

Referral Process in Patients with Uveitis: A Challenge in the Health System

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Purpose: To describe the evaluation and referral process from a group of patients with uveitis presented at a specialized uveitis center in Bogotá, Colombia.

Methods: An observational descriptive cross-sectional study was performed. After applying the selection criteria, 315 clinical records were recovered. Univariate and bivariate analyses were used, reporting proportions, means and standard deviations.

Results: The mean age of the sample was 45.23 years old and 63.8% of them were females. Patients were mostly referred by retina specialists, general ophthalmologists, rheumatologists, and cornea specialists. Meantime between the first ocular symptom and uveitis specialist evaluation was 2.08 years. Patients had been previously evaluated by a mean of 1.9 ophthalmologists. In 79.9% of patients, inflammation was recognized by the remittent; however, only 4.7% of patients were correctly graded according to SUN classification. At first time consultation with the uvea specialist, 52.1% of the patients arrived with an adequate infectious panel, 58.1% with an adequate rheumatologic panel, 11.6% with aqueous humor PCR study, 65.1% with an initial etiological diagnosis, 34.9% with inadequate topical treatment, and 59.6% with inadequate systemic treatment. The mean time to reach a diagnosis by the uvea specialist was 5.27 weeks (0.10 years). A diagnostic coincidence was not reached in 58.7% of the cases.

Conclusion: The referral process to uveitis specialists is complex but highly relevant for those who suffer from this pathology. Health professionals must be aware of the standardized classification of the disease, the appropriate treatment according to the classification, and early referral to the uveologist with adequate laboratory tests.

Keywords: uveitis, referral and consultation, ophthalmologists, disease management, diagnosis, Colombia

Plain Language Summary

Uveitis is an ocular inflammatory disease that can be caused by infectious and non-infectious etiologies. Due to its complexity, many cases are not easily recognized, which may lead to complications. This is why this pathology must be treated by an ophthalmologist specialized in the disease, a uveitis specialist. We consider it is crucial to study the referral process to the uveitis specialist and its possible role in the disease. The aim of this article is to describe the evaluation and referral process from a group of patients with uveitis presented at a specialized uveitis center in Bogotá, Colombia. We included 315 patients (63.8% females) with a mean age of 45.23 years old. Patients were mostly referred by retina specialists and general ophthalmologists. Time elapsed until the uveitis consultation was 2.08 years and patients were previously evaluated from 0 to 6 ophthalmologists. Intraocular inflammation was recognized in 79.9% of patients but was classified according to

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a standardized classification in only 4.7% of the cases. More than a half of the patients were referred with adequate laboratories and 11.6% with aqueous humor PCR. 53.3% were referred with an initial etiological diagnosis, 34.9% with inadequate topical treatment, and 59.6% with inadequate systemic treatment. The mean time to reach a diagnosis by the uvea specialist was 5.27 weeks. Diagnostic coincidence was not reached in 58.7% of the cases. This study is important as it leads us to recognize what is failing and what should we improve in the referral process of uveitis patients.

Background

Uveitis comprises a diverse group of intraocular inflammatory conditions, including a variety of disorders that can involve not only the uvea but also the retina, the optic nerve, and the vitreous. Uveitis can be restricted to the eye or related to systemic diseases.¹ It can be idiopathic, autoimmune, masquerade or caused by numerous infectious agents.² It can vary regarding its clinical course, treatment, and prognosis. Whereas some forms of uveitis have a limited course and a favorable prognosis, requiring a short-term treatment, other forms have a prolonged course with severe visual compromise, requiring long-term treatment.¹

Due to the complexity of uveitis cases, many of them are not easily recognized, the diagnosis can be delayed, and this can lead to irreversible complications. That is why this pathology must be treated by a uveitis specialist.³

In the Colombian health system, the initial attention of the patient is performed by a general practice physician, who decides if the patient must or must not be evaluated by a specialist, in this case, an ophthalmologist.⁴ The ophthalmologist determines if the patient needs to be evaluated by a subspecialist, in this case, a uveitis specialist.⁵ These evaluations are usually performed in an outpatient setting and appointments can take up to months. Additionally, in Colombia, there are few specialists in uveitis, and they are located in the main cities of the country (Bogotá, Cali, Medellín, and Bucaramanga).

