OPHTHALMOLOGIC MANIFESTATIONS OF HUMAN IMMUNODEFICIENCY VIRUS /AIDS IN MALI: IS THERE A INTERRELATION WITH THE CD4 COUNT?

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ABSTRACT

Purpose: Study the profile of ocular complications of HIV / AIDS in Mali and determine if there is an interrelation between their occurrence and the CD4 Counts.

Material and methods: Prospective study conducted at the Mali General Hospital from September 2009 to October 2010. All HIV positive patients with CD4 counts results were included in this study. They all underwent a thorough ophthalmologic examination.

Results: We collected 63 patients including 34 women (53.9%) and 29 men (46.03%). Their average age was 38.9 years ± 10.3. The ophthalmologic examination was abnormal in 39 patients (61.9%) and normal in 24 patients (38.1%). Ocular complaints were the initial manifestations of the disease in 33.3% of patients. The main lesions in the anterior segment were herpetic keratitis (9.52%) and herpes zoster ophthalmicus (12.69%). The most common lesions of the posterior segment were cytomegalovirus retinitis (12.69%) and uveitis (15.87%). The average CD4 count of 118.3 ± 106.7 mm³ in our study. 91.7% of patients with ocular complications had a CD4 count not exceeding 200/mm³. A nonlinear correlation was found between the CD4 count the onset of ocular complications.

Conclusion: With improved access to antiretroviral therapy, ophthalmologic complications of HIV / AIDS are becoming less frequent. The role of the ophthalmologist becomes essential in the diagnosis and care of patients.

Keywords: HIV/AIDS, Ocular complications, CD4 count, Mali

1. INTRODUCTION

HIV/AIDS infection rates are higher in the developing countries especially in SubSaharan countries of Africa where its progress is constant. The prevalence rate of this disease in Mali was estimated at 1.7% at the national level with a level highest among women 15 to 49 years old (2%) than men of the same age group (1.3%). The number of seropositive in Mali are in the order of 80,000 with 48,000 of them being women. Some authors have stressed the rarity of ocular complications of HIV / AIDS in Africa, especially because of premature mortality due to unavailability or inaccessibility of antiretroviral therapy [6,9,20].

According to Lewallen, it should also be noted that most studies are done in the West while the majority of sufferers are in Africa [17].

Thanks to proactive policy and international cooperation, antiretroviral treatment is increasingly available in many African states. There is a clear improvement of care and patient survival. Furthermore, the literature highlights the close relationship between the degree of immunity and occurrence of ocular complications that are due to HIV itself or to opportunistic infections [8,18,22]. One of the best indicators of waning immunity is the falling rate of CD4 count that would have a prognostic and predictive value [18,21].

Knowledge of ocular complications is important as long as they may be the cause of a mono or bilateral blindness which seriously damages the quality of life for patients living with HIV / AIDS [8,14]. To our knowledge there are few studies on ocular complications of HIV / AIDS in our country. This justifies the work whose goal is to study the profile of the ocular complications of HIV / AIDS in our midst and to determine whether there is a correlation between their occurrence and CD4 count.

2. MATERIALS AND METHODS

This is a prospective study which took place in the department of Ophthalmology and Internal Medicine, General Hospital “Gabriel Toure” in Mali from April 2009 to May 2010. All patients with positive HIV serology and CD4 count results were included in the study. The serotyping of HIV was carried out at the hospital laboratory by
enzyme-linked immunosorbent assay (ELISA) with two consecutive tests with the second test being a confirmatory test. The enumeration of lymphocyte subpopulations was performed using flow cytometry with the PLC-Facs Calibur. Each patient underwent a thorough ophthalmologic examination as including an examination with the slit lamp, a measurement of intraocular pressure, examination of the fundus and oculomotor examination. According to the guidelines of the National Committee of HIV/AIDS disease, patients with CD4 count of less than 200/mm3 must be systematically be subjected to antiretroviral therapy. Statistical analysis was performed using the Microsoft Excel 2003. We used the correlation coefficient and Spearman rank test for compliance demonstration of the correlation.

