

Ten Years of Epidemiological and Diagnostic Aspects of Non-Traumatic Anterior Uveitis at Campus Teaching Hospital of Lome-Togo

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Abstract

Background: Uveitis is a serious disease which dangerous complications can jeopardize the visual prognosis. Anterior uveitis (AU) is the inflammation of the anterior uvea which is composed of the iris and the ciliary body. The objective of the study was to identify the epidemiological and etiological determinants of non-traumatic anterior uveitis at the Campus Teaching Hospital of Lomé. **Materials and methods:** Retrospective cross-sectional study of the records of patients diagnosed with anterior uveitis (AU) without a notion of trauma in the ophthalmology department of CHU Campus of Lomé from January 1, 2010 to December 31, 2019 (10 years). **Results:** 141 cases of uveitis, representing a prevalence of 0.18%. Female predominance, with a sex ratio of 0.76. Mean age was 34.74 ± 13.20 years. Decreased visual acuity was the primary complaint (34.40%), followed by ocular pain (28%). Non-traumatic anterior uveitis was unilateral in 87.2% of cases. Retro-corneal precipitates were present in all patients. 61.60% of patients had Tyndall in the anterior chamber. The etiology of non-traumatic AU was undetermined in 76.80% of cases. Toxoplasmosis, tuberculosis and syphilis were the main etiologies found. **Conclusion:** Non-traumatic anterior uveitis is relatively rare but serious, often affecting young subjects. It is a pathology that engages eye health professionals, not only because of the difficulties involved in diagnosing the etiology, but also because of its progression which sometimes leads to blindness.

Keywords

Anterior Uveitis, Non-Traumatic, Epidemiology, Etiology, Lome

1. Introduction

Uveitis is a serious disease which dangerous complications can jeopardize the visual prognosis. Uveitis refers to the inflammation of the uveal tract, which is the middle vascular coat of the eye, lying between the sclera and neuro-epithelium [1] [2]. Uveitis is a rare but serious disease, with an estimated incidence of 17/100,000 in France [3]. Anterior uveitis (AU) is the inflammation of the anterior uvea which is composed of the iris and the ciliary body. The inflammation can affect either the iris (iritis), the ciliary body (cyclitis) or both (iridocyclitis). Studies of anterior uveitis in the sub-region have reported respective prevalence of 0.85% and 1.35% [4] [5].

The anatomical characterization of uveitis, its scalability mode and whether it is unilateral or bilateral are therefore essential for relevant diagnostic and therapeutic orientation [6]. The diversity of etiologies of non-traumatic anterior uveitis represents a real diagnostic and therapeutic challenge in our practice setting. Although much African research has been published on uveitis, to our knowledge few are dedicated to non-traumatic anterior uveitis [7]. The objective of this study was to identify the epidemiological and diagnostic determinants of non-traumatic anterior uveitis at the Campus teaching hospital (CHU) of Lome.

2. Patients and Methods

This ten year's retrospective cross-sectional study from January 1, 2010, to December 31, 2019, included the records of all patients who consulted the ophthalmology department of the CHU Campus of Lome and who had a diagnosis of non-traumatic anterior uveitis. The records that did not contain all the data were excluded from the study. CHU Campus of Lome is one of Togo's three reference hospitals. We obtained authorization from the Director of the CHU Campus to conduct the study. The study complied with the ethical principles set out in the Declaration of Helsinki. For each patient, the following data were collected from the consultation register and medical record:

- demographic data (age, sex);
- reason for consultation, onset, duration;
- physical signs (retro-corneal precipitates, Tyndall effects, hypopyon);
- biological tests and imaging;
- etiological diagnosis.

Operational definitions

- Tyndall in the anterior chamber: the presence of inflammatory proteins and cells circulating in the aqueous humor [8].
- Sarcoidosis was based on the granulomatous appearance of the eye damage associated with constant tuberculin anergy and other illustrative manifestations, in particular inflammatory arthralgias, and the presence of hilar and mediastinal adenopathies on chest CT scan.
- Tuberculosis was considered on the basis of a positive intradermal tuberculin test, HIV immunosuppression, radiographic injuries in favor of pulmonary

tuberculosis and granulomatous uveitis.

Qualitative variables were expressed as a number of cases and percentages and quantitative values as mean (\pm standard deviation).

3. Results

One hundred and twenty-five patients (141 eyes) out of 68,779 seen in consultation presented non-traumatic anterior uveitis, representing a prevalence of 0.18%.

The mean age of patients was 34.74 ± 13.20 years [11 years; 64 years] and the female gender was predominant with a sex ratio of 0.76 (Table 1).

