Archives of Pediatrics and Neonatology
ISSN: 2638-5155
Volume 2, Issue 2, 2019, PP: 39-48

Prevalence and Factors Associated with HIV Transmission in the Pediatric Consultation and Hospitalization Units of Bouaké University Hospital

Roselyne N'guessan-Sika[1]*, Richard Azagoh-Kouadio[2], Kouassi Christian Yao[3], Yeboua Kossonou Roland Yeboua[3], Aude Hélène Aka-Tanoh[3], Muhamed Ouattara[3], Leioh Roméo Adou[3], Carole Sarah Sanogo[3], Djenebou Coulibaly[3], Kouadio Vincent Asse[3]

[1]*Pediatric Ward of University and Teaching Hospital of Yopougon, Abidjan, Côte d'Ivoire.
[2]Pediatric Ward of University and Teaching Hospital of Angré, Abidjan, Côte d'Ivoire.
[3]Pediatric Ward of University and Teaching Hospital of Bouaké, Côte d'Ivoire.
kouameroseline8@gmail.com

***Corresponding Author:** Roseline N'guessan-Sika, Assistant professor, Pediatric Ward of University and Teaching Hospital of Yopougon, 21 BP 632 Abidjan 21, Abidjan, Côte d'Ivoire.*

Abstract

***Objective:** To determine the prevalence and factors associated with HIV transmission among pediatric children in consultation and hospitalization at the Bouaké University Hospital for the improvement of prognosis.*

***Methods:** This was a prospective study with a descriptive and analytical focus carried out from February 8 to May 08, 2019 in the pediatric consultation and hospitalization units of the Bouaké University Hospital. It involved 300 children aged 18 to 180 months admitted for various reasons, tested for HIV and whose parents were consenting. Care for HIV-positive children was done according to national recommendations. The studied parameters were sociodemographic, diagnostic and evolutive. The analysis was descriptive and analytical with a significance level of p <0.05 at the chi-square test.*

***Results:** A total of 300 children screened for HIV, 11 were HIV-positive (6 boys and 5 girls), a prevalence of 3.6%. The average age was 100 months. The main reasons for consultation were fever (31.6%), cough (15.8%), convulsion (15.8%) and weight loss (10.5%). The main HIV-related conditions were acute respiratory infections (27.3%), severe malaria (27.3%) and gastroenteritis (18.1%). Significantly associated factors were maternal death (p <0.001), prior knowledge of maternal HIV status (p <0.001), HIV mother's HIV status (p <0.001).*

***Conclusion:** The prevalence of HIV infection is high in the pediatric consultation and hospitalization units of Bouaké University Hospital. It concerns the child whose mother is dead or alive but HIV positive. Strengthening PMTCT and routine screening of children will improve prognosis.*

Keywords: *Child, HIV, consultation, hospitalization, transmission, prevalence, associated factors, PMTCT Côte d'Ivoire.*

Introduction

According to UNAIDS, from 2000 to 2018, the number of new HIV infections fell by 39% in the general population and by 64% in children under 15 years of age. According to the same report, the death rate from HIV / AIDS has halved since 2000 with 11.4 million lives saved [1, 2]. In addition, 62% of adults living with HIV had access to ARV treatment. as well as 54% of children, compared with 41% and 32% respectively in 2014 [1, 3]. Despite the progress made, HIV / AIDS infection remains a serious health problem in West and Central Africa [2]. In these two African regions, in 2018, UNAIDS registered 5 million people living with HIV, including 1.7 million children under 15 years of age. Among infected children, there were 160,000 new infections [1]. In Côte d'Ivoire, the prevalence of HIV infection has increased from 3.7% in 2012

[4] to 2.6% in 2017 [5], ie about 500 000 infected persons including 31 000 children [5]. Faced with this problem, the Ivorian state has adopted in its health policy the "test and treat all" strategy. This strategy aims to ensure that 90% of people living with HIV know their HIV status, 90% of all those infected with HIV receive sustainable antiretroviral therapy, and 90% of people receiving antiretroviral therapy have a sustained viral load. [3]. The success of this strategy depends not only on the effective involvement of all health actors in the screening activity but also on the intensification of this screening activity at all the gateways of the various health services. health. The pediatric unit of the University Hospital Center (CHU) of Bouaké, the only tertiary-level center located more than 300 km from Abidjan, has had a unit for the care of children infected with HIV since 2005. In this service, the prevalence of HIV was 4% in pediatric emergencies [6]. However, apart from emergencies, there are other entry points including the consultation and hospitalization units in which 2359 and 3677 children respectively were admitted in 2017. The aim of the study was to determine the prevalence and the factors associated with HIV transmission in pediatric children in consultation and hospitalization at Bouaké University Hospital for the improvement of prognosis.

