Evaluation of the Nutritional State of Children and Teenagers Infected by HIV Treated in a University Hospital in Abidjan (Côte d’Ivoire)


1Pediatric department of the University Hospital of Cocody, Abidjan, Côte d’Ivoire
2University Felix Houphouët Boigny, Abidjan, Côte d’Ivoire
3National Institute of Public Health, Côte d’Ivoire
4Centre Suisse de Recherches Scientifiques in Côte d’Ivoire, Abidjan, Côte d’Ivoire
5Swiss Tropical and Public Health Institute, Basel, Switzerland
6University of Basel, Basel, Switzerland

*Corresponding author: Folquet AM, Pediatric department of the University Hospital of Cocody, Abidjan, Côte d’Ivoire, Tel: 0022507848317; E-mail: amorissanifolquet@hotmail.fr

Received date: September 23, 2014; Accepted date: August 21, 2015; Published date: August 25, 2015

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Abstract

Introduction: The aim of our study was to evaluate the nutritional status of HIV-infected children followed at a university pediatrics department in Abidjan.

Method: This cross-sectional, descriptive and analytical study was conducted from January to March 2013 in the pediatric department of the university teaching hospital of Cocody and concerned pediatrics HIV/AIDS cases. Children of 0-59 months (group A) and those above 59 months (group B) formed two groups.

Results: Two hundred and twenty-two children were assessed during this period. The median age was 105 months and the sex ratio of 1.09. More than half of the children were from modest backgrounds (52.7%) or orphans (53.9%). At enrollment in the cohort, they were mostly symptomatic (77.0%), had immune deficiencies (76.5%), anemia (74.0%) and were on Anti-retrovirals (ARV) therapy (98.1%). The prevalence of malnutrition was higher in group A (46.6%) than in group B (38.4%). Isolated chronic malnutrition was the most frequent clinical form of the two groups (20% and 19.7%). In group A, seven children were suffering of acute malnutrition alone (15.5%) and five under ARV treatment [3]. Côte d’Ivoire also is challenged by high malnutrition rates, with 5.4% of its children being estimated to be suffering of acute malnutrition [4]. Stunting is the most common form of malnutrition, especially in the children below the age of five who in the northern parts of the country are affected in up to 40% [4].

Conclusion: Due to delayed diagnoses of HIV in children; chronic malnutrition remains common among them, whatever their age. The activities of nutritional care and support are essential in the management of this infection.

Keywords: Nutritional status; Child; HIV/AIDS; Abidjan

Introduction

The malnutrition of children remains a major public health concern in developing countries. It is both the cause and consequence of poverty. Malnutrition is held for the death of more than a third of the children aged less than five years worldwide [1]. Malnutrition can present as acute malnutrition with wasting, as chronic malnutrition with stunted growth or in the case of over nutrition, as overweight and obesity [2]. The anthropometric indicators weight-for-height and height-for-age allow to evaluate these two types of malnutrition by using a z score or the percentile in relationship with the median of the referred population. The International Pediatric Association officially recommended the use of WHO’s standards which it describes as “an effective tool to detect both malnutrition and overweight” [2].

In sub-Saharan Africa, and especially in areas with a high prevalence of HIV child malnutrition remains a major concern. Côte d’Ivoire is the country the most hit by the HIV/AIDS pandemic in West Africa with an estimated seroprevalence of 3.4% in the general population and of 4.5% in pregnant women in 2011[3]. Of the estimated 50000 children living with HIV with only 15% of them are under ARV treatment [3]. Côte d’Ivoire also is challenged by high malnutrition rates, with 5.4% of its children being estimated to be suffering of acute malnutrition [4]. Stunting is the most common form of malnutrition, especially in the children below the age of five who in the northern parts of the country are affected in up to 40% [4].

HIV and malnutrition are intertwined [5]. Indeed, both compromise the immune system. HIV compromises the nutritional status and rise the probability of opportunistic infections while malnutrition exacerbate the HIV’s effects by further weakening the organism’s immune system [5].
Materials and Methods

Study setting

The study was conducted at the HIV unit of the paediatric service of the university hospital of Cocody in Abidjan, Côte d’Ivoire. Since November 2005, this unit is the national reference centre for the care of HIV infected paediatric patients in Côte d’Ivoire. A multidisciplinary team provides medical care and support. Since June 2011, nutritional assistance and rehabilitation is available with therapeutic milks (F75 and F100) and ready-to-use therapeutic foods (RUTF).

Study participants and data collection

This cross-sectional study concerned all sero-positive children in the cohort aged 0 to 19 years admitted to the HIV unit as out and in-patients from January to March 2013. They benefited from a systematic evaluation of their nutritional state and if indicated nutritional therapy. The following anthropometric parameters were measured: the weight in kg taken with an electronic scale with a 50g interval, the size in cm measured lying down for children younger than two years old and standing upright for older ones with a stadiometer.

