr Neeraj Malhotra** has done radiological diagnosis and orthopaedic assessment of cases.

Reference

01. Nussenblatt RB. The natural history of Uveitis. Int Ophthalmol. 1990 Oct;14(5-6):303-8. *doi: 10.1007/BF00163549 [Crossref][PubMed][Google Scholar]*

02. Suttorp-Schulten MS, Rothova A. The possible impact of Uveitis in blindness: a literature survey. Br J Ophthalmol. 1996 Sep;80(9):844-8. *doi: 10.1136/bjo.80.9.844 [Crossref][PubMed][Google Scholar]*

03. Darrell RW, Wagener HP, Kurland LT. Epidemiology of Uveitis, Incidence and prevalence in a small urban community. Arch Ophthalmol. 1962 Oct;68:502-14. *doi: 10.1001/archopht.1962.00960030506014 [Crossref][PubMed][Google Scholar]*

04. Vadot E, E Barth, and P Billet. Epidemiology of uveitis-preliminary-results of a prospective-study in savoy. acta ophthalmologica, Dept ohpthalmology, dk-8000 aarhus, denmark: arhus univ hospital. 1984. *[Crossref][PubMed][Google Scholar]*

05. Baarsma GS. The epidemiology and genetics of endogenous Uveitis: a review. Curr Eye Res. 1992;11 Suppl:1-9. *doi: 10.3109/02713689208999505 [Crossref][PubMed] [Google Scholar]*

06. Tran VT, Auer C, Guex-Crosier Y, Pittet N, Herbort CP. Epidemiology of Uveitis in Switzerland. Ocul Immunol Inflamm. 1994;2(3):169-76. *doi: 10.3109/09273949409057073 [Crossref][PubMed] [Google Scholar]*

07. Dandona L, Dandona R, John RK, McCarty CA, Rao GN. Population based assessment of Uveitis in an urban population in southern India. Br J Ophthalmol. 2000 Jul;84(7):706-9. *doi: 10.1136/bjo.84.7.706 [Crossref][PubMed][Google Scholar]*

08. Jabs DA, Nussenblatt RB, Rosenbaum JT. Standardization of Uveitis Nomenclature (SUN) Working Group, Standardization of uveitis nomenclature for reporting clinical data, Results of the First International Workshop. Am J Ophthalmol. 2005 Sep;140(3):509-16. *doi: 10.1016/j.ajo.2005.03.057 [Crossref][PubMed] [Google Scholar]*

09. Weiner A, BenEzra D. Clinical patterns and associated conditions in chronic Uveitis. Am J Ophthalmol. 1991 Aug 15;112(2):151-8. *doi: 10.1016/s0002-9394(14)76694-2 [Crossref] [PubMed][Google Scholar]*

10. Nakahara H, Kaburaki T, Takamoto M, Okinaga K, Matsuda J, Konno Y, et al. Statistical analyses of Endogenous Uveitis Patients (2007-2009) in central Tokyo area and Comparison with Previous Studies (1963-2006). Ocul Immunol Inflamm. 2015 Aug;23(4):291-296. *doi: 10.3109/09273948.2014.920036 [Crossref] [PubMed][Google Scholar]*

11. Goto H, Mochizuki M, Yamaki K, Kotake S, Usui M, Ohno S. Epidemiological survey of intraocular inflammation in Japan. Jpn J Ophthalmol. 2007 Jan-Feb;51(1):41-4. *doi: 10.1007/s10384-006-0383-4 [Crossref][PubMed][Google Scholar]*

12. Keino H, Nakashima C, Watanabe T, Taki W, Hayakawa R, Sugitani A, Okada AA. Frequency and clinical features of intraocular inflammation in Tokyo. Clin Exp Ophthalmol. 2009 Aug;37(6):595-601. *doi: 10.1111/j.1442-9071.2009.02102.x [Crossref][PubMed][Google Scholar]*