Methods

Type, Period, Place and Population of Study

This is a prospective cross-sectional descriptive and analytical study that took place from February 8 to May 8, 2019 in the consultation and hospitalization units of the pediatric department of the University Hospital of Bouaké. The Bouaké University Hospital is the only referral hospital in the Gbêkê region and the northern part of the country. Pediatric consultations take place from Monday to Friday. They are ensured by 8 doctors including 3 assistants heads of clinics assisted by 2 caregivers. In 2017, the activity report of the Bouaké University Hospital indicated that 2325 children were received there, ie 194 children per month. The purpose of the consultations is the rapid management of benign and common pathologies of children in ambulatory care. It is also the gateway for hospitalization of children with serious pathologies. The main diseases in consultation were acute respiratory infections (41.7%), simple malaria (24.8%), gastroenteritis (3.5%) and dermatitis (2.7%). The hospitalization unit of the pediatric ward of the Bouaké University Hospital comprises 4 rooms, one of which is reserved for the therapeutic feeding unit for a total of 32 beds. In 2017, 3677 children were hospitalized there. The unit's staff consists of 4 doctors, 12 nurses and 14 caregivers. The activity of care includes infusions, blood samples, blood transfusions with the risk of contamination of agents with HIV. The main causes of consultation and hospitalization were severe malaria (76.9%), acute respiratory infections (7.7%), acute gastroenteritis (5.8%) and severe acute malnutrition (3.9%). %). In 99.4% of cases the evolution of the patients was favorable. The study population consisted of all children aged 18 months to 15 years received in the pediatric consultation and hospitalization units of the Bouaké University Hospital during the study period.

Criteria For Inclusion and Non-Inclusion

All children aged 18 months to 15 years were included in the study with no difference in sex, in which the parents' free and informed written consent was obtained. Infants under the age of 18 months and all children older than 18 months whose parents refused to participate in the study were not included. The sample of cases responding to the inclusion criteria was established as admissions to consultation and hospitalization during the study period.

Course of the Study

On admission, the children included had a thorough clinical examination with examination and physical examination. The interview specified the socio-demographic characteristics of the child (age, sex, home, education level) and parents (age, educational level, occupation, pathological history). The physical examination assessed the general condition, hemodynamic constants, contact apparatus and other devices. Depending on the clinical orientation, a paraclinical etiological assessment was prescribed including hemogram, blood groups (ABO / Rhesus), abdominal ultrasonography, cytobacteriological analysis of cerebrospinal fluid, thick blood smear and blood smear in search of Plasmodium. HIV testing was consistent with the algorithm of the national AIDS program presented in Figure 1 [7].

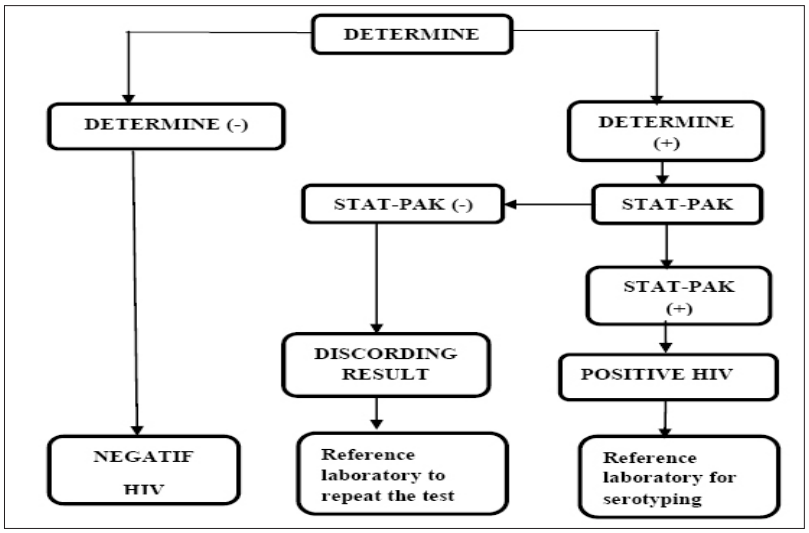

Fig1. *National HIV Diagnostic Algorithm in Voluntary Testing Centers, and in PMTCT Centers PTME [7].*

