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VIRAL RESPONSE IN HIV INFECTED INFANTS STARTING ART AT 1 MONTH IN SOUTHERN MOZAMBIQUE

THE MIAMI CENTER FOR AIDS RESEARCH CFAR UNIVERSITY OF MIAMI MILLER SCHOOL OF MEDICINE

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BACKGROUND

In perinatal HIV infection, early infant HIV diagnosis and initiation of antiretroviral treatment (ART) are critical for achievement of viral suppression (VS). VS must be sustained to achieve long term benefits and allow infants to grow into adolescence as well as to prevent HIV-related complications.
Maintaining undetectable viremia, will also prevent ART resistance development, which is a constraint in Africa where available drugs for younger patients are still limited and first line regimen must be preserved as longer as possible.
This study aimed at investigating viral response in a cohort of infants who started ART in the first months of life in southern Mozambique, Maputo Province.

METHODS

Project TARA (Towards AIDS Remission Approaches) included a descriptive cohort study of HIV perinatally infected infants who started ART at ≤ 2 months of age and were followed with frequent plasma viral load (VL) measures for two years.
VL monitoring was performed at 1, 2, 4, 5, 8, 9, 11, 17, 18 and 23 months and children with ≥ 4 measurements were included in the analysis.
Viral suppression (VS) was defined as HIV RNA plasma <1000 copies/ml, according to MoH guidelines.
Sustained VS was defined as ≥ 2 consecutive VS measures.
Follow-up consisted of monthly clinical and psychosocial support visits provided by a multidisciplinary team. Adherence to treatment was self-reported by the caregiver.
Kaplan–Meier estimator and descriptive analyses were used to summarize infants virologic response.
ANTHRO package was used to calculate anthropometric measures z-scores. Time course of weight for age z-score, weight for height z-score and head circumference z-score, during follow-up has been represented according to viral response to treatment.

RESULTS

Characteristics of infants	Virologically suppressed (VLS) N=18	Non virologically suppressed (No VLS) N=12	P-value
Sex, n (%)			
Male	6 (33.33)	5 (41.67)	
Female	12 (66.67)	7 (58.33)	0.7116[1]
Age at ART initiation (days)			
Median [IQR]	34.5 [20]	33 [7.5]	0.5224[2]
Post-natal prophylaxis, n (%)			
No	2 (11.1)	0	
Yes	13 (72.22)	11 (91.67)	0.4923[1]
Missing	3 (16.67)	1 (8.33)	
WHZ score at baseline, n (%)			
>=-1SD	13 (72.22)	12 (100)	0.0657[1]
>=2SD e <-1SD	5 (27.78)	0	
WHO stage at baseline, n (%)			
I	17 (94.44)	10 (83.33)	
II	1 (5.56)	1 (8.33)	0.4975[1]
III	0	0	
IV	0	1 (8.33)	
CD4 at baseline Median [IQR]			
cd4mm	2,081 [1,137]	1,905 [575]	0.4187[2]
cd4%,	32 [12.1]	26 [10]	0.0650[2]
Hgb (g/dl) at baseline			
Median [IQR]	9.6 [2.7]	10.6 [2.51]	0.2307[2]
Missing	3 (16.67)	0 (0)	
Infant pre-ART VL			
Median [IQR]	1,348,664 [4,684,542]	2,014,386 [6,637,924]	0.6900[2]
Mean log_{10} (sd)	5.99 (0.94)	6.17 (0.62)	0.9204[2]
Mother VL during follow up, n (%)			
Detectable	4 (22.22)	6 (50)	0.1221[1]
Undetectable	11 (61.11)	4 (33.33)	
Missing	3 (16.67)	2 (16.67)	
Mother self-disclosure to family			
Yes	13 (72.22)	11 (91.67)	1.0000[1]
No	2 (11.11)	1 (8.33)	
Missing	3 (16.67)	0	

[1] Fisher's Exact Test [2] Mann-Whitney Test

Thirty infants started ART with ZDV/3TC/LPVr at 34 days (IQR 18). Median pre-ART VL was 1.988.708 c/ml (IQR 4.661.355). Among all children, 18/30 (60%) reached VS, after a median time of 7.8 months (min 1, max 24) on ART. 9/18 (50%) infants who initially achieved VS had a rebound within 3.3 mo (1-10mo); 5/9 re-suppressed within 3mo (1-7mo). 14/30 (47%) infants had sustained VS. All infants were adherent to clinical visits and drugs pick up. Cumulative probability of VS among all infants of the cohort was 43% at 6mo, 56% at 12mo and 73% at 18mo (Fig1). Considering only the18 infants adherent to ART who reached VS, the cumulative probability of VS at 12mo was of 89% (Fig 2). The cumulative probability of viral rebound at 6 months was of 50% (Fig. 3).
There was no statistically significant difference in time to VS among infants with pre-ART VL > Log 6 compared to those with VL< Log 6.