We consider it is crucial to study the phenomenon of referral to the uveitis specialist and its possible role in the outcomes of patients with uveitis.

This article aims to describe the evaluation and referral process from a group of patients with uveitis presented at a specialized uveitis center in Bogotá, Colombia, from the onset of the symptoms to their final diagnosis.

Methods

Design

We conducted an observational descriptive cross-sectional study in patients diagnosed with uveitis presented at a reference uveitis center in Bogotá, Colombia.

Population

Clinical records between 2013 and 2018 were reviewed. Inclusion criteria were 1) patients diagnosed with uveitis, 2) patients referred for the first time to the uveitis consultation, and 3) patients evaluated from 2013 to 2018. Exclusion criteria were 1) patients previously evaluated by another uvea specialist and 2) medical records of patients with incomplete data. After applying inclusion and exclusion criteria, 315 clinical records were recovered.

Data Recollection

We elaborated and validated a database in Microsoft Excel (Microsoft Corp., Redmond, WA, USA). Variables included in the database were: type of specialist who referred the patient, pertinent diagnosis, treatment and categorization of inflammation and uveitis, time between symptoms and evaluation, consistency between referral doctor and uveitis specialist diagnosis and infectious and rheumatologic requested profiles. Evaluation and categorization of intraocular inflammation and uveitis was taken into account only if the specialist who referred the patient was an ophthalmologist, as they are the only specialist who can assess these findings.

Statistical Analysis

We statistically analyzed the associations between the outcomes of interest and other variables using classical univariate and bivariate analysis. The Kruskal–Wallis test was used to compare quantitative versus categorical variables, and the chi-square test was used to compare categorical versus categorical variables. Results are described by proportions, means and standard deviations.

Results

Demographics

We evaluated 315 clinical records of patients referred to the uveitis consultation. The proportion of female patients was 63.8%. The age varied between 1 and 85 years old, with a mean age of 45.23 years old. More detailed information is shown in [Table 1](#).

Table 1 Patients Demographic Description

Variables	Results	
Sample	315 patients	
Mean age	45.23 ± 20.03 years	
Sex	Female	201 patients (63.8%)
	Male	114 patients (36.19%)

Referring Specialists

The patients were mostly referred by retina specialists, general ophthalmologists, rheumatologists, and cornea and anterior segment sub-specialists. More detailed information is shown in [Table 2](#).

Time elapsed between the appearance of symptoms and the uveitis specialist's first evaluation varied between 1 and 1042 weeks, with a mean of 108.5 weeks (2.08 years). When evaluating causative diagnosis, infectious uveitis time was shorter than non-infectious uveitis. Unexpectedly, posterior uveitis was the most rapidly referred, followed by intermediate uveitis, panuveitis and anterior uveitis.

Before uveitis first consultation, patients were evaluated by 0 to 6 ophthalmologists, with a mean of 1.9 ± 1.09 .

Detailed information is shown in [Table 2](#).

Ophthalmological Evaluation

Since only ophthalmologists count with the tools to perform an adequate ophthalmological examination, the variables of inflammation recognition and classification, and uveitis classification according to the SUN⁶ were evaluated only if the patient was referred by an ophthalmologist. Therefore, the results will be presented according to a 214 patients sample.

In 79.9% of the patients referred to the uveitis consultation, inflammation was recognized. However, inflammation was only classified by the SUN Working Group Grading Scheme for Anterior Chamber Cells⁶ in 4.7% of the cases.

Additionally, only 14.5% of the cases were classified according to the SUN Working Group Descriptors of Uveitis (anatomy, onset, duration, and course).⁶ Retina specialists, general ophthalmologists, cornea/anterior segment specialists and neuro-ophthalmology specialists were the professionals that correctly used the descriptors. Incomplete uveitis classification was performed in 48.1% of the cases and 37.4% of the patients were referred to uveitis specialist without uveitis classification. More

detailed information about ophthalmological examination is found in [Table 3](#).

