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Original Research Article

Evaluation of Prevention of Mother-To-Child Transmission of HIV at the Hospital Niananankoro Fomba of Segou

T. Traoré[1*], C. Sylla[3], A. Sanogo[1], K. Sidibé[1], S. Diarra[1], A. Bah[1], D. Coulbaly[1], B. Taoré[1], A. L. Coulibaly[1], A. Diarrisso[1], B. Donigolo[1], S. A. Beye[2], Y. Traoré[3], I. Téguété[3], M. Touré[4]

[1]Obstetrics-Gynecology Unit HNF of Segou, Mali
[2]Anesthesia Resuscitation Unit HNF of Ségou, Mali
[3]Obstetrics-Gynecology Department of UTH Gabriel Touré, Bamako, Mali
[4]Obstetrics-Gynecology Unit of the hospital of Mali

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***Corresponding author:** T. Traoré

Abstract

Nowadays, HIV/AIDS pandemic is a public health problem. Mother-to-child transmission is a major factor in this pandemic worldwide [1]. We have initiated this study to assess the prevention of mother-to-child transmission of HIV. This is a prospective, cross-sectional study carried out in the obstetric-gynecology department of the hospital Niananankoro Fomba (HNF) Ségou over a period of 24 months, from June 2014 to May 2016. We have collected 60 cases of HIV-positive women, out of whom 1% of pregnant women and 1.28% of new mothers. The majority were housewives (65%) with an average age of 29.36 years. They were infected with HIV1 in 98.30% associated with opportunistic infections in 21.7% of cases. Immunological status was retained in 71% of patients with CD4 T-cell counts above 350 / mm3, and the average of CD4 count was 401.8947 / mm3. No patient was able to perform the viral load due to the failure of the device. 38.30% of our patients were screened HIV positive during pregnancy and 16.70% during the delivery labor. All our patients have been put on ARV triple therapy. 31.70% of the spouses were not informed of the status of their partners. The difficulties encountered in the follow-up of the children were: loss of sight, breaks in ARVs, non-availability of PCR. These difficulties explained the high rate of mother-to-child transmission (MTCT) of HIV in our study with 16.98%.

Keywords: HIV, pregnancy, PMTCT, Evaluation, ARV.

INTRODUCTION

Nowadays, HIV/AID pandemic is a problem of public health. Transmission mother-to child is a major factor of this pandemic around the world [1].

We talk about PMTCT, when a seropositive mother transmits HIV to her baby during pregnancy, labor, delivery or breastfeeding.

In absence of intervention, the rates of MTCT vary from 15 to 45%. Efficient interventions permit, of course, to lower these rates to 5% [1, 2].

In late 2015, 77% of pregnant women living with HIV in low or middle-income countries received antiretroviral to prevent the transmission of virus to their children [2,3].

The rate of MTCT is estimated from 15 to 20% in Sub Saharan Africa [2]. In Mali, in his study in 2010, BAZECHOUIN reported a rate of MTCT to 1.8%.

According to DHS V in 2013, the national prevalence of HIV is 1.1% [4]. The seroprevalence in pregnant women increased from 2.7% in 2009 to 2.9% in 2012 [5]. The region of Segou ranks second nationally with a seroprevalence of 1.2% [4, 5].

According to PMTCT report of 2014 of regional direction of health (RDH) of Segou, HIV seropositive in pregnant women is 0.3% in Segou region [6].

MATERIAL AND METHODS

It is a prospective and cross-sectional study conducted in the obstetric-gynecology unit of the hospital Nianankoro Fomba (HNF) of Segou over a period of 24 months, from June 2014 to May 2016.

Any HIV seropositive pregnant women who agreed to be followed-up or delivered in the obstetrics-gynecology unit during the study period were included in this study whatever the gestational age was.

Any seropositive pregnant women having miscarriage or loss of sight were excluded from this study.

The participation of the survey was strictly deliberate with informed consent (in written or verbal form) and anonymous was guaranteed.

Data were collected with a survey sheet filled in by using prenatal care record book and the interrogation of patients.