HIV testing was performed with the Rapid Determination Kits® of Alere and Stat-Pack® Laboratories of Chembio Laboratories in accordance with the manufacturer's instructions.These two tests are qualitative tests for the detection of anti-HIV-1 and anti-HIV-2 antibodies and based on the principle of immunochromatography or membrane filtration. The assays result from a unique combination of specific antibody-binding protein, conjugated with selenium colloid (Determine®) or colloidal gold (Stat-Pak®) staining particles and HIV-related antigens of HIV1 and 2. the solid phase of the membrane. The sample (plasma, serum or whole blood) is deposited at a deposition zone and added with a transport buffer solution. The buffer solution facilitates the lateral circulation of the released products and promotes the binding of antibodies to the antigens. When present, the antibodies bind to the binding protein conjugated to colloidal selenium or colloidal gold particles. In a reagent sample, the immunoconjugate complex travels over the nitrocellulose membrane and is then captured by the immobilized antigens of the patient window to form a red / purple line. In the absence of HIV antibodies, there is no red / purple line in the patient window. The sample continues to move along the membrane and a red / purple line is obtained in the control window or control window containing immunoglobulin G antigen. The witness of the procedure to ensure the validity of the test. If the control bar does not turn red / purple at the end of the test, the test result is not valid and the sample is reanalysed. The result is read in 15 to 60 minutes. Determine® and Stat-Pack® have a sensitivity of 100% and a specificity of 100%. Therapeutic management included symptomatic means (electrolyte-enriched perfusion solutes, bicarbonate serum, blood transfusion, analgesics, antipyretic, as appropriate) and specific to the cause. These specific means could be an antibiotic, an antimalarial or an antiretroviral. Antiretroviral therapy was in line with the guidelines of the national HIV / AIDS program. [8]. Since 1 March 2019, the first-line ARV protocol in children infected with HIV 1 in Côte d'Ivoire is based on the combination of ABC + 3TC + LPV / r in children <10 years of age and <35 kg. In children ≥ 10 years old and weighing ≥ 35kg, the protocol is based on TDF + 3TC + DTG. ARV is combined with Cotrimoxazole for the prevention of opportunistic infections until immune status is restored [8]. The data were collected on a pre-established survey sheet providing information on the socio-demographic characteristics of the child (sex, age, level of schooling, nationality, ethnicity, place of residence), the socio-demographic characteristics of the parents (age, motherhood and motherhood). educational level, occupation), child's history (circumstances of birth, diet, growth, psychomotor development, vaccination, pathological history and serological status), parental history (HIV status, pathological history), the admission modality, the reason for consultation, the physical examination on admission, the diagnosis, the result of HIV serology. The variables studied were the prevalence and factors associated with the transmission of HIV infection in consultation and hospitalization at the pediatric ward

of the University Hospital of Bouaké. In this study, the mother's education level was classified into three categories: low (0-6 years of schooling), medium (7-14 years of schooling), and higher (beyond 14 years of schooling).

Ethical Considerations

The study was approved by the Medical and Scientific Direction of the University Hospital of Bouaké. Patient involvement was obtained after written and verbal informed consent from parents or legal guardian. Anonymity and confidentiality were respected by assigning an anonymity number to each survey sheet.

Data Analysis

Quantitative variables were expressed as mean and standard deviation and Qualitative variables are expressed as proportions. The qualitative variables were compared using the chi-square test or chi-square test with Yates correction or Fischer test when the application conditions of chi2 were not met. The threshold of significance was set for a value $p \leq 0.05$. The data was analyzed with Excel 2010 statistics software and EPI Info 7.

Results

Characteristics of the Study Population

During the study period, 300 children (consultation 147, hospitalization 153) were registered and then screened for HIV. The socio-demographic aspects of the children's population studied by the reception unit are shown in Table 1. The average age of the children was 51.46 +/- 35.72 months [18 months; 180 months]. The mother was between 25 and 35 years old in 55.7%. It had not been educated in 43.7% and exercised the household activity in 54.3%. The child had no pathological history in 80.3% of cases. The reasons for hospitalization were dominated by fever and pallor in 71.6% of cases. An absence of blood transfusion of the child before admission was recorded in 91.6% of cases. Mother and father had no pathological history respectively in 99% and 98.3% of cases. The mother knew her HIV status during pregnancy in 87.7% of cases. Mother and father were not aware of their current HIV status in 52.7% and 81.3% of cases, respectively.

Table I. *socio-demographic characteristics of the study population*

➢ **Children**

Variables	Child's home unit	
	Consultationn(%)	**Hospitalization (%)**
Child		
Sex		
Male	83 (56.5)	79 (51.6)
Feminine	64 (43.5)	74 (48.4)
Age		
[18-60]	111 (*75.5*)	121 (*79.1*)
[60-120]	25 (*17.0*)	23 (*15.0*)
[120-180]	11 (*7.5*)	9 (*5.9*)
Place of residence		
Bouake	125 (*85.0*)	106 (*69.3*)
Outside Bouaké	22 (*15.0*)	47 (*30.7*)
Level of schooling		
Not schoolable	83 (*56.5*)	106 (*69.3*)
Primary	28 (*19.0*)	35 (*22.9*)
Kindergarten	27 (*18.3*)	9 (*5.9*)
Secondary	7 (*4.8*)	1 (*0.6*)
Illiterate	2 (*1.4*)	2 (*1.3*)
Mother's profession		
Housewife	80(54.4)	87(56.8)
Saleswomen/shopkeeper	29(19.7)	32(20.9)
Civil servant	21(14.3)	9(5.9)
Crafts woman	9(6.1)	11(7.2)
Farmer/planter	5(3.4)	9(5.9)
Student/student	3(2.0)	5(3.3)