3. RESULTS
During the study period, we managed to have 135 patients with HIV-1 positive. We selected 63 patients (126 eyes) who met our inclusion criteria. The study was composed of 34 women (53.9%) and 29 men (46.03%). The average age of patients was 38.9 years ± 10.3, with extremes ranging from 22 to 69. The average age for women was 42.3 ± 19.9 years and men 35.9 years ± 8.9. On the eye, 39 patients who had pathological examination (61.9%) were symptomatic and 24 (38.1%) were asymptomatic. Sixteen of 78 eyes (20.5%) were blind. Ocular complaints were the initial manifestation in 21 patients (33.3%) including 6 ophthalnic zoster, 5 herpetic keratitis, 2 sarcoma eyelid, 3 lagophthalmos and 5 uveitis. Lesions of the anterior segment and data are compiled in Table 1. Table 2 shows lesions of the posterior segment. We observed 4 cases of bilateral blindness without apparent eye injury during the examination: 3 cerebral toxoplasmosis and 1 Cryptococcus neoformans meningitis. One patient developed a multi-ectodermose orificial Stevens-Johnson after ingestion of a drug containing a sulfonylurea. The average CD4 count was 118.3 / ± 106.7 mm 3. There is 53 patients (84.1%) with a CD4 count below 200/mm3 including 36 (57.1%) with a lower count of 100/mm3.Thirty six patients (92.3%) with ocular complications had a CD4 count of below 200/mm3. In patients with vitreoretinal lesions, the CD4 count was below 150/mm3 in 71.9% of cases. Of 24 patients; Thirteen patients (54.1%) with a normal ocular examination had a CD4 count below 200/mm3, 8 with a count below 100 / mm3 and 5 10/mm3 a lower rate. The correlation coefficient between the CD4 and ocular complications r = -0.19 and the compliance test t = 1.42.

4. DISCUSSION
The patients in our study were young and mostly women. The same observation was made by Atangana et al. in a study in Cameroon [2]. Democratic Republic of Congo, and Burundi, they were adults young males who were the most affected [9,13,19]. In Western literature, 42% to 75% of patients infected with HIV have ocular complications [1,18]. This percentage was 61.9% in our study. In other African-American studies, Kawe et al. reported 64%, Balo et al. 60.5%, and 56.9% reported by Maertens Ngoy. [5,13,19]. Among Ugandan children, Ikoon et al. found 35% of ocular complications [12]. These different results show that ocular complications are not rare in Africans living with HIV / AIDS. The lesions encountered in our patients are quite disparate and overlapping those described in the literature. In the anterior segment, damage due to herpes group viruses are most common. Indeed, herpetic keratitis and herpes zoster ophthalnicus represent 9.52% and 12.69% of cases respectively. These infections are particularly severe in immunocompromised subjects and can cause blindness [16]. Kawe et al. reported 18% of cases of herpes zoster ophthalnicus in their studies and regarded as a clinical marker of early HIV infection / AIDS [13]. In other African studies, these lesions are rare [4, 5, 19, 20]. In most viral infections, other injuries of the anterior segment are essentially paralysis of the facial nerve, and oculomotor nerve tumors. Unlike some authors who reported 20 to 50% of sarcoma among HIV positive subjects, we observed that this disease in 3.17% of cases [8]. We noted no orbital lymphoma or squamous cell carcinoma of the conjunctiva which is very common in Uganda and Malawi [23]. Our work shows that the most frequent lesions in the posterior segment are panuveitis (15.87%), followed by cytomegalovirus retinitis (12.69%) and nodules dysoriques cotton wool exudate (11.1%). For most African studies, cotton wool exudate represent the most common retinal lesion in the patient with HIV / AIDS [4,5,13,19,20]. Arruda et al. reported of 4% cases of cotton wool exudates in Portugal [1] and Ausayakhun et al. 8% in Thailand [3]. However, their presence depends on the stage of the disease and their significance in relation to the latter remains controversial. Cytomegalovirus retinitis is reported in all studies. Ausayakhun et al. found that cytomegalovirus retinitis was the most common ocular complications of HIV / AIDS [3], this is a serious complication that usually leads to loss of vision. Kestelyn and Cunningham argue that the damage is bilateral in 40% of cases [14]. Some authors believe that cytomegalovirus retinitis is rare in African patients, because they died before reaching the stage where the developed retinitis or it occurs when the patients were in severely ill conditions to carry out ophthalmological examination [14,17]. However, this complication is reported in several African studies. If Kawe et al. Maertens and Ngoy reported only 4% and 4.6% of cases respectively in their studies [13,19], Balo et al. found 20% [5] and ourselves 12.69% of cases of cytomegalovirus retinitis then indeed it is not a rare complication in African patients. In 4 of our patients with bilateral blindness, ocular examination was normal. The visual loss was more central in origin.There were 3 cases of cerebral toxoplasmosis and 1 case of Cryptococcus neoformans