Data analysis was performed by the software Epi info-version 6 and XLSTAT 2014. The statistic test used was Fisher with a probability $p < 0.05$ considered as significant.

Studied variables were based on: socio-demographic characteristics, previous obstetrics, ANC, details about couple, MTCT risk factors, pathology during pregnancy, vital prognostic of the mother, CD4 count rate, the viral load during screening and delivery, ARV regimens, the way of nursing opted by the mother, the post-partum care, PCR result, HIV status of the child after 18 months.

RESULTS

1. Prevalence

During study period 6019 pregnant women, 4687 deliveries have been recorded out of which 68 women were HIV positive of whom 8 were excluded from the study for loss of sight (05) and miscarriages (03) with HIV prevalence rate of 1% among pregnant women and 1.28% among mothers.

2. Sociodemographic characteristics:

Age

Age (year)	Number	Freq (%)
< 19years	3	5.00
20 - 29 years	**29**	**49.00**
30 - 39 years	23	38.00
≥ 40 years	5	8.00
Total	**60**	**100.00**

Occupation

Occupation	Number	Freq (%)
Housewife	**39**	**65.00**
Public servant	7	12.00
Pupil or student	2	3.00
Others*	12	20.00
Total	**60**	**100.00**

*: traders or sellers =5, hairdressers =3, seamstresses =2, instructor =1, restaurant owner=1.

Education level

Level	Number	Freq (%)
Out of school	**27**	**45.00**
Primary	21	35.00
Secondary	12	20.00
Total	**60**	**100.00**

Marital status: 92% of our patients were married among them 32,73% were polygamous.

Obstetrical history

Parity

Parity	Number	Freq. (%)
Nulliparous	11	18.30
Primiparous	9	15.00
Pauci-parous	**24**	**40.00**
Multiparous	4	6.70
Large Multiparous	12	20.00
Total	**60**	**100.00**

The parity average: 2.8 extremes from [0 to 9]

Qualification of ANC provider

Qualification	Number	Freq. (%)
Midwife	**23**	**42.00**
Obstetrician/Gynecologist	4	7.00
Doctor	9	16.40
Student	19	34.60
Total	**55**	**100.00**

HIV status of the husband

Status	Number	Freq (%)
Unknown	26	43.33
HIV negative	3	5
HIV positive	**31**	**51.67**
Total	**60**	**100.0**

All HIV positive husbands were on ARV.

Clinical data:

Risk factors of MTCT during pregnancy

Risk factors	Number	Freq. (%)
Forceps delivery	2	3.33
Chorioamnionitis	1	1.67
CD4<200 Cells/mm3	5	8.33
Metrorrhagia	4	6.67
Cervicovaginal infection	9	15.00
RPM	4	6.67
Episiotomy	4	6.67
No risk factor	8	13.33
Others *	**23**	**38.33**
Total	**60**	**100.00**

*: Malaria =11; Prolonged labor=6; Early delivery threat =3; Bracht Manoeuvre =2; Vulvovaginal tearing =1.

Pathology associated to pregnancy

Pathology	Number	Freq. (%)
None	**27**	**45.00**
Related to HIV *	13	21.70
Not related to HIV**	20	33.30
Total	**60**	**100.00**

***:** pulmonary tuberculosis =2(15%); vulvovaginal condyloma=1(8%); Diarrhea>15j=1(8%), herpes zoster=2(15%); oral thrush=3(24%); Prurigo=2(15%); Kaposi's sarcoma=2(15%)

****:** Malaria=10(55%); HBP=4(20%); Asthma=2(10%); diabetes=2(10%); sickle cell disease=1(5%); cervicitis =1(5%).

WHO clinical stage of patients

Clinical stage	Number	Freq. (%)
Stage 1	**43**	**71.70**
Stage2	8	13.30
Stage3	9	15.00
Total	**60**	**100.00**

Lymphocyte T/CD4 rate during screening.