Diagnostic Approach

At the time of the first uveitis consultation, 65.1% of patients were referred with an etiological diagnosis, and approximately more than half of them arrived with an adequate infectious panel (52.1%) and rheumatological panel (58.1%). Investigation panel differed among anatomical diagnoses; infectious panel was more asked in posterior uveitis, while rheumatologic panel was more requested in panuveitis. General lab test request was greater in posterior uveitis, followed by panuveitis, anterior uveitis and intermediate uveitis.

Only 69 patients required aqueous humor Polymerase Chain Reaction (PCR) study. Nevertheless, solely 11.6% of these patients had this laboratory requested. Retina specialists, general ophthalmologists, glaucoma specialists, and neuro-ophthalmology specialists requested this test.

More detailed information about the diagnostic approach description is found in [Table 4](#).

Management Approach

Patients were referred with adequate topical treatment in 65.1% of the cases. Overall referral with the correct systemic therapy (n=315) was 32%. However, only 250 patients needed systemic treatment, from which 59.6% were referred to uveitis specialists without the correct therapy.

Systemic therapies in prescription order included immunomodulators, antibiotics for antiparasitic use, biologicals, antivirals, corticosteroids, and antibiotics. Immunomodulators and biological therapies were mostly prescribed by rheumatologists; corticosteroids and antibiotics for antiparasitic use by retina specialists; antivirals by retina specialists; and antibiotics by pediatric rheumatologists.

More detailed information about the management approach description is found in [Table 5](#).

Uvea Specialist Evaluation

The time required by the uvea specialist to reach a final diagnosis varied between 0 and 94 weeks, with a mean of 5.27 weeks (0.1 years). In 81.3% of the patients, a final etiological diagnosis was reached, 72.3% corresponded to non-infectious uveitis, and 27.7% to infectious uveitis. Regarding anatomical classification, anterior uveitis was the most common, followed by panuveitis, posterior uveitis and intermediate uveitis.

Table 2 Referral Specialists Description

	Referring Specialist		Time Between First Symptom or Episode and Uvea Specialist Evaluation	Number of Previous Ophthalmologists Who Evaluated the Patient	
	n	%	Weeks	Ophthalmologists	
General	n = 315		108.5 ± 164.2	1.91 ± 1.09	
Retina specialist	111	35.2	87.6 ± 128.1	2 ± 1.09	
General ophthalmologist	57	18.1	129.4 ± 223.8	1.67 ± 0.92	
Rheumatologist	45	14.3	149.1 ± 179	1.65 ± 1.05	
Cornea and anterior segment specialist	28	8.9	74 ± 84.8	2.23 ± 1.11	
Non-informed	23	7.3	87.4 ± 128.8	2.06 ± 1.55	
Other	19	6	144 ± 221.6	2 ± 1.22	
Glaucoma specialist	10	3.2	79.2 ± 149	1.67 ± 0.87	
Pediatric rheumatologist	8	2.5	136.3 ± 161.3	1.86 ± 0.38	
Oculoplastics specialist	3	1	44	4 ± 1.41	
Pediatric ophthalmologist	3	1	87.3 ± 68	1.33 ± 0.58	
General practice physician	2	0.6	20	1	
Neurologist	2	0.6	4	3	
Neuro-ophthalmology specialist	2	0.6	156	1.5 ± 0.71	
Internist	1	0.3	52	NA	
Optometrist	1	0.3	520	1	
Time between first symptom or episode and uvea specialist evaluation by uveitis type	Causative diagnosis	n = 256			
		Infectious		107 ± 154.5	
		Non-infectious		123.6 ± 208.6	
	Anatomical diagnosis	n = 315			
		Anterior		122.65 ± 180.5	
		Intermediate		65.57 ± 132.27	
		Posterior		64.31 ± 132.27	
Panuveitis		96.4 ± 133.06			

When evaluating overall diagnostic coincidence (n=315), referral diagnosis was incorrect in 58.7% of the cases. However, diagnostic coincidence was evaluated when the patient was referred with an initial etiological diagnosis and a final etiological diagnosis was reached by the uvea specialist; 177 patients met the criteria. Diagnostic coincidence was not reached in 26.6% of the cases. Non-infectious uveitis diagnosis (63.8%) was easier to reach than infectious uveitis (36.2%).

