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Original Article

Clinical patterns of uveitis in two ophthalmology centres in Bogota, Colombia

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Abstract

Purpose: To describe the distribution pattern and the clinical features of uveitis in two ophthalmology referral centres in Colombia.

Methods: This was a retrospective study in which clinical records of patients attending the centres between 1996 and 2006 were systematically reviewed. Data were analysed and compared with previous reports.

Results: Uveitis was found in 693 patients: 335 men (48.3%) and 358 women (51.7%). The mean age for the first presentation was 31.7 ± 18.3 years. Unilateral (73.4%), acute (68.3%), posterior (35.9%) and non-granulomatous (90.6%) were the most common types of uveitis found in the sample. Toxoplasmosis was the most frequent cause in this study followed in order by idiopathic and toxocariasis. Vogt–Koyanagi–Harada, Behçet's disease, sarcoidosis and white dot syndromes were less common. Some causes such as systemic lupus erythematosus and tuberculosis were extremely rare. Presumed ocular histoplasmosis, onchocerciasis and Lyme disease were absent.

Conclusions: The results of this study provide the first report of clinical patterns for uveitis in Colombia. This study will enhance awareness of uveitis, and data should assist in the development of public health policies in our population for the improvement of patient outcomes.

Key words: aetiology, classification, Colombia, epidemiology, uveitis.

Introduction

Uveitis is the most common form of ocular inflammatory disease, and it causes blindness and visual impairment in many countries. The annual incidence of uveitis varies between 17.4 and 52.4 per 100 000 cases and the prevalence between 38 and 714 per 100 000 cases.[1–3] It has been considered that uveitis is responsible for approximately 10% of all visual impairments in the Western world with up to 35% of uveitis patients experiencing diminution of visual acuity or legal blindness.[3–5] Uveitis may occur at any age, but most commonly afflicts people between 20 and 59 years of age.[1,3,6,7] Numerous studies have been performed worldwide to determine the distribution, clinical patterns and aetiology of uveitis as this knowledge may assist in improving the management of the disease.[3] In addition, these studies have shown an important relation between uveitis aetiology and genetic, ethnic, geographic, environmental and socioeconomic factors.[8,9] Few studies have been performed in South America and Central America,[10,11] where it has been more common for studies to be focused on specific diseases such as toxoplasmosis, pars planitis, onchocerciasis or Vogt–Koyanagi–Harada disease.[12–18] In the present study we retrospectively reviewed the clinical records of uveitis patients who were seen between January 1996 and May 2006 at two ophthalmology referral centres in Bogotá, Colombia. Our purpose was to describe the distribution pattern, clinical features

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and aetiology of uveitis in this region. The current data were analysed and compared with studies published in worldwide medical literature.

Methods

We retrospectively reviewed the clinical records of all patients (113 317) who were seen in the 'Fundacion Oftalmologica Nacional' (FUNDONAL), a university referral centre for a large area, and 'San Jose, ophthalmology center', a private practice centre in Bogota, Colombia. These records covered patients seen between January 1996 and May 2006. Foreign patients and those patients with direct trauma leading to inflammation were excluded.

Patient information was gathered from the databases, of both centres including age, gender, race, age at onset, age at presentation, laterality, anatomic diagnosis, course of the disease, type of uveitis, aetiological diagnosis and complications. Patients were classified according to the Standardization of Uveitis Nomenclature for Reporting Clinical Data as having anterior uveitis, posterior uveitis, intermediate uveitis or panuveitis.[19]