Reasons for Consultation and Diagnosis Used According to the Child's Reception Unit

The reasons for consultation were dominated by fever, pallor and convulsion in 54.3% of cases. In hospitalization the reasons for consultation were also dominated by fever, pallor and convulsion in 74.8% of cases. Simple malaria (52.7%), acute gastroenteritis and acute respiratory infections (14.2%) were the main diagnoses retained in consultation. Inpatients included malaria (57.4%), acute respiratory infections (21.3%) and acute gastroenteritis (10.3%) (Table II).

Table II. *Repartition de la fréquence des motifs de consultations et du diagnostic retenu selon l'unité d'accueil de l'enfant.*

Variables	Child's home unit	
	Consultation n (%)	Consultation n (%)
Reason of admissions		
Fever	76 (27.1)	85 (40.0)
Pallor	39 (14.0)	38 (17.8)
convulsions	37 (13.2)	36 (17.0)
Abdominal pain	27 (9.6)	-
Cough	23 (8.2)	-
adynamia	-	21 (9.8)
Difficulty breathing	15 (5.4)	8 (3.7)
Other*	63 (22.5)*a	25 (11.7)*b
Diagnosis retained		
Malaria	67 (52.7)	89 (57.4)
Acute gastroenteritis	30 (23.6)	16 (10.3)
Acute respiratory infection	18 (14.2)	33 (21.3)
Dermatoses	8 (6.3)	-
Neurological infections ???	-	5 (3.2)
Other **	4 (3.2)	12 (7.8)

Other reasons: **a) rhinorrhea (22) diarrhea (15), vomiting (12), weight loss (6), rash (5), constipation (2), pelvic pain (1), redness of the eye (1), dysphagia (1); * b) slimming (5), vomiting (5), abdominal distension (4), obstruction (4), joint pain (2), ascites (1), headache (1), chest pain (1), facial swelling (1), edema of the lower limbs (1)*

Other pathologies**: *Hospitalization: Tumor pathologies (2), Hypoglycemia (2) Urinary tract infections (2) Nephrotic syndrome (1), Typhoid fever (1), Peritoneal tuberculosis (1), Enteric sepsis (1), Osteomyelitis (1), Hirschprung disease (1). Consultation: dermatoses (8), Hemoglobinopathies (7), Urinary tract infections (7), conjunctivitis (1), stye (1), heart disease (1), iatrogenic neuropathy (1)*

Prevalence and Factors Associated with HIV Transmission

Of the 300 children registered and screened, 11 were HIV-positive, giving an overall prevalence of 3.6%. Of the 11 HIV-positive children, 10 (91%) were screened for hospitalization and 1 (9%) for consultation. They were all HIV-positive 1. The HIV-positive child was a boy in 6 cases and a girl in 5 cases was a sex ratio (H / F) of 1.2. The age was between 60 and 120 months in 54.5% with a median age of 81 months (range 19 months and 168 months). In 54.5% of the cases, the child infected with HIV had a primary level. All children diagnosed with HIV were all living in the city of Bouaké and all had HIV-positive mothers1. They were brought by parents in 81.8% of cases. The reasons for consultation were dominated by fever (31.6%), cough (15.8%), seizures (15.8%) and weight loss (10.5%). The main HIV-related conditions were low acute respiratory infections, malaria and acute gastroenteritis in 72.7%. Children infected with HIV were in WHO stages 3 and 4 in 63.6% of cases. The analysis of the factors associated with the transmission of HIV in children is presented in Table III.

Table III. *Factors associated with HIV infection in children*

Variables	HIV serology		p-value
	Positive n(%)	Negative n(%)	
Education level of the mother			
Lowlevel of education	11 (*5.6*)	186 (*94.4*)	0.695
Medium & high	2 (*1.9*)	103 (98.1)	
Prior serology knowledge of the mother			
Unknown	3 (*1.9*)	155 (*98.1*)	< 0.001*
Known	8 (*5.6*)	134 (*94.4*)	
Maternal death			
No	5 (*1.7*)	289 (*98.3*)	< 0.001*
Yes	6 (*100.0*)	0 (*0.0*)	
Serological status of mothers (n = 142)			
Positive HIV	11(*91.7*)	1(*8.3*)	< 0,001*
HIV negative	0(*0.0*)	130(*100.0*)	
Child's sex			
Male	6 (*3.7*)	156 (*96.3*)	0.97
Feminine	5 (*3.6*)	133 (*96.4*)	
Place of residence			
Bouake	11 (*4.8*)	220 (*95.2*)	0.074
Outside Bouaké	00 (*0.0*)	69 (*100.0*)	

