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Background: Since 1994 and the first introduction of ARV therapy in pregnant women mother to child transmission (MTCT) has dropped dramatically. First limited to AZT monotherapy, bitherapies and tritherapies were then introduced. This study was designed to assess MTCT when ARV therapy is offered to HIV pregnant women, to assess compliance to therapy and its effects on MTCT.

Methods : Our study is a **monocentric prospective study** unrolling HIV positive women delivering in our unit. CD4 count and Viral Load (VL) were checked at beginning of pregnancy and at delivery. Infection in babies was assessed by viral cultures or PCR techniques. Mothers' treatment were divided in three groups : monotherapy (A), bitherapies (B), tritherapies (C). All women received AZT infusion at delivery; all the babies received AZT therapy during 6 weeks. C-section was not systematically performed.

Results: Between 1994 and 2004 we unrolled **381 women**, 72% delivered vaginally, 28% by C-section. Most HIV discoveries were recent (52% over the past year) which explain the low rate (23%) of pretreated. At beginning of pregnancy mean CD4 count was 391, mean VL 41 682 (range 0-4070147). At delivery mean CD4 count was 430, mean VL was 1546 (range 0-43000), 58% were undetectable or under 100; only 4% were above 30 000. Patients were **14% in group A , 57% in group B and 28% in group C**, only 1% had no treatment. In group A, VL was available in only 30% but was never undetectable at delivery. In group B, mean VL dropped from 24 161 to 8900 with 62% undetectable or under 100. In group C mean VL dropped from 77 089 to 3229 with 61% undetectable or below 100. The overall total **lack of compliance** was observed in only 7% of the cases. Out of the 371 evaluables babies only 9 were contaminated (2.4%), five delivered vaginally, four by C-section. All the cultures or PCR were positive at birth, which account for early contamination before delivery. In **five cases** (55%) **lack of mother compliance to treatment** could be retained. Two of the four other cases had premature birth with prolonged rupture of the membranes.

Conclusions: According to CD4 count and VL variations very good treatment compliance (over 90%) was seen in HIV pregnant women a much better result than in the general population. ARV therapy plays a major role to prevent MTCT and none of our babies was contaminated during delivery. However **good compliance should be emphasized to avoid more than half of the remaining MTCT.**

**COMPLIANCE TO
ARV THERAPY IN
PREGNANT WOMEN
INCIDENCE ON
MOTHER TO CHILD
TRANSMISSION**

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INTRODUCTION

Since 1994 and the first introduction of ARV Therapy in pregnant women mother to child transmission(MTCT) has dropped dramatically. First limited to AZT monotherapy bitherapies and tritherapies were then introduced.

This study was designed to **assess MTCT** when ARV therapy is offered to pregnant women , to **assess compliance** to therapy and **its effects on MTCT**

SUMMARY

- **Monocentric prospective study of 381 HIV positive pregnant women delivering between 1994 and 2004 at Lariboisière hospital (Paris France) receiving ARV therapy during pregnancy, AZT infusion at delivery, baby post natal treatment by AZT. No systematic C.section performed; 371 evaluable babies.**
- **Deliveries: 72% vaginal, 28% C.section**
- **Pretreated women: 23 (52% of HIV discoveries over the past year)**
- **Antenatal ARV therapies: monotherapy (AZT): 14%, bitherapies (mostly AZT + Lamivudine) : 57%, tritherapies (NRTI, NNRTI, antiprotease):28%, no treatment 1%**
- **MTCT assessed by viral cultures or PCR**
- **Compliance assessed by variations of CD4 count and Viral Load (VL)**
 - ❖ **Correct in 90% :MTCT 0.9%**
 - ❖ **Total lack 10% : MTCT 14%**
- **Total mother to child transmission: 2.4% (nine cases, all antenatal)**
 - ❖ **6 lack of compliance : two third of the cases**
 - ❖ **2 premature birth with premature rupture of the membranes (28, 30 weeks)**
 - ❖ **1 without explanation :CD4>500 and VL=30at delivery**