Lymphocytes T/CD4	Number	Freq. (%)
<350	17	28.33
350-500	**30**	**50.00**
>500	11	18.33
Not done	2	3.33
Total	**60**	**100.00**

The median lymphocyte T CD4 rate was 401.8947cells/mm3, with extremes of 124 to 966cells/mm3

ARV initiation period

Period	Number	Freq. (%)
Before pregnancy	**26**	**43.30**
During pregnancy	22	36.70
During labor	12	20.00
Total	**60**	**100.00**

NB: HIV1 (98.30%) and HIV2 (1.7%)

ARV treatment regimens

Regimens	Number	Freq. (%)
TDF/3TC/EFV	**57**	**95**
TDF/3TC/NVP	2	3.45
TDF/3TC/ LPV/r	1	1.72
Total	**60**	**100.00**

Delivery way

Way	Number	Freq (%)
Low	**55**	**91.70**
High*	5	8.30
Total	**60**	**100.00**

*: RPH=1; RPM=3; scarred uterus on pelvis boundary=1

Vital prognostic of the mother

Prognostic	Number	Freq. (%)
Living	**58**	**96.70**
Died*	2	3.30
Total	**60**	**100.00**

*: RPH=1 and opportunistic infections=1

Apgar score of new to 1st minute

Apgar	Number	Freq (%)
0	7	11.67
4-7	7	11.67
8-10	**46**	**76.66**
TOTAL	**60**	**100.0%**

NB: at 5th minute of life all the newborns had an Apgar score ≥8

Feeding way of the newborn

Way	Number	Freq (%)
Alternative feeding	10	18.87
Breastfeeding	43	**81.13**
TOTAL	**53**	**100**

HIV status of the newborn at 18 months

Status	Number	Freq (%)
Negative	**38**	**71.70**
Positive	9	16.98
Loss of sight	6	11.32
TOTAL	**53**	**100.00**

HIV status at 18 months on the basis of labor timeline in hour

	HIV status at 18months		
Labor timeline	**Negative**	**Positive**	**Total**
(H)	N (%)	N (%)	N (%)
Unclear	2 (5,70)	3 (33.33)	5 (11.36)
<12	30 (85,7)	5 (55.56)	35 (79.54)
>12	3 (8,60)	1 (11.11)	4 (9,10)
Total	**35 (100,0)**	**9 (100,0)**	**44 (100,0**

Exact Fisher: p-value=0.462

Birth weight according to CD4 rate

	Birth weight in gram		
CD4 rate	<2500 N (%)	2500-3660 N (%)	**Total N (%)**
<**350**	10 (52.6)	7 (17.9)	17 (29.3)
350-500	7 (36.8)	23 (59.0)	30 (51.7)
>500	2 (10.5)	9 (23.1)	11 (19.0)
Total	**19 (100.0)**	**39 (100.0)**	**58 (100.0)**

Exact Fisher: p-value=0,030

DISCUSSION

1. Prevalence

HIV seroprevalence was respectively 1% and 1.2% in pregnant women and mothers. That reflects the overall prevalence of pregnant women in Mali with 1% [15].

HIV1 with 98.30% was common compare to HIV2 with 1.7%. The same trends have been reported by BAZECHOUIN [10] and SOGOBA [7] with 98.5% of HIV1 to 1.9% for HIV2 and 98.4% of HIV1 to 1.6% for HIV2 respectively.

2. Sociodemographic characteristics

The average age of our patients was 29.30 years. This result is close to those of CAMARA [11], BAZECHOUIN [10] and GASSAMA [14] who have reported 29.30 years, 29.1 years and 29.0 years of average age respectively.

Married women were the most frequent with 92%, followed by single women (5%) and 2.6% of widows.

The majority of our patients were married women (65%) with no generating income activity, out of school (45%) or primary level (35%). This was vulnerability factors and most of them were living in monogamic regime (67.27%). In the series of BAZECHOUIN [10] the housewives predominated and most of them were living in monogamic regime (59.8%), in contrast, in the series of DOUMBIA [10] most of the patients were polygamous (91.46%). The majority of our patients were housewives (65%). They had no or low level of education with low generating income activity. This might expose them to risky sexual behavior and making them vulnerable groups.

The average parity was 2.8 in our series. This result is similar to those of CAMARA [11], DOUMBIA [10], TOUGRI [12], who found respectively 2.4, 2.5 and 2.2.