*significant p-value at the threshold of < 0.05

Discussion

This prospective descriptive and analytical study, conducted over a period of three months in the pediatric ward of the University Hospital Center of Bouaké aims to determine the prevalence and factors associated with HIV transmission in children in consultation and hospitalization for the improvement of the prognosis. The study reveals a prevalence of 3.6%. Factors significantly associated with the transmission of HIV infection in the child in consultation and in hospital are maternal death (p <0.001), prior knowledge of the mother's HIV status (p <0.001), and HIV status. mother to HIV (p <0.001). However, these results must be qualified because the study is mono-centric, carried out over a period of three months and concerns only the consultation and hospitalization units while there is another gateway into the service. Other HIV-immunocompromised children have certainly been seen in other health facilities in the Gbêkê region. In addition, infants under 18 months of age with whom both Detmine® and Stat-Pak® could not confirm the diagnosis of HIV infection were not included in the study. In this age group, the PCR, which is the confirmatory examination, was routinely inaccessible. All of these facts are potential biases that may contribute to underestimating or overestimating the results of the study. However, the pediatric ward of the Bouaké University Hospital is the reference hospital in the Gbêkê region, the majority of cases are referred to and the results could reflect the reality. These results elicit the following points of discussion.

Prevalence and Characteristics of Children Infected with HIV

The prevalence of HIV in pediatric consultation and hospitalization at the Bouaké University Hospital is 3.6% similar to the 3.7% reported by Azagoh et al. [6] in the pediatric emergency unit of the same service in 2018. In sub-Saharan Africa, the reported prevalence according to the studies is globally high and varies between 0.87 and 5.5% [9-11]. This confirms the importance and necessity of systematic screening of patients regardless of the gateway into the services.

In the study all children are infected with HIV 1. In the same service, Azagoh et al. [6] had pediatric emergencies in 2018 HIV 1 in 92.8% and HIV 2 in 7.2%. D'Almeida et al. [12] in Benin in 2013 reported HIV 1 in 100% of cases. These results can be explained by the fact that among the 3 types of HIV, HIV 1 is the most prevalent in sub-Saharan Africa. The study does not report a predominance of sex as previously reported by other authors [6, 9,13,15] in West Africa.