CONCLUSIONS

- Excellent accessibility to ARV therapy for pregnant women delivering in France and low rate of global MTCT
- MTCT cases always antenatal
- Good compliance to ARV therapy during pregnancy, higher than in the general population
- MTCT 15 times greater when lack of compliance
- Therefore in the future efforts should focus on treatment compliance in order to avoid almost two third of the remaining MTCT cases

METHODS 1

- **Monocentric prospective study**
- **HIV 1 Pregnant women**
- **Maternal status** assessed by **CD4 count and Viral Load (VL)**
 - ❖ **At beginning of pregnancy or just before treatment**
 - ❖ **At delivery**
- **Compliance** assessed on patients enquiries and/or expected modifications of CD4 & V.L. under ARV therapies
- **New born status** assessed by viral cultures or PCR at Birth, First month, third month

METHODS 2

- **ARV during pregnancy**
 - ❖ **Monotherapy by AZT**
 - ❖ **Bitherapies mostly AZT + Lamivudine**
 - ❖ **Tritherapies : NRTI , NNRTI , Antiproteases**
- **Beginning of ARV therapy**
 - ❖ **Before pregnancy for pretreated patients**
 - ❖ **First trimester if CD4 <200 and/or high VL**
 - ❖ **Third trimester (28-32weeks) if CD4 >200 and VL <30 000**
- **Systematic AZT infusion at delivery**
- **No systematic C.section**

POPULATION

- **381 pregnant women** unrolled between **1994-2004**
 - ❖ 80% of subsaharian Africans
 - ❖ 52% recent HIV discovery (less than one year)
 - ❖ 23% pretreated
 - ❖ 72% vaginal deliveries, 28% C.section
 - ❖ 371 evaluable babies
- **Three groups of patients**
 - ❖ Group **A** receiving **monotherapy**
 - ❖ Group **B** receiving **bitherapy**
 - ❖ Group **C** receiving **tritherapy**

RESULTS

- 1. ARV and CD4 count in total of cases**
- 2. ARV and Viral Load in total of cases**
- 3. CD4 in groups A, B, C.**
- 4. V.L. in groups A, B, C.**
- 5. PREGNANCY follow up**
- 6. COMPLIANCE TO ARV**
- 7. MOTHER TO CHILD TRANSMISSION**
- 8. NO COMPLIANCE : MTCT,CD4 and V.L**
- 9. Six cases of MTCT without compliance**
- 10. Three cases of MTCT with good compliance**

ARV and CD4 (1)

Before ARV or
beginning of
pregnancy: CD4 (1)

At delivery
CD4 (2)

Mean

391

430

Median

319

407

Range

3 - 1116

21 - 1281

ARV and VL (2)

Before ARV or
beginning of
pregnancy: VL 1

At delivery: VL 2

Mean	41 682	1546
Median	5 566	30
Range	0 – 407 147	0 – 43 000

58 % Undetectable
4 % < 30 000

CD4 in A,B,C groups (3)

NB:1 % not treated

	Group A 14 %	Group B 57 %	Group C 28 %
CD4 (1) beginning of pregnancy or before Treatment	Mean 442 Median 447 Range 116-1116	Mean 412 Median 354 Range: 89-887	Mean 280 Median 265 Range: 16-847
CD4 delivery	Mean 410 Median 430 Range: 89-704	Mean 478 Median 430 Range:90-1281	Mean 301 Median 286 Range: 42-736

V.L in A,B,C groups (4)

NB 1 % not treated	Group A 14 % 30% evaluable	Group B 57 %	Group C 28 % No tritherapy before 1998
V L (1) beginning of pregnancy or before Treatment	Mean 15 600 Median 553 Range <500-100 000	Mean 24 161 Median 4496 Range 0-197 500	Mean 77 089 Median 21709 Range 0-407147
V L delivery	Mean 1254 Median 135 Range 70-7800 Always detectable	Mean 8 900 Median 626 Range 0-10 755 62% <50	Mean 3 229 Median 30 Range 0-43000 61% <50

PREGNANCY follow up(5)

➤ **Very good availability to ARV therapy**

- ❖ **First clinic: mean 14w range 6-40w**
- ❖ **Number of clinics: mean 8 range 0-10**

