

## **Experience of a Unit of Support of People Living With HIV in Neurology Department of Chu Cocody Abidjan**

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### **Summary**

#### ***Introduction***

*Neurological manifestations during HIV infection are frequent, varied and remain a common concern in neurological practice in Abidjan. We undertook to describe the profile of patients followed in the support unit of HIV.*

#### ***Context***

*The prevalence within the Ivorian population was 4.7%, according to the EIS 2005 (Survey of AIDS indicators) (3). According to UNAIDS / WHO estimates the prevalence was 3.4% for 2009 (10). Despite this significant decline in prevalence, Côte d'Ivoire remains one of the most affected countries in the West African sub-region.*

#### ***Methodology***

*We conducted a retrospective study including all HIV positive patients, hospitalized in the service with complete immunologic tests from 2006 to 2010.*

#### ***Results***

*In total 485 HIV patients were included, of which 60% were female. The average age of the study population was 39.5 years. Opportunistic infections were dominated by cerebral toxoplasmosis (36.5%). The average rate of CD4 was 171.9 cells / mm<sup>3</sup>. The majority of patients had HIV1 (93.8%) and 55.7% of patients received triple therapy associating combination D4T + 3TC + EFV. We noted 16.3% of hospital mortality.*

#### ***Conclusion***

*The second clinical tables to HIV infection affect the young subjects with a severe immunosuppressant.*

**Keywords:** Neurologic Manifestations - HIV - Toxoplasmosis- Abidjan.

#### ***Introduction***

Infection by the Human Immunodeficiency Virus (HIV) is a public health problem and has grown into an epidemic in sub-Saharan Africa. This region remains one of the seriously affected areas with almost an adult in 20 (4.9%) living with HIV, which represents 69% or 2/3 of people living with HIV (PLHIV) in the world. (9) Neurological manifestations rank third violations during this viral disease, after digestive and skin manifestations (7). The range of neurological diseases caused by HIV is wide and interests several areas of the nervous system. The nervous system is a major target of the tumor or infectious complications during HIV infection.

In this study we wanted to make an inventory on this scourge and more precisely on its particularities in our support unit of patients living with HIV .

## **Methodology**

### **Framework and type of study**

This is a retrospective study of a 60 month period from 1<sup>st</sup> January 2006 to 31 December 2010. It took place in the neurology department of the University Hospital of Cocody (Abidjan), within which was created in 2006 a support unit for people living with HIV. Screening for HIV infection was either voluntary (voluntary testing board) or at the initiative of the health provider. The detection of HIV antibodies meets one of the following techniques: Determines and Genius II (rapid screening test) or Elisa and Western Blot (test for blood sampling).

Prescribed treatments consistent with WHO recommendations namely by first intention 2 nucleoside reverse transcriptase inhibitors (NRTIs) and one non-nucleoside reverse transcriptase inhibitor (NNRTI) and 2 nucleoside reverse transcriptase inhibitors (NRTIs) and 1 protease inhibitor (PI)

### **Inclusion criterion**

The patients in our unit are from hospitalization, neurology consultations and other services, but also subjects who voluntarily came for their screening.

Thus were included patients:

- HIV positive with neurologic disorders.
- Allowed / monitored in the service during the study period.
- With a pre therapeutic biological assessment (initial assessment)

### **Exclusion criteria**

- Refusal notified and declared of screening.
- Patients who have not honored the first appointment for the initial assessment

## **Results**

Four hundred and eighty-five patients (485) patients met the criteria mentioned above. This sample included a female predominance (60%) (291/485) with a sex ratio of 0.66 for women.

The average age of patients was 39.5 years, with extremes ranging from 10 to 84 years.

Young patients under 50 years represented 83% of the sample, among them the age group between 26 and 50 years represented for 58.6% of patients. The attacks of the central nervous system are preponderant with mainly expansive process intra cranial abscess type (37.5%) and tables of encephalitis (24.7%). The main opportunistic disease is cerebral toxoplasmosis found in 35.6% of cases (**Table 1**). Patients were predominantly (94.8%) bearing a type of HIV 1serotype. (**Figure 1**).The immunological profile of patients allowed finding an average rate of CD4 lymphocytes, which increased from 171.9 / mm<sup>3</sup> in the first screening during the 1st month to the 273.16 / mm<sup>3</sup> to the control at 06 months. (**Table 2**).

Half of the patients (51%) have effectively received antiretroviral treatment. The main combination of triple therapy prescribed at 30.4% of patients is: a nucleoside inhibitor of reverse transcriptase (Narti) D4T (Stavudine<sup>R</sup>), a nucleoside reverse transcriptase (NRTIs) 3TC (Lamivudine<sup>R</sup>), and NNRTIs (the Efavirenz<sup>R</sup>) EFV. We observed 79 deaths mortality is estimated at 16.3%. The three main diseases responsible for death are cerebral toxoplasmosis, tuberculosis of the nervous system, and neuromeningeal cryptococcosis (**Table 3**). The initial assessment conducted in the patients bearing 4 most lethal diseases is listed in the (**table 4**) indicating severe immunosuppression especially in cerebral toxoplasmosis with an average rate of 73/ mm<sup>3</sup>of CD4 lymphocytes.