In Mali, however, Dicko-Traoré et al. [14] reported a female predominance in 2013 (sex ratio 0.76). A male predominance has been reported in Morocco by Daki et al. [14] in 2011 with a sex ratio of 1.9. In work, children diagnosed with HIV are older than or equal to 5 years in 72.7% of cases with a mean age of 100 months (8.3 years). In the same service, Azagoh et al. [6] in 2018 then Assé et al. [13] in 2019 reported similar results. In the works of Diarrassouba et al. [17] in Abidjan (Ivory Coast) in 2010 and Oumar et al. [18] in Ségou (Mali), the average age was 78 months and 60 months. The study reveals that 91% of children infected with HIV were screened in the hospital unit. This rate was 78.4% in the Dicko-Traoré et al study in Mali in 2013 [16]. These results point to the insufficiency of early diagnosis in children exposed to HIV and the screening of women in general. Hence the value of strengthening efforts for the diagnosis and early management of pediatric HIV infection. Children infected with HIV are schooled in 54.5% of cases. This result is superior to de Oumar et al. [18] in Ségou which reported 44.4% of schooling. All the children lived in the city of Bouaké. Samaké [19] in Bamako found a slightly lower proportion (83.2%). The decentralization and multiplication of health centers that can diagnose and care for HIV-positive children could explain the high proportion of children living in the city of Bouaké. Indeed, once the diagnosis of HIV infection is made, the child is cared for in the health center where the diagnosis is made. As the pediatric unit of the Bouaké University Hospital is the only reference center in the Gbêkê region, it only receives patients who most often have a diagnosis and / or therapeutic problem. The majority of patients (81.8%) are brought by their parents. In 2012, Assé et al found a similar reference rate of 16% for emergencies in the same department [20]. This low reference rate, which we report, would reflect the dysfunction of our pyramid, which predicts a major role for primary and secondary level hospitals in the region. The main reasons for admission of HIV-infected children to hospital are fever (31.6%), cough (15.8%), seizures (15.8%) and stroke. weight loss (10.5%). These major signs have been reported previously in the same department by Azagoh et al. [6] then Assé et al. [13] but in different proportions. The study of Bugaje et al. [21] in Nigeria in 2006 reported a rate of 82.8% for fever and cough. These signs represent the major signs of the HIV infection of the child in their majority. Malaria (27.3%), acute respiratory infections (27.3%) and acute gastroenteritis (18.1%) are the main pathologies encountered in HIV-infected children irrespective of the 'Home. Low respiratory infections (55.6%) and severe acute malnutrition (33.3%) were the dominant pathologies in the Azagoh et al. [6] in a study similar to emergencies of the same department. Elsewhere, Dicko et al. [10] in Mali as well as Diarrasouba et al. [17] in Côte d'Ivoire found malnutrition and pneumopathy as associated pathologies in HIV-positive children. Kouéta et al. [9] reported malaria (15%), acute meningitis (11.1%) and pneumonitis (11.1%). Early prevention, diagnosis and management of these infections would improve the quality of life and survival of children. [22] With regard to the characteristics of mothers, the mother was between 25 and 35 years old in 55.7% of the population. case. The extreme ages were 19 to 47 years old. This age group is predominant in many studies. Dainguy et al. [11] in Abidjan reports a prevalence of 61.1%. Maïga in 2015 [23] and Traoré in 2010 [24] in Mali recovered respectively 66.6% and 50%. Azoumah et al. [22] in Togo in 2011 reported that 62.7% of mothers were between 20 and 35 years old. These findings could be explained by the fact that the 25 to 35 age group was the most mature and sexually active, making them high risk for STIs and HIV infection. In addition, difficulties in accessing the family planning program and education do not allow them to protect themselves and avoid unwanted pregnancies at a young age. This vulnerability is further accentuated by the poor socio-economic conditions [25]. This study found uneducated mothers in 43.7% of cases. Dainguy et al. [11] reported 11.1% of uneducated mothers at the Cocody CHU (Abidjan) in 2014. According to Traoré [24], in his study at the pediatric ward of CHU Gabriel Touré in Mali in 2010, 39.6% of mothers had no education. This observation raises the problem of schooling for women. According to UNESCO, the literacy rate of women does not exceed 50% in more than 12 countries in sub-Saharan Africa [26]. This would represent a real danger in terms of health vulnerability and would therefore be a brake on the implementation of PMTCT. Mothers are housewives in 54.3%. This finding is consolidated by those of Assé et al. [13] as well as Azagoh et al. [6] in the pediatric department of the University Hospital of Bouaké (Ivory Coast) with different proportions (71.3% and 72.6%). Elsewhere Maïga [23] and Traoré [24] in Mali

make the same observation with respectively 66.6% and 63.8%. According to Dainguy et al. [11] 42.6% of women worked in the informal sector compared to 91.7% in the Azoumah et al. [22]. In this study, 72.7% of mothers with HIV-positive children know their status during pregnancy and are also HIV-positive. Dainguy et al. [11] reported a 55.6% of cases in 2014 at the pediatric department of Cocody University Hospital (Abidjan). In the Traoré study in Sikasso (Mali), seropositivity in mothers was diagnosed at 45.03% before delivery and 21.2% during pregnancy [27]. These high figures could be explained by numerous awareness campaigns and an increase in the number of PMTCT sites in the country. Currently in Ivory Coast, with free ARVs, all HIV-positive women who are pregnant and / or screened during pregnancy are subjected to prophylactic triple therapy.

Associated Factors

In the study, maternal death (p<0.001), prior knowledge of maternal serology (p<0.001), and maternal seropositivity (p<0.001) were significantly associated with HIV infection. In fact, 54.5% of children with HIV were motherless. In the same service for children admitted to emergencies Azagoh et al. [6] reported a proportion of 44%. The number of orphans and children made vulnerable (OVC) due to HIV / AIDS was estimated in 2016 by the National Institute of Statistics at 476,000 in Côte d'Ivoire. In addition to maternal death, prior knowledge of maternal serology and maternal seropositivity are the factors associated with HIV in children. Maternal seropositivity is a proven risk factor in the MTCT of HIV [28]. Also, clinical trials have shown a strong positive correlation between circulating HIV viral load and maternal CD8 T cell count during pregnancy or delivery and the risk of perinatal transmission of HIV, even for women on ART [29-31]. However, this variable was not found in our study. This factor could also highlight a shortfall in the PMTCT program.