13. Nakahara H, Kaburaki T, Tanaka R, Takamoto M, Ohtomo K, Karakawa A, et al. Frequency of Uveitis in the Central Tokyo Area (2010-2012). Ocul Immunol Inflamm. 2017;25(sup1):S8-S14. *doi: 10.3109/09273948.2015.1133840 [Crossref] [PubMed][Google Scholar]*

14. Miettinen R. Incidence of Uveitis in Northern Finland. Acta Ophthalmol (Copenh). 1977 Apr;55(2):252-60. *doi: 10.1111/j.1755-3768.1977.tb 01306.x [Crossref][PubMed][Google Scholar]*

15. Deschenes J, Murray PI, Rao NA, Nussenblatt RB; International Uveitis Study Group. International Uveitis Study Group (IUSG): clinical classification of Uveitis. Ocul Immunol Inflamm. 2008 Jan-Feb;16(1):1-2. *doi: 10.1080/09273940801899822 [Crossref][PubMed][Google Scholar]*

16. London NJ, Rathinam SR, Cunningham ET Jr. The epidemiology of Uveitis in developing countries. Int Ophthalmol Clin. 2010 Spring;50(2):1-17. *doi: 10.1097/IIO.0b013e3181d2cc6b [Crossref] [PubMed][Google Scholar]*

17. Rathinam SR, Namperumalsamy P. Global variation and pattern changes in the epidemiology of Uveitis. Indian J Ophthalmol. 2007 May-Jun;55(3):173-83. *doi: 10.4103/0301-4738.31936 [Crossref][PubMed][Google Scholar]*

18. Shams, Hormoz, et al. Epidemiology and prevalence of Uveitis: a literature review. Iranian Journal of Ophthalmology. 2009: 4-16. *[Crossref] [PubMed][Google Scholar]*

19. 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 Feb;79(1):64-8. doi: 10.1034/j.1600-0420.2001.079001064.x [Crossref] [PubMed][Google Scholar]*

20. Khairallah M, Yahia SB, Ladjimi A, Messaoud R, Zaouali S, Attia S, et al. Pattern of uveitis in a referral centre in Tunisia, North Africa. Eye (Lond). 2007 Jan;21(1):33-9. *doi: 10.1038/sj.eye.6702111 [Crossref][PubMed][Google Scholar]*

21. Singh R, Gupta V, Gupta A. Pattern of Uveitis in a referral eye clinic in north India. Indian J Ophthalmol. 2004 Jun;52(2):121-5. *[Crossref] [PubMed][Google Scholar]*

22. 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 Mar-Apr;57(2):144-6. *doi: 10.4103/0301-4738.45506 [Crossref][PubMed] [Google Scholar]*

23. Shirahama S, Kaburaki T, Nakahara H, Tanaka R, Takamoto M, Fujino Y, et al. Epidemiology of Uveitis (2013-2015) and changes in the patterns of Uveitis (2004-2015) in the central Tokyo area: a retrospective study. BMC Ophthalmol. 2018 Aug 2;18(1):189. *doi: 10.1186/s12886-018-0871-6 [Crossref][PubMed][Google Scholar]*

24. Zheng Y, Zhang LX, Meng QL, Zhang M, Cui Y, Liu QY, et al. Clinical patterns and characteristics of Uveitis in a secondary hospital in southern China. Int J Ophthalmol. 2015 Apr 18;8(2):337-41. *doi: 10.3980/j.issn.2222-3959.2015.02.22 [Crossref] [PubMed][Google Scholar]*

25. Biswas J, Narain S, Das D, Ganesh SK. Pattern of Uveitis in a referral uveitis clinic in India. Int Ophthalmol. 1996-1997;20(4):223-8. *doi: 10.1007/BF00175264 [Crossref][PubMed][Google Scholar]*

26. Jones NP. The Manchester Uveitis Clinic: the first 3000 patients--epidemiology and casemix. Ocul Immunol Inflamm. 2015 Apr;23(2):118-26. *doi: 10.3109/09273948.2013.855799 [Crossref] [PubMed][Google Scholar]*