More detailed information about the uvea specialist evaluation is shown in [Table 6](#).

Discussion

To the best of our knowledge, we are presenting the first study about the referral process in uveitis patients in Colombia and the second worldwide.⁷

Demographic characteristics of uveitis reported in studies made in tertiary centers of uveitis worldwide

Table 3 Ophthalmological Examination Description

	Intraocular Inflammation Recognition	Intraocular Inflammation Classification According to the SUN*	Complete Uveitis Classification According to the SUN*	Incomplete Uveitis Classification According to the SUN*
	n = 214	n = 214	n = 214	n = 214
Retina specialist	98	9	20	52
General ophthalmologist	42	1	7	27
Cornea and anterior segment specialist	18	0	3	13
Glaucoma specialist	6	0	0	7
Oculoplastics specialist	2	0	0	2
Pediatric ophthalmologist	3	0	0	2
Neuro-ophthalmology specialist	2	0	1	0

Abbreviation: SUN*, standardization of uveitis nomenclature.⁶

coincide with our study results. For example, Archarya et al exposed that uveitis incidence is usually higher in female patients⁸ and similarly, Jones et al exposed that uveitis patients' age varies between 16 and 65 years.⁹ Both results agree with the Felfeli et al study, which reported a mean age of 48 ± 19 years and a female percentage of 57.⁷

More than one-third of the patients included in this study were referred by retina specialists, followed by general ophthalmologists. Likewise, Felfeli et al reported retina and ophthalmology to be the most common referring specialties.⁷ Due to the small number of uveologists available, patients are usually first referred to the retina specialist or general ophthalmologists and they are the ones who refer the patient to the uvea specialist. This step may represent a delay in referral and diagnostic time, as well as complications secondary to ocular inflammation. A correlation between referral time and complications, as well as visual impairment, has been described in a pediatric population with uveitis.¹⁰

A meantime of 108.5 weeks (2.08 years) elapsed between the first uveitic episode and the uvea specialist evaluation. Similarly, a study describing the mean uveitis duration in pediatric patients at the moment of assisting to the Massachusetts Eye and Ear Infirmary was 2 years.¹⁰ Closely, a study reporting ocular complications in pediatric uveitis described a mean time of 1.79 years between uveitis diagnosis made by an ophthalmologist and arrival to the center.¹¹ Consultation time might be influenced by a

lack of knowledge about the disease diagnosis and treatment approach, and the administrative processes that are performed before assisting to the uveitis consultation. Contrarily, Felfeli et al reported an average waiting time of 49 ± 49 days, which might be attributed to a bigger number of available centers for uveitis attention in countries such as Canada.⁷

In the same way, infectious and posterior uveitis were more rapidly referred than the other ones. This might be attributed to a referral by ophthalmologists in most of the cases, making easier the recognition of posterior damage such as toxoplasmic retinochoroidal scars, and a higher request of laboratory tests, while patients with other types of uveitis were referred, not only by ophthalmologists, but by other types of medical practitioners and specialists. Unexpectedly, anterior uveitis was the type that presented the longest referral time. This might be due to the fact that anterior uveitis is usually managed with topical corticosteroids, and until there are no recurrences, patients are usually not referred. Also, some patient records demonstrated that sometimes anterior uveitis is incorrectly diagnosed and mis-treated as conjunctivitis. Nevertheless, it is important to consider that the anterior uveitis group of patients was almost seven times greater than the posterior uveitis group, which difficult the comparison. To the best of our knowledge, there are no published data to compare this information.

