Initiating cART in Pregnancy: Impact on HIV RNA Decay

Jasmini Alagaratnam[1], Sarah Chitty[2], Annemiek de Ruiter[3], Fionnuala Finnerty[4], Rebecca Marcus[5], Achyuta Nori[3], Liat Sarner[5], Rimi Shah[6], Graham Taylor[1] for the London HIV Perinatal Research Group

Imperial College Healthcare NHS Trust[1], Chelsea and Westminster Hospital[2], Guys and St Thomas' NHS Foundation Trust[3], Brighton and Sussex Hospitals NHS Trusts[4], Royal London Hospital[5], Royal Free Hospital[6]

Introduction

- High maternal HIV-1 viral load (VL) is the major risk factor for mother-to-child transmission (MTCT).
- Vaginal delivery is recommended when VL is low or undetectable.
- cART suppresses HIV replication, reducing MTCT and allows normal vaginal delivery
- cART is evolving rapidly and the optimal regimen for initiating treatment in pregnancy remains uncertain.

Methods

9 HIV clinics in Southern UK (2001-05)
Clinical data anonymised
- Demographics
- Serial HIV loads
- Mode of Delivery
- cART

Inclusion Criteria:

cART started in this pregnancy. Measurable HIV load (VL) at baseline and at 14 ±3days

Subjects with VL<50 at day 14 excluded: PI 26, NNRTI 2, Integrase Inhibitor 5.

Outcomes:

1. **Initial HIV half-life** (T/2)*
2. **Time to undetectable VL**

Mid-point between last detectable and first undetectable VL

3. **Undetectable at 36 weeks/delivery**

$$* T/2 = \frac{no.\,days\ post\ starting\ cART\ x\ lg\ 0.5}{lg\ (1st\ VL\ post\ starting\ cART/baseline\ VL)}$$

Results



n = 160 Medians (range)
Age: 30 years (17 – 42)
Ethnicity: 84% Black African / Caribbean, 11% White
HIV acquired: Heterosexually 97.5%, IDU 2%,
Co-infection: 1 with Hepatitis B, 2 with Hepatitis C
Baseline CD4: 333 cells/μL (30 – 1136)
Baseline VL: 17, 524 cp/mL (548 – 7, 569, 500)
Gestational age cART started: 21 weeks (5 – 35)
Backbone – dual NRTI (100%)

Median T/2: 2.4 days (1.0 – 5.3)
107 (67%) undetectable at 36 weeks GA
132 (83%) undetectable by delivery

Table 1 Outcomes according to 3rd cART Agent

cART 3rd agent by class	n	Baseline HIV VL (cp/mL)	Baseline CD4 (cells/μL)	viral T/2 (days)	Time to <50 (days)	GA at start of cART (weeks)	% <50 36 weeks GA	% <50 at delivery
Protease Inhibitors (PI)	122	16,137	359	2.5	67	22	65	83
NNRTI	32	22,852	209	2.3	69	19	68	77
Integrase Inhibitor (II)	6	28,770	455	1.9	46	12	100	100

In univariate analysis, HIV T/2 (days) was significantly shorter by class, II vs PI (p 0.01) but not by the three main individual 3rd agents: Atazanavir (ATZ), Nevirapine and Lopinavir.

In linear regression analysis, viral half-life decay was associated with baseline VL (p < 0.001) and baseline CD4 (p 0.01), but not with gestational age when cART was commenced (p 0.2).

In multivariate linear regression analysis only baseline VL remained significantly associated with viral half-life decay (p < 0.001).

Time to VL <50 and %<50 at 36/40 were not influenced by 3rd agent.

Data analysis Performed in SPSS

Conclusions

- A range of cART combinations were effective in achieving undetectable HIV load (VL) at 36 weeks GA and at delivery.
- Baseline VL was the single factor significantly associated with a more rapid initial viral decay.
- The limited data on Integrase Inhibitors suggest they perform well in pregnancy, as evidenced by:
  - shorter viral half-life
  - shorter time to undetectable VL
  - high % of undetectable VL at 36 weeks and at delivery
- Integrase inhibitors might be considered for pregnant women with high HIV loads initiating cART after 20 weeks GA.
- However, in this cohort, patients started Integrase Inhibitors earlier and at higher viral loads therefore more data are required to allow correction for these confounders.

References and acknowledgements

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