## **Discussion**

the HIV infection is frequently accompanied by neurological complications (6). These are inaugural in 10% of cases; in 40-75% of cases they occur during the course of the disease (8). The HIV neurological involvement is common in the developed countries as corroborated Levy and col (6), Moulignier and col (8) studies; that found respectively 37%, 35% and 100% of prevalence of this association. Moulignier (8) gives three main reasons:

- Immunosuppression induced by the virus (responsible for the occurrence of opportunistic infections, lymphoma or other tumors)
- The direct attack of the virus (the glial cells of the nervous system constitute reservoirs for the virus)
- Side effects linked to ART (Immune Restoration, direct toxicity)

In the countries south of the Sahara, we note a renewed interest to this pandemic, according to prevalence studies already carried out:

- Yaoundé (Cameroon): 7.5% (1).
- Lomé (Togo): 8.9% (2).
- Bobo-Dioulasso (Burkina Faso): 20.12% (7).

Nearly 2/3 of our patients were female; ATANGANA (1) observed the same proportions like us. By against the result was quite the opposite with Kouassi (5) and MILLOGO (7). This current female predominance is confirmed by the finding of UNAIDS / WHO that there would be a feminization of the epidemic. (9). Their physiological vulnerability is advanced as reasons, the socioeconomic status and lower policy, unequal access to education and education, the fear and experience of the violence.

This scourge therefore affects mostly young with an average age of about 40 years. This age group represents a professionally active population with a certain shortfall, and sexually active. When the diagnosis of opportunistic infections was possible, he revealed the preponderance of cerebral toxoplasmosis. It is since almost two decades, in our service, the first cerebral opportunistic infection: it is present in our series in 36.5% of cases against 43.5% in 1988 (5).

The same preponderance of toxoplasmosis was found by BALOGOU (2). Furthermore, the lowest CD4 cell rates (73 cells / mm<sup>3</sup>) are found in the initial screening during this condition. The other tuberculosis opportunistic diseases of the nervous system (7.6%), cryptococcal neuromeningeal (2.7%) are certainly less frequent but also serious when we refer to the average rate of CD4 cells respectively 162 / mm<sup>3</sup> and 60 / mm<sup>3</sup>.

The incidence of cryptococcosis in the HIV infection is variable in Africa but remains weak in all cases: 8.3% Mali (11), 7% in Ethiopia (14) 3.25% Burkina Faso (4) This condition would be grafted with a bad prognosis as said OUMAR et al. (11) MALI with 10 deaths out of 17 cases. We believe that the improvement of our technical platform would have allowed us to have better results in terms of performance and filtering of diagnosis. We could thus reduce the high proportion (40.5%) of meningoencephalitis of undetermined etiology. Especially with regard viral infections. Therefore, we deplore the absence of data on HIV subacute encephalitis, cytomegalovirus (CMV), JC virus.

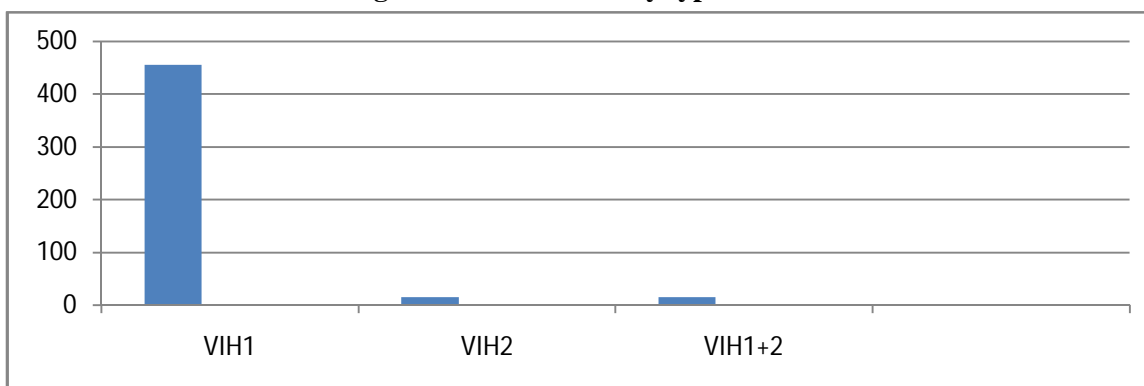
On the whole, neurological disorders occurred on average CD4 lymphocytes rate of around 171 / mm<sup>3</sup> therefore at an advanced stage of immunosuppression with a repercussion on the support. HIV-1 was the most observed serotype with 455 patients. Indeed, it is the most encountered serotype in the world. Originally located in West Africa, HIV-2 and / or HIV 1 + 2 is found in lower proportions: 3% for each serotype in our series. TIEMBRE and al (12) also observed the predominance of VIH1 with only 8% of HIV-2. We found 79 deaths or 16.3% mortality, including 22 cases of cerebral toxoplasmosis, 10 cases of tuberculosis, and 5 cases of cryptococcosis. Triple therapy was established in 55.7% of patients combining 2 Nucleoside Reverse Transcriptase Inhibitors (NRTIs) and 1 inhibitor Non-nucleoside Reverse Transcriptase of (NNRTIs) or 1 protease inhibitor (IP). Remember that it was only from 2009 that WHO has advocated the phasing out of stavudine (D4T) which explains the strong presence of this molecule in our schemes. This is one of the molecules largely involved by its toxicity, in the genesis of neuropathic pain. (13).