Each patient underwent a complete history and ophthalmological examination including slit-lamp biomicroscopy, tonometry, indirect ophthalmoscopy, evaluation of the best-corrected visual acuity (BCVA) and initial laboratory tests (blood cell count with differential, erythrocyte sedimentation rate, urine analysis and venereal disease research laboratory test). Additional ophthalmic tests (e.g. fluorescein angiography, indocyanine green angiography, optical coherent tomography, visual field testing) were performed when indicated. Other auxiliary examinations were carried out where necessary in order to make diagnoses. These examinations included X-rays, computed tomography, magnetic resonance imaging, HLA-B27/B51/DR4/A29 typing, C-reactive protein, serum angiotensin-converting enzyme, lysozyme, serum calcium, antinuclear antibodies, antineutrophil cytoplasmic antibodies (p-ANCA and c-ANCA), extractable nuclear antibodies (ENAS), rheumatoid factor, anticardiolipin antibodies, fluorescent treponemal antibody absorption test, purified protein derivative, *Toxoplasma* antibodies, *Toxocara* antibodies, *Herpes simplex*, *Herpes zoster* and *Cytomegalovirus* antibodies, *Borrelia* antibodies and enzyme-linked immunosorbent assay and Western blot for HIV. The cases for which diagnosis could not be determined were classified as uveitis of idiopathic cause. Diagnoses were based on clinical and laboratory findings. The group termed 'undetermined' included patients in whom the diagnosis could not be made because of incomplete evaluation and testing (including both those that were pending and those that could not be performed because of economic difficulties). A descriptive statistical analysis for each one of the variables was performed. For statistical analysis the program Statcalc of Epi-info version 3.3 (Center for Disease Control and Prevention, Atlanta, GA, USA) was used.

Results

Our study group consisted of 693 patients with uveitis clinical records from two ophthalmology referral centres, with a point prevalence of 600 per 100 000 consultations (0.0060%). Of these patients, 335 (48.4%) were male and 358 (51.7%) female. The mean age for both groups was 31.7 ± 18.3 years with a range of 0–81 years. Of the cases 73.4% ($n = 509$) were unilateral. One hundred per cent of patients were Hispanic. The demographics of the study population are summarized in Table 1.

Posterior uveitis was the most common localization ($n = 249$, 35.9%) followed by panuveitis ($n = 214$, 30.9%), anterior uveitis ($n = 200$, 28.9%) and intermediate uveitis ($n = 30$, 4.3%). Most cases of anterior, posterior and panuveitis were unilateral, in contrast to the intermediate uveitis, which was 60% bilateral ($n = 18$) and 40% unilateral ($n = 12$). Most of the uveitis cases presented an acute pattern of disease ($n = 473$, 68.3%). Non-granulomatous uveitis was much more common than granulomatous inflammation (90.6% *vs.* 9.4% respectively, as shown in Table 2).

A specific diagnosis was made in 417 (60.1%) cases (Table 2). In 146 (21.1%) of the patients a specific diagnosis could not be made. In general, toxoplasmosis was the most frequent cause with 276 cases (39.8%) followed by idiopathic uveitis with

Table 1. Demographics of the uveitis study population

Demographics	Anterior uveitis	Posterior uveitis	Intermediate uveitis	Panuveitis	Total
Age (years), mean ± SD					
At presentation	46.5 ± 17.5	34.1 ± 18.6	30.3 ± 19.9	37.6 ± 16.9	38.6 ± 18.6
At onset	40.3 ± 17.9	25.3 ± 17.5	24.3 ± 18.3	31.8 ± 16.0	31.7 ± 18.3
Gender, *n* (%)					
Female	103 (51.5)	127 (51.0)	14 (46.7)	114 (53.3)	358 (51.7)
Male	97 (48.0)	122 (49.0)	16 (53.3)	100 (46.7)	335 (48.3)
Total, *n* (%)	200 (28.9)	249 (35.9)	30 (4.3%)	214 (30.9)	693 (100.0)