Decreased visual acuity (VA), eye pain and blurred vision were the main reasons for consultation in respectively 34.40%, 28% and 20% of cases. (Table 2)

Non-traumatic anterior uveitis had a progressive onset in 57.20% of cases, and a brutal onset in 42.80%. Single episodes of non-traumatic anterior uveitis accounted for 89.60% of cases. Non-traumatic AU was unilateral in 87.20% of cases, including 49.60% in the right eye (RE) and 37.60% in the left eye (LE). Vision was low in the majority of cases, with uncorrected visual acuity (VA) between 1/10 and 3/10 in 43.26% of cases (Table 3). Retro-corneal precipitates (RCP) were found in all eyes, and Tyndall in the anterior chamber in 54.60% of cases (Table 4). According to the anatomical and clinical characteristics, retro-corneal precipitates were predominantly grayish in 58.86%, granulomatous in 29.08% and non-granulomatous in 17.02% of cases. (Table 5)

A biological inflammatory syndrome was noted in 28 cases (22.4%), with a consistently high C-reactive protein (CRP), above 6 mg/l, and a sedimentation rate (ESR) greater than 20 millimeters in the first hour in 33 cases (26.4%). HIV retroviral, toxoplasma and TPHA VDRL serologies were positive in respectively 8.8%, 2.4% and 1.6% of cases. Intradermal tuberculin testing was performed in 44.8% of patients, with 4% positive.

The presence of hilar and median adenopathies illustrating sarcoidosis detected on chest CT (2 cases) and radiographic lesions in favor of pulmonary tuberculosis (1 case) were noted. Cerebral toxoplasmosis was noticed in 5 cases (4%) after the brain CT scan.

The etiology of non-traumatic anterior uveitis was undetermined in 73.60% of cases. Infectious causes represented 17.60%, dominated by ocular toxoplasmosis in 10.40% and inflammatory causes in 8.8% of cases. (Table 6)

4. Discussion

Over a ten years period, 141 cases of non-traumatic anterior uveitis were reported at the ophthalmology department of the CHU Campus of Lome. Non-traumatic anterior uveitis was predominantly unilateral, and infections were the most important etiologies in 17.60% of cases.

The prevalence of 0.18% in this study were lower than those of Assavedo *et al.*, and Sounouvou *et al.*, on uveitis in Benin, who reported respectively 1.35% and

Table 1. Patient distribution by age and gender.

	Gender		Total	Percentage (%)
	Female	Male		
[11 - 21 years[	6	13	19	15,20
[21 - 31 years[	20	16	36	28.80
[31 - 41 years[	17	9	26	20.80
[41 - 51 years[	17	8	25	20.00
[51 - 60 years[	9	7	16	12.80
≥60 years	2	1	3	2.40
Total	71	54	125	100

Table 2. Distribution of patients by reason for consultation.

	Headcount	Percentage (%)
DVA*	43	34.40
Eye pain	35	28.00
Visual blur	25	20.00
Tearing	6	4.80
Photophobia	6	4.80
Ocular redness	6	4.80
Others ⁺	4	3.20
Total	125	100.00

*Decrease in visual acuity; ⁺Sensation of foreign body, ocular heaviness, ocular discomfort.

Table 3. Eye distribution by visual acuity.

	OD		OG		Total	
	n*	%	n*	%	n*	%
VA ⁺ < 1/10	21	26.62	25	35.48	43	30.50
1/10 ≤ VA ⁺ < 3/10	36	45.57	25	40.32	61	43.26
≥3/10	31	39.24	15	24.19	36	25.53
Total	79	100.00	62	100.00	141	100.00

*Headcount; ⁺Visual acuity.

Table 4. Physical signs of non-traumatic anterior uveitis.

	Headcount	Percentage (%)
RCP*	141	100.00
Tyndall in AC ⁺	77	54.60
High IOP ⁺⁺	37	26.24

Continued

Synechia	28	19.86
Hypopyon	3	2.13
Irial nodules (Koeppel, bussaca)	3	2.13

*Retro-corneal precipitates; + Anterior chamber; ++Intraocular pression.

Table 5. Anatomico-clinical characteristics of retro-corneal precipitates.

	Headcount	Percentage (%)
Color		
Pigmented	31	21.98
Greyish	83	58.86
Whitish	11	7.80
Size		
Fine	76	53.90
Medium	19	13.47
Large	30	21.28
Granulomatous character		
Yes	41	29.08
No	24	17.02
Undetermined	76	53.90

Table 6. Causes of non-traumatic anterior uveitis.