Neurologists, general practice physicians, oculoplastic specialists, and internists referred in a shorter time. This might be attributed to the preference for a rapid referral

Table 4 Diagnostic Approach Description

	Patients Referred with Aqueous Humor PCR* Results	Patients Referred with an Adequate Infectious Panel	Patients Referred with an Adequate Rheumatologic Panel	Patient Referred with an Initial Etiological Diagnosis
	n = 69	n = 315	n = 315	n = 315
Retina specialist	4	55	56	73
General ophthalmologist	2	32	35	35
Rheumatologist	0	27	40	36
Cornea and anterior segment specialist	0	8	10	16
Non-informed	0	9	11	11
Other	0	11	11	13
Glaucoma specialist	1	5	5	5
Pediatric rheumatologist	NA	7	7	7
Oculoplastics specialist	0	2	2	3
Pediatric ophthalmologist	0	2	1	1
General practice physician	NA	1	1	2
Neurologist	0	2	2	1
Neuro-ophthalmology specialist	1	1	1	2
Internist	NA	1	0	0
Optometrist	NA	1	1	0
Diagnostic approach by anatomical diagnosis		n = 315		
		Infectious Panel	Rheumatologic Panel	General Lab Test Request
		n (%)	n (%)	%
	Anterior	93 (46.7)	109 (54.8)	50.75
	Intermediate	7 (41.2)	9 (52.9)	47.05
	Posterior	23 (76.7)	19 (63.3)	70
Panuveitis	39 (56.5)	48 (69.6)	63.05	

Abbreviation: PCR*, Polymerase chain reaction.

since, although these specialists know uveitis causative etiologies and their dangerous consequences, they do not have a deep knowledge of specific ophthalmological management of the uveal diseases. Nevertheless, it is difficult to perform a comparison between specialties, as there was a great variation in the number of patients referred by each one. No published data are available to compare this information.

Although the mean of ophthalmologists evaluating the patients before the uveitis consultation was not high (1.91), the standard deviation shows cases in which patients were evaluated by up to 6 ophthalmologists. This might be attributed to patients that have to consult to multiple specialists as they do not have an answer for their ocular complaints. There are no published data to compare this information.

Table 5 Management Approach Description

	Patients Referred with an Adequate Topical Treatment	Patients Referred with an Adequate Systemic Treatment
	n = 315	n = 250
Retina specialist	67	24
General ophthalmologist	37	18
Rheumatologist	33	24
Cornea and anterior segment specialist	19	7
Non-informed	15	8
Other	15	7
Glaucoma specialist	6	3
Pediatric rheumatologist	5	5
Oculoplastics specialist	1	1
Pediatric ophthalmologist	2	2
General practice physician	2	0
Neurologist	2	2
Neuro-ophthalmology specialist	0	0
Internist	0	0
Optometrist	1	NA
Type of Systemical Treatment Used		
	n = 101	
	n	%
Corticosteroids	12	11.88
Antibiotic for antiparasitic use	21	20.79
Antiviral	13	12.87
Antibiotic	1	0.99
Immunomodulator	39	38.61
Biological	15	14.85

One of the positive points in this study is that inflammation was recognized in almost 80% of the patients referred to by ophthalmologists. Nonetheless, the SUN Working Group Grading Scheme for Anterior Chamber Cells⁶ is not being adequately used; only some retina specialists and general ophthalmologists graded anterior chamber cells according to this classification. This

represents a systematic mistake since it does not allow the uvea specialist to recognize the previous disease course and therapy effectiveness. It would be ideal that each ophthalmologist could classify anterior chamber inflammation by the SUN Working Group Grading Scheme for Anterior Chamber Cells.⁶

On the other hand, in most cases, incomplete use of the SUN Working Group Descriptors of Uveitis⁶ was performed. This implies that even though the classification is known, it has not been completely adopted by ophthalmologists. The complete use of the SUN Working Group Descriptors of Uveitis⁶ would help to determine etiology, the need for treatment change, and patient prognosis in a faster way. Retina specialists, general ophthalmologists, and cornea/anterior segment specialists referred a bigger quantity of patients with an adequate classification of the disease. Thus, we consider these specialties are more related to uveitis patients and could have more extended knowledge of the disease. There are no published data about the use of the SUN classification by ophthalmology subspecialist,⁶ thus, no comparison could be performed.