In order to evaluate the nutritional state appropriately, the studied population was divided in two groups. Young children aged 0 and 59 months formed group A, and children older than 59 months formed group B. The anthropometric indicators used were the height-for-age (H/A) for both groups, weight-for-height (W/H) for group A and the body mass index-for-age (BMI/A) for group B. The W/H and BMI/A indicators were used to evaluate acute malnutrition (AM) and the H/A to determine the presence of chronic malnutrition (CM). These indicators were compared to the new WHO growth standards [6]. All the children with a z score below -2 were considered malnourished.

The data were collected with the medical folder and a survey with epidemiological parameters (age, sex, nationality, place of living, viral status of parents, socioeconomic conditions and serology status of parents), clinical (DG classification at recruitment), biological (type of HIV, lymphocytic count and blood cell count before an under the antiretroviral regime, cotrimoxazole).

- The socio-economic conditions of the parents were assessed by calculating the daily average economic. The formula used was: resource - cost/divided by 30 (number of days in the month)/divided by the number of homemakers:
  - families whose economic daily average was $1 per day per person were classified as coming from a modest background.
  - families whose economic daily average was over $2 per day per person were classified as resulting from a favorable environment.
  - families whose economic daily average was less than $1 dollar per day per person came from an unfavorable environment.

Data processing

The data entry was performed using Excel 2007. The data were analysed with the soft wares Epi info 6.0 and SPSS 17.0. Non malnourished and malnourished children where compared. Univariate analyse was performed to check for risk factor for acute and chronic malnutrition. The statistic tests used were the khi 2, Fishers exact test and the Odd ratio. The significance level chosen was 5% and the interval confidence was 95%.

Results

During the period of the study, on a population of 232 HIV-positive children in active line, 222 (95.7%) children appeared in our structure.

Children characteristics

The average age was 109 months (9.08 years) ranged from 4 months to 19 years. A total of 45 children where younger than five years and 177 were older. Sex distribution was even. The majority of school-age children (95%) were sent to school (80%) and more than half of them were from modest socioeconomic backgrounds (52.7%). Many children were orphans with 29.7% having lost their mother and 17.5% having lost their father. The death of both parents was found in 6.7% of the cases. The most frequent mean of contamination was the mother-child transmission (84.3%). At the recruitment, most of the children were symptomatic (category B and C of the CDC classification) (77.02%), showed an immune deficit moderate or severe (76.5%) and an anaemia (74.3%). All of them were infected by the HIV1. At the time of the study the majority of the children were under antiretroviral treatment (98%) and under cotrimoxazole (77%). The average duration of treatment was 40 months and more than two third of them had no immune deficiancy (71.2%). The table 1 presents the children’s main characteristics at the recruitment in the cohort.
Evaluation of the nutritional state

In the overall population, the prevalence of AM was 37.3% with 17.5% of acute cases and 25.5% of chronic forms. Malnutrition was more prevalent in the young, (group A 46.6%) than in the older children (group B 38.4%). In-group A, seven children were emaciated (15.5%), nine of them showed signs of chronic malnutrition (20%). Only five children were emaciated and showed chronic malnutrition at the same time (11.1%). In group B, acute malnutrition represented 10.7% and 19.7% were stunted. Underweight and stunting were associated in 8 children (4.5%). Figure 1 shows the children’s layout of nutritional status during the period of the study.

The analytical study concerned the risk factors of malnutrition. The results of this analysis are listed in Tables 2 and 3.
Table 2: Risk factors of acute malnutrition (AM).

Current immune deficit was a risk factor for acute and chronic malnutrition. Symptomatic state and less than 3 years of treatment were risk factors for chronic malnutrition.

Discussion

Despite important progress made in the fight against the HIV/AIDS, diagnosis and treatment of the children infected by the HIV is still often delayed in countries with limited resources. This late diagnosis is also reflected in our figures with average age being 109 months. Mohd [7] in Malaysia and Souza [8] in Brazil described comparable average ages (8.4 years and 9.83 years).
Table 3: Risk factors of chronic malnutrition (CM).

<table>
<thead>
<tr>
<th>Factor</th>
<th>No. of Children</th>
<th>% Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socioeconomic conditions</td>
<td>27</td>
<td>47.3</td>
</tr>
<tr>
<td>Symptomatic children</td>
<td>91</td>
<td>85.5</td>
</tr>
</tbody>
</table>

*Socioeconomic conditions, **Symptomatic children, ***At the time of the inquiry

Additional interventions as the nutritional support remain indispensable and will possibly allow to help retain more children in the care program, but also to allow them to optimal growth and a better quality of life [16].

References