91.66% of our patients were followed up during pregnancy out of whom 42% by midwives who are the first contact of pregnant women.

68.30% of husbands were informed about the HIV status of their partners and 51.67% were HIV positive.

This result is near to that of ZABAONRE in Ouagadougou [13] who found out 53.7% of HIV

positive husbands. All the husbands (100%) infected by HIV virus were on ARV treatment.

3. Clinical data

Among the risk factors of mother-to-child transmission of HIV by pregnancy or during delivery labor, we have pointed out: malaria (48%), prolonged labor (26%), cervicovaginal infections, RPM (11.6%) and the lymphocyte rate CD4 <200 Cell/mm3 (8.33%).

In Kenya GHALLAGER and al [16] have found out malaria as factor of MTCT in two cases of HIV and in Gabon MOULANGA [8] found one case. CAMARA [11] in his series has figured out malaria as risk factor in 6.3% pregnant women.

The predominance of malaria factor in our study might be accounted for by the endemicity of this pathology in the study area.

The oral thrush, pulmonary tuberculosis, zoster, prurigo, Kaposi's sarcoma have been the opportunistic infections we came across with 21.7%.

The infections not related to HIV as malaria, HBP, asthma, diabetes, sickle cell disease and cervicitis have represented 33.3%.

These results are similar to those of CAMARA [11] with 21.6% of opportunistic infections and 32.3% of infections not related to HIV.

In contrast, DOUMBIA [15] has found out 72.5% of diseases not related to HIV to 8.53% opportunistic diseases.

We have recorded 15% of patients at stage III of WHO against 11.2% in the series of SOGOBA [7], which is a major risk factor of MTCT.

71% of our patients had conserved immunologic state with a rate of CD4 >350 cellules/mm3. Moreover 52.6% of small birth weight were mothers whose CD4 rate was < 350cellules/mm3. In our study, no patient was able to perform viral load, because of the device failure.

43.3% of patients have been put on ARV treatment before pregnancy, 36.7% during pregnancy and 20% during delivery labor. This initiation was contingent on the time of screening.

95% of our patients have received a tri-therapy according to the therapeutic regimen of first line (TDF/3TC/EFV/r). An alternative regimen including (TDF/3TC/NVP) has been used in patients who have not tolerated the first line regimen with 3.45%. A patient was on TDF/3TC/LPV/r., it is the one with HIV2 [15].

The vaginal way was the preferential way of delivery with 91.70% as well as in the series of SOGOBA.S [7]; MOULANGA A.F [8]; BAZECHOUIN [9]; DOUMBIA.D [10]. That could be explained by the absence of indication of caesarian.

We have recorded 3.3% of maternal deaths due to RPH and opportunistic infections. This result is higher to that of CAMARA [11] who found 2.7% of maternal deaths.

The Apgar score was higher to 7 in the first minute in 86.8% of newborns. BAZECHOUIN [9] and DOUMBIA [10] have reported a frequency close to ours with respectively 84% and 84.6% of newborns having an Apgar score normal in the first minutes.

The choice of the type of feeding was informed choice. That is why 79.60% of the mothers in our study opted for breastfeeding. Those choices were justified mainly by the fear of stigma but also for financial constraints as well.

In the series of DOUMBIA.D [10] and SOGOBA.S [7] the majority of mothers had chosen artificial feeding.

11.11% HIV positive children in 18 months were born after 12 hours of labor in contrast 33.33% of cases the timeline of labor was unclear.

Our rate of transmission was 16.98%. which is substantially higher than that reported by BAZECHOUIN [10] (1.8%) but lower than that of MULANGA [8] in Gabon (28.33%). These rates could be accounted for by breastfeeding but also by the irregularity in the children follow-up.

CONCLUSION

HIV association with pregnancy remains a high risky situation for the mother-to-child transmission of HIV. The prevalence of this association in our study was 1% in pregnant women. The rate of transmission is still high in our series with 16.98%.

The early screening and the use of ARV treatment during pregnancy permits to reduce substantially the vertical transmission of HIV hence the necessity to make readily available the screening test and ARV.

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