Almost half of the patients arrived at the uveitis consultation without an adequate request for laboratory tests. Similarly, Felfeli et al reported 53% of their patients arrived at the uveitis consultation without an adequate test pool,⁷ which delays and difficults proper management and referral. Infectious and rheumatologic panels were adequately requested mostly by internal medicine and pediatric specialties. These specialties are the ones that showed extended knowledge of infectious and autoimmune diseases that can compromise the eye. However, we have to understand that patients with ocular manifestations primarily consult ophthalmologists.

Multiplex PCR is used to discard differential etiologic diagnosis in patients with infectious uveitis. It measures the genomic DNA of *Herpesviridae* family, *Toxoplasma gondii*, and mycobacteria. The calculated sensitivity percentage is around 91.3%, specificity 98.8%, positive predictive value 98.6%, and negative predictive value 92.4%.¹² Although it is fairly new, it is a very important diagnostic tool of which ophthalmologists should be informed to generate greater use of it. According to our results, retina specialists, general ophthalmologists, glaucoma specialists, and neuro-ophthalmology specialists are the ones who most frequently use this diagnostic method. Nevertheless, our study showed a higher percentage of use of this laboratory test (11.5%) than Felfeli et al, that

Table 6 Uvea Specialist Evaluation Description

The time required by the uvea specialist to reach a final diagnosis	5.27 ± 12.98 weeks (0.10 ± 0.24 years)		
	n	%	
Final uveitis causative diagnosis	n = 256		
	Infectious	71	27.73
	Non-infectious	185	72.27
Final uveitis anatomical diagnosis	n = 315		
	Anterior	199	63.17
	Intermediate	17	5.40
	Posterior	30	9.52
	Panuveitis	69	21.90
Coincidence between referral specialist diagnosis and uveitis specialist diagnosis	n = 177		
	Retina specialist	43	
	General ophthalmologist	22	
	Rheumatologist	24	
	Cornea and anterior segment specialist	10	
	Non-informed	7	
	Other	8	
	Glaucoma specialist	4	
	Pediatric rheumatologist	7	
	Oculoplastics specialist	2	
	Pediatric ophthalmologist	1	
	General practice physician	1	
	Neurologist	NA	
	Neuro-ophthalmology specialist	1	
	Internist	NA	
Optometrist	0		

(Continued)

Table 6 (Continued).

Diagnostic coincidence according to uveitis final diagnosis	n = 130		
	Infectious	47	36.15
	Non-infectious	83	63.85

calculated a 2% use of this diagnostic tool in all their sample.⁷

Approximately half of the patients are arriving with an established diagnostic suspicion. Likewise, Felfeli et al exposed that 45% of their patients arrived at the consultation with a suspected etiology.⁷ Nevertheless, although we understand the diagnostic confirmation is made by the uvea specialist, it is always important to have a concept from the referring specialist as it helps the approach to a diagnostic impression.

In 65.1% of the patients, adequate topical treatment was initiated, which indicates initial treatment is being established. Topical treatment implies a lower systemic compromise and it is known for being used in other ophthalmologic conditions, this is why is widely used. Meanwhile, adequate systemic treatment was initiated only in 41.22% of the cases. These systemic therapies require strict follow-up by specialties such as internal medicine, rheumatology, infectology, and other subspecialties. We understand that establishing systemic treatment is not an obligation for the general ophthalmologist, but the uvea specialist. Nevertheless, because of the lack of uvea specialists in the medical Colombian system, the responsibility of early referral to establish early management lies in ophthalmologists. This information coincides with data exposed by Felfeli et al, which exposed that 48% of the patients were referred with topical steroids and 10% with systemic immunosuppressants.⁷

Acute episodes of the disease can be managed with corticosteroids. Nonetheless, definitive treatment must be established with immunomodulators or antibiotics, depending on the etiology. The use of these systemic medications requires adequate follow-up. This is why, if the classification is not correctly performed, follow-up cannot be assured and treatment cannot be established.