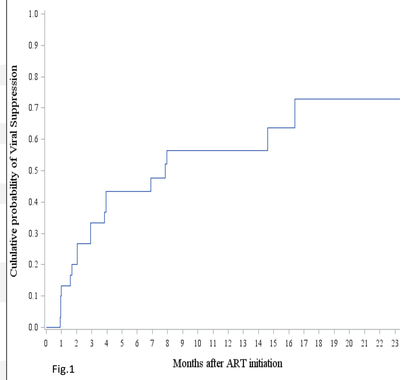

Fig.1

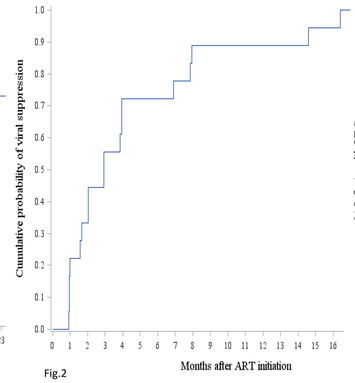

Fig.2

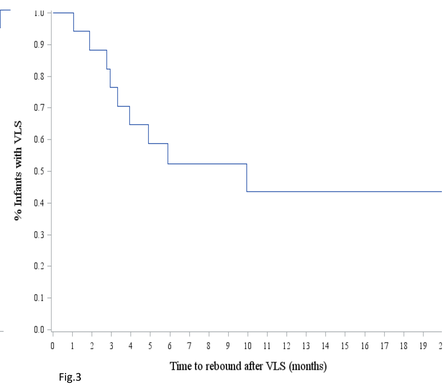

Fig.3

A difference in trends of anthropometric measurements was evident, particularly the weight-for-age Z score: infants with sustained VS presented a better WAZ-score compared to those with no sustained VS and was more noticeable from the age of 8-9 months (Fig.4, 5)

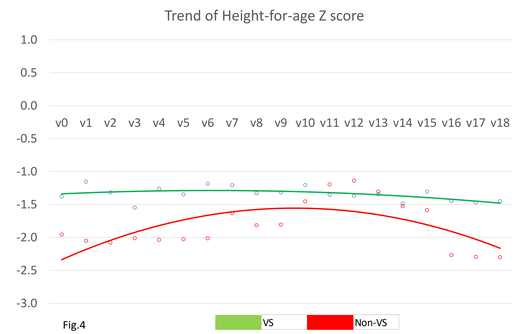

Fig.4

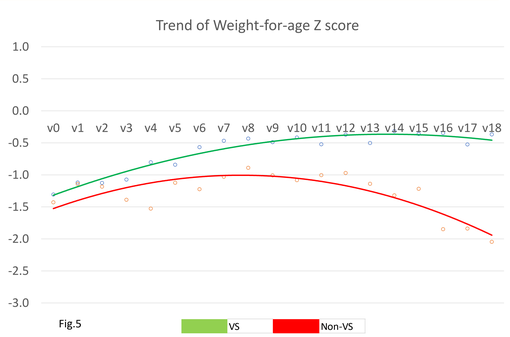

Fig.5

CONCLUSIONS and RECOMMENDATIONS

Despite early ART initiation with a LPV/r based regimen and adherence efforts, only 60% HIV+ infants achieved virus suppression, and of these, about 50% had a virus rebound demonstrating adherence challenges in sustaining undetectable viral load faced by caregivers.
Clinical benefits gained with early diagnosis and early treatment initiation must be maintained throughout child ART care. Therefore an urgent response to enable caregivers to build a strong adherence behavior is needed by the HIV program.
Build skills and abilities of clinicians to early recognize clinical signs of poor adherence by using growth monitoring and combining it with viral test result, is of paramount importance.
Research to further understand barriers to ART adherence among caregivers along with innovative approaches to address problems that prevent timely delivery of medications to infants in low resource countries are urgently needed.

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