Table 2. Distribution of uveitis according to different classification criteria

Characteristics	Anterior uveitis	Posterior uveitis	Intermediate uveitis	Panuveitis	Total
	n (%)	*n* (%)	*n* (%)	*n* (%)	*n* (%)
Ocular involvement					
Bilateral	43 (21.7)	64 (25.7)	18 (60.0)	59 (27.3)	184 (26.6)
Unilateral	155 (78.3)	185 (74.3)	12 (40.0)	157 (73.5)	509 (73.4)
Course					
Acute	135 (67.5)	195 (78.3)	19 (63.3)	124 (57.9)	473 (68.3)
Chronic	23 (11.5)	11 (4.4)	4 (13.3)	43 (20.1)	81 (11.7)
Recurrent	42 (21.0)	43 (17.3)	7 (23.3)	47 (22.0)	139 (20.1)
Type of inflammation					
Granulomatous	13 (6.5)	36 (14.5)	0 (0.0)	16 (7.5)	65 (9.4)
Non-granulomatous	187 (93.5)	213 (85.5)	30 (100.0)	819 (92.5)	628 (90.6)

Table 3. Causes of uveitis

Diagnosis	Number	Per cent	Gender distribution *n* (%)	
			Male	Female
Toxoplasmosis	276	39.8	137 (49.6)	139 (50.4)
Idiopathic	130	18.8	58 (44.6)	72 (55.4)
Toxocariasis	44	6.3	18 (40.9)	26 (59.1)
Lens-induced uveitis	13	1.9	4 (30.8)	9 (69.2)
Herpes simplex virus	12	1.7	8 (66.7)	4 (33.3)
Cytomegalovirus	11	1.6	11 (100.0)	0 (0.0)
Rheumatoid arthritis	8	1.2	3 (37.5)	5 (62.5)
Vogt–Koyanagi–Harada syndrome	8	1.2	1 (12.5)	7 (87.5)
Ankylosing spondylitis	6	0.9	6 (100.0)	0 (0.0)
Juvenile idiopathic arthritis	5	0.7	2 (40.0)	3 (60.0)
Behçet's disease	4	0.6	2 (50.0)	2 (50.0)
Syphilis	4	0.6	1 (25.0)	3 (75.0)
Fuchs heterochromic iridocyclitis	4	0.6	1 (25.0)	3 (75.0)
Herpes zoster virus	3	0.4	1 (33.3)	2 (66.7)
Sarcoidosis	2	0.3	1 (50.0)	1 (50.0)
Others	17	2.3	6 (35.3)	11 (64.7)
Undetermined	146	21.1	75 (51.4)	71 (48.6)

130 cases (18.8%). Men and women were affected by toxoplasmosis, idiopathic uveitis and toxocariasis, at the same frequencies (Table 3).

In patients with anterior uveitis, idiopathic uveitis was the most common aetiology ($n = 51$, 25.5%) (Table 4), followed by *H. simplex* ($n = 11$, 5.5%). The most common cause of posterior uveitis and panuveitis was toxoplasmosis ($n = 170$, 67.2% and $n = 104$, 46.6% respectively) (Tables 5,6). Intermediate uveitis was caused mostly by idiopathic uveitis ($n = 29$, 96.7%). In patients with idiopathic intermediate uveitis, 90% ($n = 27$) were pars planitis (Table 7).

Of the toxoplasmosis cases 21% were bilateral ($n = 58$) whereas 11.4% of the toxocariasis cases were bilateral ($n = 5$). Of the idiopathic uveitis 59.2% ($n = 77$) were unilateral (Table 8).

Table 9 shows the distribution of anatomical forms of uveitis according to age. Posterior uveitis was the most common in patients younger than 16 years of age. Panuveitis was the most frequent in individuals between the ages of 16 and 60 years, and anterior uveitis was the most common in patients over the age of 60 years. Table 10 shows the predominant diagnosis in the different age groups. Toxoplasmosis was the most common diagnosis in all groups of age (Table 10).