	Headcount	Percentage (%)
Inflammatory	11	8.80
Sarcoidosis	4	3.20
Ankylosing spondylitis	5	4.00
Juvenile idiopathic arthritis	2	1.60
Infectious	22	17.60
Toxoplasmosis	13	10.40
Tuberculosis	7	5.60
Syphilis	2	1.60
Undetermined	92	73.60
Total	125	100.00

0.65% [9] [10]. This low prevalence may be explained by the fact that, unlike other studies, the study only took into account anterior non-traumatic uveitis. The mean age of patients was 34.74 ± 13.20 years. This is lower than those of Assavedo *et al.*, and Nguyen *et al.*, who found respectively 38.4 and 47.2 years [9] [11]. It is similar to that of Ayena *et al.*, [12] who reported an age average of 35.7

years. The age group between 21 and 31 years was the most represented, with 28.80% of cases. Koffi *et al.*, and Chung *et al.*, found an age range of 21 - 40 years [13] [14]. These results confirm the observations that uveitis can occur at any age, particularly between the ages of 20 and 60 [15] [16].

A female predominance was noticed with a sex ratio of 0.76. A male predominance is often reported in the literature, with a sex ratio ranging from 1.1 to 1.5 [9] [12] [13] [17]. The difference in percentage according to sex could be explained by methodological variability in the different studies.

Non-traumatic AU was unilateral in 87.2% of cases. This result is higher than that of Souley *et al.*, who reported 60.95% of unilateral uveitis in a study of the epidemiological profile of uveitis in Morocco, and that of Maalouf *et al.*, (56.8%) [18] [19]. All these studies show that anterior uveitis is often unilateral. Visual acuity tests during the ophthalmological examination showed that all patients presented a decrease in visual acuity. This corroborates the findings of most authors, who have identified decreased visual acuity as one of the frequent signs of anterior uveitis [12] [19].

The slit-lamp examination of the patients revealed that retro-corneal precipitates (RCP) were the main clinical sign in all cases. This result is higher than that of Ayena *et al.*, [12] who found 65.5% RCP. This confirms that RCP is one of the cardinal physical signs of anterior uveitis. It should be noted that 29.60% of patients showed a high intraocular pressure. This result is higher than that of Chebil *et al.*, [20] who reported 12% of high intraocular pressure in a study conducted in Tunisia about the epidemiology of uveitis.

The etiological approach and the request for additional examinations in non-traumatic anterior uveitis must take into account the clinical features and extra-ophthalmological manifestations, hence the importance of close collaboration between the ophthalmologist and the internist. The poor technical equipment limits the etiological research of non-traumatic AU. However, a minimum check-up consisting of blood count, C-reactive protein (CRP), toxoplasmosis serology, tuberculin skin test (TST) and syphilis serology was requested. The etiologies of non-traumatic anterior uveitis in this series were dominated by toxoplasmosis (10.40%), and tuberculosis (5.60%). Causes were undetermined in 76.80% of cases. Ayena *et al.* [12] found toxoplasmosis (7.5%), and shingles (3.2%), followed by HIV (2.6%) and undetermined causes in 85.7% of cases. Chebil *et al.* [20] reported Behçet's disease (14.7%), toxoplasmosis (10.2%), Vogt-Koyanagi-Harada (VKH) (3.7%) and sarcoidosis (3.3%) as causes of anterior uveitis. These results show a wide diversity of etiological distribution from one series to another. This diversity of etiologies could be linked to genetic and socio-economic factors.

5. Limitations

One of the limitations of the study it was a retrospective cohort and patient examination was done by different personnel. The absence of anterior chamber

puncture for biological examinations in the etiological research was another limitation of this study. However, the long period of 10 years enabled to obtain a substantial sample of 141 cases of non-traumatic anterior uveitis is an asset of the study.

6. Conclusion

A retrospective cross-sectional study of non-traumatic anterior uveitis over a ten years period revealed a prevalence of 0.18%. It remains a rare but serious pathology and a cause of blindness. Non-traumatic anterior uveitis mainly affects young people with decreased visual acuity as the first reason for consultation. In most cases, the etiologies are undetermined, and when found, they are dominated by infectious causes, in particular toxoplasmosis and tuberculosis. The etiological approach must therefore be contextual and multidisciplinary, taking into account above all the clinical presentation in front of poor technical equipment. Further studies on the etiological research coupled with the therapeutic may provide a complete understanding of the particularities of non-traumatic anterior uveitis in sub-Saharan Africa.

Conflicts of Interest

The authors declare no conflicts of interest.

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