Conclusion

This study shows that HIV infection is frequent in the consultation and hospitalization units of the pediatric department of the Bouaké University Hospital with a prevalence of 3.6%. The diagnosis of HIV infection is made late in the presence of clinical signs dominated by fever, cough, convulsion and weight loss. The main HIV-related conditions in pediatric consultation and hospitalization units are pneumonia, malaria and gastroenteritis. Factors significantly associated with transmission of HIV infection in children are prior knowledge of maternal serology (p <0.001) maternal death (p <0.001) and maternal serology (p <0.001) . These results highlight the insufficiency of PMTCT activity due to the late diagnosis of this pathology in our context, despite the link that has been established between the seropositivity of the mother and that of the child. To improve the prognosis of HIV-exposed and HIV-infected children, we suggest increasing community awareness and strengthening activities to prevent mother-to-child transmission (PMTCT) of HIV in terms of early diagnosis and management.

Acknowledgement

To all staff of the pediatric department of the University Hospital of Bouaké and to the members of the NGO AIDSCOM present on the site of the Pediatric Department of the University Hospital of Bouaké

References

[1] UNAIDS. Fact Sheet-Global AIDS Update 2019. Available on : URL https://www.unaids.org/sites /default/files/media_asset/UNAIDS_FactSheet_ fr.pdf; accessed on 2019.04.30

[2] WHO. HIV/AIDS. Available on : URL https://www. who.int/fr/news-room/fact-sheets/detail/hiv-aids accessed on .2019.04.30

[3] UNAIDS. 90-90-90: an ambitious target of treatment to help end the AIDS epidemic. Geneva 2014. Available on: URL https://www.unaids. org/sites/default/files/media_asset/90-90-90_ fr.pdf accessed on2019.04.24

[4] National Institute of Statistics (INS) / ICF International. Demographic and Health Survey and Multiple Indicators of Côte d'Ivoire 2011-2012. Calverton, Maryland, USA 2012. Available on : URL https://www.dhsprogram.com/pubs/ pdf/FR272/FR272.pdf accessed on 2019.03.18

[5] UNAIDS. Coutry factsheets: Côte d'Ivoire 2018. Available on : URL https://www.unaids.org/fr/ regionscountries/countries/ctedivoire accessed on 2019.04.24

[6] Azagoh KR, Yao KC, Benié AC, Irié Bi GS, Yeboua YK, Aka-Tanoh KA et al. Prevalence and factors associated with transmission of HIV/

AIDS infection in pediatric emergencies at the University Hospital Center (CHU) of Bouaké. RAMUR 2018; 23 (1): 21-7

[7] Ministry of Health, Sectoral Committee for AIDS Control Côte d'Ivoire. Policy and protocols for antiretroviral treatment of HIV / AIDS 2008

[8] Ministry of Health, Sectoral Committee for AIDS Control Côte d'Ivoire. 2015: URL https://aidsfree.usaid.gov/sites/default/files/ci_directives_2_2015_vih.pdf accessed on 2019.04.22

[9] Koueta F, Ouedraogo-Yugbare SO, Boly C, Dao L, Savadogo H, Ouedraogo SAP et al. Morbidity and mortality of human immunodeficiency virus infection in children in hospitals in Ouagadougou (Burkina Faso). Medicine of Black Africa 2016; 63 (4): 205-12

[10] Dicko-Traore F, Kone A, Sylla M, Diakite AA, Konate D, Konate Y et al. Causes of hospitalization of HIV-infected children in the pediatric ward of Gabriel Touré Teaching Hospital in Bamako. Mali Medical 2013; 28 (4): 31-6

[11] Dainguy ME, Folquet AM, Kouadio E, Kouakou C, Gro Bi A, Djivohessoun A. Lived from mothers who benefited from Prevention of Mother to Child Transmission PMTCT in a reference center in Abidjan. Med Afr Black 2014; 61 (2): 64-70

[12] D'Almeida M, Sagbo G, Lalya F, Alao MJ, Almeida C, Agossou J et al. Profile of children infected with HIV followed at the National Hospital and University Center (CNHU) of Cotonou. Mali Med 2013; 28 (1): 25-39

[13] Asse KV, Yao KC, Azagoh-Kouadio R, Yeboua KR, Ehouman MA, Aka-Tanoh KA, Avi C, Plo KJProfile-of-Children-Living-with-HIV-Followed-up-from-2005-to-2016-in-the-Prevention-of-Mother-to-Child-Transmission-Pmtct-HIV-Unit-at-the-University-Teaching-Hospital-UTH-of-Bouake-Côte-d'Ivoire. International Journal of Pediatrics and Neonatal Health 2019; 3 (1): 1-6

[14] Daki LH. Epidemiology of HIV infection in children in the Marrakech region. Thesis Med. Univ Cadi Ayyad Marrakech 2011:N°22/11. Available on: URL http://wd.fmpm.uca.ma/biblio/theses/annee-htm/FT/2011/these22-11.pdf accessed on 2019.04.22