Discussion

This retrospective study describes a large population of patients seen in two ophthalmology referral centres in Bogotá, Colombia over a 10-year period. In this study, the patient population had a homogeneous ethnic background as all patients were considered Hispanic, different from other studies with a variety of ethnic groups.[20,21] The mean age of uveitis onset was 31.7 ± 18.3, similar to the finding reported in North Africa (34 years[22]), which was

Table 4. Causes of anterior uveitis

Diagnosis	Number	Per cent	Gender distribution *n* (%)	
			Male	Female
Idiopathic	51	25.5	23 (45.1)	28 (54.9)
Herpes simplex virus	11	5.5	7 (63.6)	4 (36.4)
Lens-induced uveitis	9	4.5	3 (33.3)	6 (66.7)
Rheumatoid arthritis	6	3.0	2 (33.3)	4 (66.7)
Ankylosing spondylitis	5	2.5	5 (100.0)	0 (0.0)
Fuchs heterochromic iridocyclitis	4	2.0	1 (25.0)	3 (75.0)
Juvenile idiopathic arthritis	4	2.0	2 (50.0)	2 (50.0)
Herpes zoster virus	2	1.0	1 (50.0)	1 (50.0)
Toxoplasmosis	2	1.0	1 (50.0)	1 (50.0)
Toxocariasis	2	1.0	1 (50.0)	1 (50.0)
Crohn's disease	1	0.5	0 (0.0)	1 (100.0)
CREST syndrome	1	0.5	0 (0.0)	1 (100.0)
Systemic lupus erythematosus	1	0.5	0 (0.0)	1 (100.0)
Sjögren syndrome	1	0.5	0 (0.0)	1 (100.0)
Relapsing polychondritis	1	0.5	0 (0.0)	1 (100.0)
Cytomegalovirus	1	0.5	1 (100.0)	0 (0.0)
Behçet's disease	1	0.5	0 (0.0)	1 (100.0)
Syphilis	1	0.5	0 (0.0)	1 (100.0)
Possner–Schlossman syndrome	1	0.5	0 (0.0)	1 (100.0)
Drug-induced uveitis	1	0.5	0 (0.0)	1 (100.0)
Tuberculosis	1	0.5	1 (100)	0 (0)
Undetermined	93	46.5	49 (52.7)	44 (47.3)

CREST; calcinosis, Raynaud phenomenon, esophageal dysmotility, sclerodactyly and telangiectasia.

Table 5. Causes of posterior uveitis

Diagnosis	Number	Per cent	Gender distribution *n* (%)	
			Male	Female
Toxoplasmosis	170	67.2	85 (50.0)	85 (50.0)
Toxocariasis	37	14.6	15 (40.5)	22 (59.5)
Idiopathic	9	3.6	3 (33.3)	6 (66.7)
Cytomegalovirus	5	2.0	5 (100.0)	0 (0.0)
Behçet's disease	1	0.4	1 (100.0)	0 (0.0)
Birdshot retinochoroidopathy	1	0.4	0 (0.0)	1 (100.0)
Cisticercosis	1	0.4	1 (100.0)	0 (0.0)
Serpiginous choroiditis	1	0.4	1 (100.0)	0 (0.0)
Eales disease	1	0.4	1 (100.0)	0 (0.0)
IRVAN syndrome	1	0.4	1 (100.0)	0 (0.0)
Masquerade syndrome	1	0.4	1 (100.0)	0 (0.0)
Sympathetic ophthalmia	1	0.4	0 (0.0)	1 (100.0)
Shyphilis	1	0.4	1 (100.0)	0 (0.0)
Undetermined	19	7.6	11 (57.9)	8 (42.1)

IRVAN; idiopathic retinal vasculitis, aneurism and neuroretinitis.

younger than found in previous reports (approximately 40 years).[23,24] Similar to other studies, there was no significant gender difference.[6–9,20,25,26] However, a study, published by Soheilian *et al.*,[8] showed idiopathic panuveitis was slightly more common in women (Table 3).