The mean time required by the uvea specialist was 5.27 weeks (0.1 years). This time is adequate due to the nature of the disease that needs a very extensive evaluation. However, there is a wide standard deviation, which

might be attributed to delays in our health system that does not allow the patient to have a continuous and rapid follow-up. It could be as well explained by full agendas of few available uvea specialists and the patients' own decisions to quit consultation. Rosenberg et al showed that in 31% of the patients, the diagnosis was performed at the time of the first consultation.¹¹ Additionally, uvea specialist diagnostic performance was really high. It might not be 100% because of the reasons mentioned before.

Despite it is not the aim of this study, we realized that the prevalence of non-infectious diseases in the uveitis clinic has increased, in contrast to previous studies of our consultation.¹³ Felfeli et al report a higher prevalence of non-infectious uveitis than infectious uveitis.⁷ We consider that this is secondary to a greater understanding of the need for an ophthalmologist, in this case, the uvea specialist, in the management of rheumatologic patients.

In the same way, we evidenced that diagnostic coincidence was greater in non-infectious uveitis than infectious uveitis. This might be attributed to a higher percentage of patients referred with non-infectious uveitis diagnosis.

Limitations

There were large differences between the number of patients referred by each specialty, which diffculted the comparison between the groups.

We included patients who are still being studied for their uveitis etiology, so the percentage of patients with a final diagnosis may be underestimated. This is why uvea specialist diagnostic performance may present a slight increase.

Conclusion

The process of referring patients to uveitis specialists is complex but highly relevant for those who suffer from this pathology. Health professionals' education about awareness of the standardized classification of the disease, the appropriate treatment according to the classification, and early referral to the uveologist with adequate laboratory tests, is the most suitable solution in health systems where the availability of uveitis specialists is limited. We recommend the study of referral and attention approaches such as nurse triage system, accessibility and availability of specialists, open-access scheduling, nurse practitioners, telephone follow-up consultations, email consultations, and questionnaire standardization in the uveitis and Latin American context. Finally, the referral of the patient to the

uveologists should not mean that they are the only doctors treating the pathology; these patients' treatment requires a multidisciplinary team composed of rheumatologists, internists, neurologists, infectologists, and other ophthalmology specialists, among others, depending on the etiology.

Abbreviations

ADLT, Alejandra de-la-Torre; AV, Alejandra Villalobos; JMO, Juliana Muñoz Ortiz; JRG, Juliana Reyes Guanes; MAE, María Andrea Estevez; MRS, Mario Ramos-Santodomingo; VB, Valentina Balaguera; PCR, polymerase chain reaction; SUN, standardized uveitis nomenclature.

Data Sharing Statement

The datasets used and/or analyzed during the current study are available by the corresponding author on reasonable request.

Ethics Approval

This study adheres to the ethical principles for human research established by the Helsinki Declaration, the Belmont Report, and Colombian Resolution 008430 from 1993. The confidentiality of the information has been preserved based on the Habeas data law (Organic Law 1581 of 2012). This investigation was presented to Escuela Superior de Oftalmología del Instituto Barraquer de América's research ethics committee. However, as it is a retrospective study and according to the policies of the institution, it did require a registration process but did not require an ethics committee approval process. It was presented, as well, to Universidad del Norte's research ethics committee, obtaining protocol and research approval.

Consent for Publication

As it is a risk-free research, researchers are exempt, by the Colombian Resolution 008430 from 1993, from obtaining informed consent.

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Author Contributions

All authors contributed to data analysis, drafting or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version

to be published, and agree to be accountable for all aspects of the work.

Disclosure

The authors declare that they have no competing interests in this work.

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