[15] Ogunbusi BO, Oladokun RE, Brown BJ, Osinusi KI. Prevalence and clinical pattern of paediatric HIV infection at the University College Hospital, Ibadan, Nigeria: a prospective cross-sectional study. Italian Journal of Pediatrics 2011; 37: 29

[16] Dicko-Traore F, Kone A, Sylla M, Diakite AA, Konate D, Konate Y et al. Causes of hospitalization of HIV-infected children in the pediatric ward of Gabriel Touré Teaching Hospital in Bamako. Mali Medical 2013; 28 (4): 31-6

[17] Diarrasouba G, Niamien E, Kaudhjis, Adonis-Koffi L, Koutou E. Causes of hospitalization of the child infected with HIV in Côte d'Ivoire. Pediatric Archives 2010; 17 (6), Suppl 1: 168

[18] Oumar AA, Katile D, Maiga B, Toure A, Drabo M, Togo B et al. Evaluation of therapeutic compliance with antiretrovirals in children in Ségou, Mali Antropo 2016; 35: 83-9

[19] Samaké M. Infection HIV of the child: clinical aspect and assessment of sixteen soft case management by antiretrovirals to pediatrics of the Gabriel Touré University Hospital Center. Thesis Med. Univ Bamako 2004. Available at: URL http://www.keneya.net/fmpos/theses/2004/med/pdf/04M30.pdf accessed on 2019.06.16

[20] Assé KV, Plo KJ, Yao KC, Konate I, Yenan JP. Epidemiological, diagnostic, therapeutic and evolutionary profile of patients referred to pediatric emergencies at CHU Bouaké (Côte d'Ibvoire). RAMUR 2012; 17 (3): 82-8

[21] Bugaje MA, Aikhionhare HA. Paediatric HIV / AIDS seen at Ahmadu University Teaching Hospital Zaria, Nigeria. Annals of African Medicine 2006; 5 (2): 73-7

[22] Azoumah KD, Lawson-Houkporti AA, Djadou KE, Tsolenyanu E, Lawson-Evi K, Améwuamé ANE et al. Assessment of the prevention of mother-to-child transmission of HIV-AIDS at Bé hospital in Lomé. J of Pediatrics and Childcare 2011; 24 (1): 1-7

[23] Maïga FY.Early diagnosis of HIV infection and fate of children born to HIV-positive mothers: experience of the pediatric center of excellence of Gabriel Touré Teaching Hospital. Thesis Med. Univ Bamako 2015.Available at: URL http://www.keneya.net/fmpos/theses/2015/med/pdf/15M72.pdf accessed on 2019.04.21

[24] Traore MK. Characteristics of the children who died during their follow-up in the PMTCT site of the pediatric department of Gabriel Touré University Hospital. Thesis Med. Univ Bamako 2010. Available at: URL http://www.keneya.net/fmpos/theses/2010/med/pdf/10M521.pdf accessed on 2019.04.21

[25] Millogo-Traore F, Lankoande J, Ouaba R. Prevention of mother-to-child transmission of HIV in Kossodo health district, Burkina Faso. Rev Med Brux 2008; 29: 153-8

[26] UNESCO. Girls' and women's education: statistics. Available at: URL http://www.unesco.org/new/en/unesco/events/prizes-andcelebrations/celebrations/international-days/international-womens-day-2014/women-ed-facts-and-figure/ accessed on2019.06.16

[27] Traore F. Two-year assessment of the care of children born to HIV-positive mothers in the Sikasso Hospital Paediatrics Department. Thesis med. 2014

[28] African Network for the Care of Children with AIDS (ANECCA). Handbook on Pediatric AIDS in Africa. Kampala: Regional Center for Health Quality, Institute of Public Health, Makere University; 2006

[29] Ransy DG, Akouamba BS, Samson J, Lapointe N, Soudeyns H. Maternal immunity and mother-to-child transmission of HCV and HIV-1: challenges and recent advances. Med Sci 2007; 23: 991-6

[30] Newell ML, Dunn DT, Peckham CS, Semiprini AE, Pardi G. Vertical transmission of HIV-1: maternal immune status and obstetric factors. The European Collaboratice study. AIDS 1996;10: 1675-81

[31] Plaeger S, Bermudez S, Mikyas Y, Harawa N, Dickover R, Mark D et al. PlaDecreased CD8 cell-mediated viral suppression and other immunologic characteristics of women who transmit human immunodeficiency virus to their infants. J infect Dis 1999; 179: 1388-94

Citation: **Roselyne N'guessan-Sika, Richard Azagoh-Kouadio, Kouassi Christian Yao, Yeboua Kossonou Roland Yeboua, et al.** *Prevalence and Factors Associated with HIV Transmission in the Pediatric Consultation and Hospitalization Units of Bouaké University Hospital. Archives of Pediatrics and Neonatology. 2019; 2(2): 39-48.*