By considering the uveitis classification criteria, the most common types of uveitis in our study were unilateral, posterior, acute and non-granulomatous. Our study differs in some important aspects from similar studies. The majority of previous studies found that anterior uveitis was the most frequent anatomical distribution, particularly in Western countries, accounting for about 50–60% of all uveitis cases in most tertiary referral centres and around 90% in primary care settings.[27] In contrast, our study

Table 6. Causes of panuveitis

Diagnosis	Number	Per cent	Gender distribution *n* (%)	
			Male	Female
Toxoplasmosis	104	46.6	51 (49.0)	53 (51.0)
Idiopathic	41	31.5	17 (41.5)	24 (58.5)
Vogt–Koyanagi–Harada syndrome	8	3.6	1 (12.5)	7 (87.5)
Toxocariasis	5	2.2	2 (40.0)	3 (60.0)
Cytomegalovirus	5	2.3	5 (100.0)	0 (0.0)
Lens-induced uveitis	4	1.8	1 (25.0)	3 (75.0)
Rheumatoid arthritis	2	0.9	1 (50.0)	1 (50.0)
Behçet's disease	2	0.9	1 (50.0)	1 (50.0)
Syphilis	2	0.9	0 (0.0)	2 (100.0)
Ankylosing spondylitis	1	0.5	1 (100.0)	0 (0.0)
Multifocal choroiditis	1	0.5	1 (100.0)	0 (0.0)
Juvenile idiopathic arthritis	1	0.5	0 (0.0)	1 (100.0)
Herpes zoster virus	1	0.5	0 (0.0)	1 (100.0)
Herpes simplex virus	1	0.5	1 (100.0)	0 (0.0)
Sarcoidosis	1	0.5	0 (0.0)	1 (100.0)
Churg–Strauss syndrome	1	0.5	0 (0.0)	1 (100.0)
Undetermined	34	23.3	18 (52.9)	16 (47.1)

Table 7. Causes of Intermediate uveitis

Diagnosis	Number	Per cent	Gender distribution *n* (%)	
			Male	Female
Idiopathic	29	96.7	14 (48.3)	15 (51.7)
Pars planitis	27	90	14 (51.9)	13 (48.1)
Sarcoidosis	1	3.3	1 (100.0)	0 (0.0)

found that posterior uveitis was the most frequent anatomical distribution followed by panuveitis, anterior uveitis and intermediate uveitis. The higher frequency of posterior uveitis may be related to the high rate of toxoplasmosis and toxocariasis that we found. Intermediate uveitis had a similar distribution to the rest of the world.[3,8] Bilateral involvement was more frequent in intermediate uveitis whereas unilateral involvement was the most common in the rest of the cases (Table 2). This finding is similar to previous reports.[8]

A specific aetiological diagnosis was reached in 60.1% of the cases, similar to previous studies. The reported frequency of a specific entity underlying uveitis varies from 47.1% to 69.7%.[20,22,23,27–29] In our study the main aetiology was toxoplasmosis, whereas in other studies was idiopathic.[3,8] North American,[20,24,30] European,[7,28,29,31–35] South American[10,11] and African studies (excluding onchocerciasis cases)[36] also show toxoplasmosis as the most frequent cause of posterior uveitis. A large number of our patients with anterior uveitis, the second most frequent cause of uveitis, had unknown aetiology, again, similar to many other studies.[8,10,37] Only one study reported the most frequent cause of anterior uveitis was ankylosing spondylitis.[38] One limitation in our cohort is that human leukocyte antigen (HLA)-B27 was one of the main diagnostic parameters that could not be determined because of economic difficulties. This meant 93 (46%) of our patients with anterior uveitis were labelled as undetermined. A large number of them theoretically could be HLA-B27 positive and later would develop ankylosing spondylitis.

In contrast with the results of a study performed in Argentina,[10] where panuveitis was the most common anatomical classification, our study found panuveitis was the second most common anatomical classification. Similar to the findings of a study conducted in Brazil,[11] the most common cause of panuveitis in our study was toxoplasmosis. Although in Argentina panuveitis was caused mainly by Vogt–Koyanagi–Harada disease followed by toxoplasmosis and Behçet's disease,[10] our study found a smaller prevalence of Vogt–Koyanagi–Harada and Behçet's disease. In our study, Behçet's disease was present only in four patients (0.6%) as shown in Table 3. Noteworthy, as compared with other studies, including those from South America, the percentages of Vogt–Koyanagi–Harada and Behçet's disease were lower, representing less than 1% of all uveitis. Although the aetiology and pathogenesis of these diseases are unclear, there exists a genetic component in Behçet's disease that is less frequent in our population.