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meningitis. These are very serious diseases that determine the visual prognosis in the sufferers. [14]. We observed a case of Stevens-Johnson syndrome in our study, it is a common disorder among immunocompromised patients in response to certain treatments [14]. In our studies, 84.1% of patients had a CD4 count below 200 / mm3 and the average CD4 count of 118.3 / mm3. This is 146 / mm3 in the study done by Atangana et al. conducted in Yaoundé, Cameroon [2]. Cochereau et al. found a rate higher than 100 / mm3 in 75% of their patients [9]. For 4 years, Hoover et al. conducted a study consisting of 367 patients whose CD4 count was below 100 / mm3 and among them, 71% developed CMV retinitis. [11]. This disease occurred in 19% of them before the CD4 count got below 50 / mm3. 71.9% of the patients in our study had lesions in vitreoretinal when the CD4 count was below 150 / mm3. For Arruda et al., all patients with cytomegalovirus retinitis had a CD4 count below 100 / mm3 [1]. As confirmed by our study, ocular complications occur when the rate is less than 200 CD4/mm3 [21]. Dimant et al. argue that despite antiretroviral therapy, cytomegalovirus retinitis develops when the CD4 count is too low. That's what they have shown by studying three patients whose average CD4 count was 67 / mm3 [10]. For Kuppermann et al. Cytomegalovirus retinitis is a late manifestation of AIDS and the risk of occurrence increases in patients with a very low CD4 count [15]. There is a correlation between the decreasing CD4 count and onset of ocular complications in our study (r = -0.19). But it is not linear since one third of patients without ocular complications have a CD4 count of less than 100 / mm3. However, this does not rule out the occurrence of complications later. That is why a longitudinal study seems essential to better understand this relation. Just as for antiretrovirals, an effort must be made to make CD4 count, Viral load tests and other tests affordable and accessible to all HIV/AIDS sufferers. In the absence of the latter view, Stebbing et al. have shown that TLC gave a reliable assessment of the degree of immunity. They recommend their measure instead of CD4 count in developing countries where the examination is not always feasible [21].

5. CONCLUSION
The ocular complications of HIV / AIDS exist and have no particular character in the African patients. They are even more frequent as the CD4 count is low. Their frequency is known to decrease with the constant improvement of access to antiretroviral treatment. They provide the call sign in a third of cases in our series. This means the role of ophthalmologists in diagnosis and treatment of patients with HIV/AIDS is increasingly becoming important in our country [7,13]. HIV serology should systematically be carried out in some unexplained evocative eye amaurosis. Similarly, among all HIV patients, ophthalmological examination should be part of initial assessment and regular monitoring.

6. REFERENCES
203.


[18]. MEYER D. Eye signs that alert the clinician to a diagnosis of AIDS. SADJ 2005; 60: 386- 7.


Table 1: Lesions of the anterior segment and Schedules

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Number of cases (n = 63)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blepharoconjunctivitis</td>
<td>2</td>
<td>3.17%</td>
</tr>
<tr>
<td>Molluscum contagiosum</td>
<td>1</td>
<td>1.58%</td>
</tr>
<tr>
<td>Sarcoma eyelid</td>
<td>2</td>
<td>3.17%</td>
</tr>
<tr>
<td>Sicca syndrome</td>
<td>2</td>
<td>3.17%</td>
</tr>
<tr>
<td>Oculomotor palsy</td>
<td>3</td>
<td>4.76%</td>
</tr>
<tr>
<td>Lagophthalmos</td>
<td>3</td>
<td>4.76%</td>
</tr>
<tr>
<td>Herpetic keratitis</td>
<td>6</td>
<td>9.52%</td>
</tr>
<tr>
<td>Ophthalmic zoster</td>
<td>8</td>
<td>12.69%</td>
</tr>
</tbody>
</table>

Table 2: Lesions of the posterior segment

<table>
<thead>
<tr>
<th>Lesions</th>
<th>Number of cases (n = 63)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hyalite</td>
<td>5</td>
<td>7.93%</td>
</tr>
<tr>
<td>Uveitis</td>
<td>10</td>
<td>15.87%</td>
</tr>
<tr>
<td>nodules dysoriques</td>
<td>7</td>
<td>11.1%</td>
</tr>
<tr>
<td>Optic Atrophy</td>
<td>2</td>
<td>3.17%</td>
</tr>
<tr>
<td>cytomegalovirus retinitis</td>
<td>8</td>
<td>12.69%</td>
</tr>
</tbody>
</table>