## **Conclusion**

Despite major diagnostic and therapeutic progress, HIV remains, 30 years after its appearance, severe disease, even deadly due to complications of immunosuppression. The neurological manifestations are frequent and varied during HIV infection. Young adults bear the heavy price with essentially the tables of intracranial expansive processes of toxoplasmosis type. These manifestations can be inaugural but they are usually present in the terminal phase of the disease.

**Figures and Graphics****Table 1: Main neurological disorders in HIV patients**

| DISEASES  |                               | EFFECTIF   | %           |
|---|-------------------------------|------------|-------------|
| <b>SNC</b>  |                               |            |             |
| Brain abscess Cerebral  | <b>Toxoplasmosis cerebral</b> | <b>177</b> | <b>36,5</b> |
|   | A pyogenic                    | 5          | 1           |
| Encephalitis, meningoencephalitis, encephalomyelitis (Of unknown cause) |                               | 120        | 24,7        |
| Tuberculosis of the nervous system                                      |                               | 37         | 7,6         |
| Meningitis  | A clear liquid                | 38         | 7,8         |
|   | Purulent                      | 7          | 1,4         |
| Neuromeningeal cryptococcosis   |                               | 13         | 2,7         |
| Neurosyphilis   |                               | 1          | 0,2         |
| Myelopathy  |                               | 26         | 5,4         |
| Cerebral Vascular Accident (CVA)  |                               | 21         | 4,3         |
| Cerebral venous thrombosis (CVT)  |                               | 4          | 0,8         |
| Cerebral lymphoma   |                               | 2          | 0,4         |
| <b>SNP</b>  |                               |            |             |
| Polyneuropathy (PN)   |                               | 14         | 3           |
| Zona  |                               | 9          | 2           |
| Peripheral facial paralysis (PFP)                                       |                               | 7          | 1,4         |
| Polyradiculoneuropathy (PRN)  |                               | 4          | 0,8         |

**Figure 1: Distribution by type of HIV****Table 2: Immunological profile of patients**

| CD4 |         | M0                    | M6                   |
|-----|---------|-----------------------|----------------------|
|     | Average | 171,9/mm <sup>3</sup> | 273/ mm <sup>3</sup> |
|     | Median  | 79/ mm <sup>3</sup>   | 242/mm <sup>3</sup>  |
|     | Minimum | 1/mm <sup>3</sup>     | 5/mm <sup>3</sup>    |
|     | Maximum | 1977/mm <sup>3</sup>  | 949/mm <sup>3</sup>  |

**Table 3: Distribution of deaths by type of affection**

| DISEASES                                     | EFFECTIVE | %           |
|--|-----------|-------------|
| Meningoencephalitis of undetermined etiology | 32        | 40%         |
| Cerebral toxoplasmosis                       | 22        | 27,8        |
| Tuberculosis of the nervous system           | 10        | 12,7        |
| Cryptococcosis neuromeningeal                | 05        | 6,3         |
| Cerebral Vascular Accident (CVA)             | 03        | 3,8         |
| Meningitis                                   | 03        | 3,8         |
| Myelopathy                                   | 03        | 1,3         |
| Cerebral lymphoma                            | 01        | 1,3         |
| <b>TOTAL</b>                                 | <b>79</b> | <b>100%</b> |

**Table 4: Distribution of CD4 rates by type of affection**

| <b>Responsible disorders deaths</b> | <b>CD4 rate / mm3</b> |
|-------------------------------------|-----------------------|
| Cerebral toxoplasmosis              | 73                    |
| Cryptococcosis neuromeningeal       | 60                    |
| Encephalitis causes of undetermined | 149                   |
| Tuberculosis of the nervous system  | <b>162</b>            |

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