In the largest population-based uveitis study in the USA (a 1-year-long retrospective cohort in Northern California[2]) the incidence of uveitis was approxi-

Table 8. Uveitis causes and affected eye

Diagnosis	Number	Per cent	Eye affected *n* (%)	
			Unilateral	Bilateral
Toxoplasmosis	276	39.8	218 (79.0)	58 (21.0)
Idiopathic	130	18.8	77 (59.2)	53 (40.8)
Toxocariasis	44	6.3	39 (88.6)	5 (11.4)
Lens-induced uveitis	13	1.9	11 (84.6)	2 (15.4)
Herpes simplex virus	12	1.7	12 (100.0)	0 (0.0)
Cytomegalovirus	11	1.6	8 (72.7)	3 (27.3)
Rheumatoid arthritis	8	1.2	6 (75.0)	2 (25.0)
Vogt–Koyanagi–Harada syndrome	8	1.2	1 (12.5)	7 (87.5)
Ankylosing spondylitis	6	0.9	3 (50.0)	3 (50.0)
Juvenile rheumatoid arthritis	5	0.7	0 (0.0)	5 (100.0)
Behçet's disease	4	0.6	0 (0.0)	4 (100.0)
Syphilis	4	0.6	1 (25.0)	3 (75.0)
Fuchs heterochromic iridocyclitis	4	0.6	4 (100.0)	0 (0.0)
Herpes zoster virus	3	0.4	3 (100.0)	0 (0.0)
Sarcoidosis	2	0.3	0 (0.0)	2 (100.0)
Others	17	2.3	8 (47.1)	9 (52.9)
Undetermined	146	21.1	115 (78.8)	31 (21.2)

Table 9. Distribution of anatomical forms of uveitis according to age

Age	Anterior uveitis *n* (%)	Posterior uveitis *n* (%)	Intermediate uveitis *n* (%)	Panuveitis *n* (%)	Total *n* (%)
Under 16 years	17 (13.5)	69 (54.8)	13 (10.3)	27 (21.4)	126 (19.6)
16–60 years	145 (31.4)	140 (30.3)	14 (3.0)	163 (35.3)	462 (71.9)
Over 60 years	27 (49.1)	13 (23.6)	1 (1.8)	14 (25.5)	57 (8.6)

Table 10. Distribution causes of uveitis by age

Under 16 years		16–60 years		Over 60 years	
Cause	*n* (%)	Cause	*n* (%)	Cause	*n* (%)
Toxoplasmosis	47 (37.3)	Toxoplasmosis	203 (43.9)	Toxoplasmosis	10 (18.2)
Toxocariasis	28 (22.2)	Idiopathic	81 (17.5)	Idiopathic	9 (16.4)
Idiopathic	29 (23.0)	Toxocariasis	12 (2.6)	Herpes simplex	5 (9.1)
Juvenile idiopathic arthritis	4 (3.2)	Cytomegalovirus	9 (1.9)	Lens-induced	5 (9.1)
Others	7 (5.6)	Others	46 (10.1)	Others	13 (22.8)
Undetermined	11 (8.7)	Undetermined	111 (24.0)	Undetermined	16 (29.1)
Total	126 (100.0)	Total	462 (100.0)	Total	55 (100.0)

mately three times higher than the incidence found in US population-based uveitis study, which analysed 10 years of consultations in Minnesota.[1] The first study could be extrapolated for a 10-year period, resulting in a prevalence of 602.9 cases/100 000 persons. This is three times higher than the result reported by Darrell *et al.*[1] The prevalence of uveitis in our study (600 cases/100 000 consultations) is very similar to the prevalence found in Northern California (602.9/100 000 persons). However, it should be noted that the two populations are different. Our study describes the prevalence in the people who went for a consultation at an ophthalmology centre (referral) whereas in Gritz and Wong's study the prevalence was described in a community (general population). Additionally, in the California study there was a predominance of uveitis in the elderly whereas in our study most of those with uveitis were young adults. Thus, there are two populations with high rates of uveitis that may have different aetiologies. In our case the origin is mostly infectious, but unfortunately the causes in California were not described. The demographic variety in Gritz and Wong's study reflects today's increasingly diverse US population (4 immigrants per 1000 habitants; http://www.cnn.com/2006/US/10/17/300.