➤ **Since 94 by the same team in a special HIV clinic**

- ❖ **Two obstetricians, one pediatrician**
- ❖ **One midwife**
- ❖ **One nurse**
- ❖ **One secretary**
- ❖ **One social worker**
- ❖ **ARV discussed each week with the hospital HIV staff**

COMPLIANCE TO ARV (6)

- 90% good compliance (n=328) better than in a general population of HIV treated patients
- 10% of total lack of compliance (n=43)

No relation with :

- ❖ First antenatal clinic
- ❖ Total number of clinics
- ❖ Education level and employment
- ❖ Country of birth
- ❖ Date of entry in France
- ❖ Prescriptions : mono, bi or tritherapies

Major correlation with :

- ❖ Type of housing: half of non compliance seen in women without permanent address
- ❖ HIV unknown by the future father

Mother To Child Transmission (7)

Total of patients : 2.4% n=9/371

Good compliance : 0.9% n=3/328

Lack of compliance : 14% n=6/43

Antenatal transmission : all viral cultures or PCR positive at birth

NO COMPLIANCE (8)

	Non infected N=37	Infected N=6
CD4 (1) mean median range	352 286 3 - 702	197 173 57 - 319
CD4 (2) mean median range	329 351 21 - 581	279 186 72 - 753
VL (1) mean median range	18 144 4023 0 - 129 000	30 475 15 450 7 500 - 100 000
VL (2) mean median range	2451 2100 140 - 35 000	5 002 1289 30 - 43 000

Six cases of MTCT without compliance (9)

DIA... salimata (2001)

- African no profession
- without permanent address
- First visit 15 w. , 7 clinics
- **Genotypic resistance**
- Bithera NO COMPLIANCE
- CD4 (2) 167 VL (2) 543
- **PREMATURE 31w , prolonged rupture of membranes (3w)**
- Vaginal delivery

PER... Isabelle(1996)

- French , prostitution,homeless
- No follow up during preg.
- **NO ARV during pregnancy**
- AZT infusion delivery
- CD4 (2) 753 VL(2) 289
- full term vaginal delivery

BAS... Bambula(1996)

- African, employee
- Cerclage at 14 w ,8 clinics
- **AZT 23w interruption between 27-31w**
- CD4(2)355 VL(2) ND
- Full term vaginal delivery

MAT... Nguala (2004)

- African no profession
- **Pretreated No compliance**
- First visit 26w, 3 clinics
- Trithera
- **Compliance clinic at 37w**
- CD4 (2) 72 VL (2) 24 000
- C.section at 38w

KAR... Affoussata(2000)

- African no profession
- Without permanent address
- First visit at 15 w, 7 clinics
- **Bithera 18-31w no effective then trithera**
- CD4(2) 57 VL(2) 43 000
- Elective C.Section at 38w

YAH...Sylvie (2001)

- French,employee
- Pretreated
- **Genotypic resistance**
- First visit 12w 8 clinics
- **No compliance until 30w**
- Compliance afterwards
- CD4 (2) 186 VL(2) 150
- Elective C.section 38w

3 cases of MTCT with compliance (10)

CUE... Marieme (2000)

- African no profession
- without permanent address
- First visit 13 w. , 8 clinics

- Bitherapy at 32w
- CD4 (2) 590 VL (2) 30

- Full term Vaginal delivery
- Suspicion of « virus reactivation »

Dos... Fatoumata (1994)

- African ,employee

- Monotherapy AZT
- CD4(2) 89 VL(2) ND

- C.section

May... Bakidi (1996)

- African no profession

- First visit at 12w

- Monotherapy AZT 15w
- CD4(2) 245 VL(2) 5 800
- Premature rupture of membranes at 28w

- Vaginal delivery at 29s

DISCUSSION

- Since 1994 ,99% of our pregnant women received adequate ARV . Of course the prescriptions changed over the decade according to the availability of drugs and the French guide lines. The overall transmission rate is low: 2.4%.
- However if we look closer to our cases we can find a subgroup of 10% of cases with **lack of compliance** and a transmission rate reaching **14%**.
- **Obviously a better monitoring for compliance to ARV therapy should take place. Improvements could be:**
 - ❖ **Viral load checked at each clinic**
 - ❖ **Drugs monitoring by plasmatic dosages**
 - ❖ **Special clinics focused on compliance**