million.over/index.html), whereas our study covers a relatively homogeneous Hispanic population due to a very low immigration rate in Colombia (1 immigrant per 1000 habitants) as reported by DANE (Departamento Administrativo Nacional de Estadísticas). (http://www.dane.gov.co/files/censo 2005/conceptos_basicos_cen.pdf).

It is interesting to note that infectious diseases play an important role in the aetiology of uveitis in countries as diverse as Argentina, Brazil and Sierra Leone. Notably, toxoplasmosis was the most common cause of uveitis in our study and in Brazil and Argentina (South America) but not in Sierra Leone (Africa), where onchocerciasis cases were predominant. The high prevalence of ocular toxoplasmosis reported in Argentina and other South American countries such as Brazil has been attributed to eating pork meat.[27] In Colombia one study for risk factors for *Toxoplasma* infection found that drinking beverages made with unfiltered water, consumption of rare meat or contact with cats less than 6 months old were the most important risk factors. We have estimated that drinking unfiltered water could be the origin of 50% of cases of toxoplasmosis in Colombia.[39] A high prevalence of ocular toxoplasmosis has been found in Colombia through fundoscopic screening in the general population.[40] The relevance of ocular involvement of *Toxoplasma* infection in Colombia has been shown recently by comparison of clinical cohorts in South America and Europe.[41,42] The risk of ocular lesions was much higher in Colombian and Brazilian children (47%; 18/38) than in Europe (14%, 79/550), and also the crude risk of intracranial lesions was much higher in the cohorts from South America (53%, 20/38) than in those from Europe (9%, 49/550).[41] Additionally, a comparative prospective study of a cohort of congenitally infected children from Brazil and Europe found that in Brazilian children eye lesions were larger, more numerous and more likely to affect the macula than their counterpart in Europe.[42] This can be explained by the higher virulence of South American *Toxoplasma* strains compared with the European strains.[43]

Inflammation in ocular toxocariasis is typically unilateral. Stewart *et al.* reported 2 of 22 cases (9.1%) with bilateral inflammation;[44] we found that 5 of 39 (11.4%) cases had bilateral ocular toxocariasis. To the best of our knowledge, our report is the largest in the world for patients with bilateral ocular toxocariasis. The higher frequency of bilaterality in ocular toxocariasis could be explained by the extended dissemination and prevalence of this disease in Colombia.[45] These factors may result in an elevated parasite load.[46] Experimentally, it has been shown that there is a relationship between parasitic load and the number of ocular larvae.[47]

Other infectious entities such as ocular histoplasmosis, onchocerciasis and Lyme disease were absent.

Related to the site of inflammation, posterior uveitis was the most common presentation in patients aged under 16 years, because of the predominance of toxocariasis and toxoplasmosis. This was in contrast to other studies in which posterior uveitis was the second most common anatomic type of uveitis in children, and anterior uveitis was the most common localization and juvenile idiopathic arthritis was the most common identified aetiology.[3,48,49] Toxoplasmosis was also the main cause of uveitis in 16- to 60-year-olds and panuveitis was the most frequent localization. Although anterior uveitis was the most frequent localization, toxoplasmosis was the predominant aetiology in older patients (>60 years old). This can be related to the high percentage of undetermined causes of anterior uveitis in this group (29%) (Tables 9,10).

The lack of some confirmatory laboratory studies is a shortcoming of this study. Health insurance disparities and laboratory costs are the primary reasons for the absence of an accurate diagnosis in 21.1% of our patients.

In conclusion, our results provide the first report of clinical patterns for uveitis in Colombia. This study will enhance awareness of uveitis, and data should assist in the development of public health policies in our population for the improvement of patient outcomes.

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