CROI 2022

HIV-1 RNA DECAY IN SEMEN AND RECTUM WITH DTG PLUS 3TC VERSUS BIC/FTC/TAF

Poster-H04
495

Arkaitz Imaz[1], Sofía Scévola[1], Jordi Niubó[1], Pere Domingo[2], Guillermo Verdejo[3], Adrian Curran[4], Vicens Diaz de Brito[5], Juan Tiraboschi[1], Sandra Morenilla[1], Benito García[1], Irene Soriano[1], Daniel Podzamczer[1]

[1] Bellvitge University Hospital, L'Hospitalet de Llobregat, Spain; [2] Santa Creu i Sant Pau Hospital, Barcelona, Spain, [3] Sant Camil Hospital, Sant Pere de Ribes, Spain, [4] Vall d'Hebron Hospital, Barcelona, Spain, [5] Parc Sanitari Sant Joan de Déu, Sant Boi de Llobregat, Spain

BACKGROUND

- The assessment of HIV decay kinetics in genital fluids and rectum may assist in predicting the potential risk of sexual transmission after initiating antiretroviral therapy (ART).
- HIV decay in these compartments have not yet been described for the dual combination dolutegravir (DTG) plus lamivudine (3TC).
- Our objective was to described HIV decay in blood plasma (BP), seminal plasma (SP) and rectal fluid (RF) with DTG+3TC in comparison with Bictegravir / Emtricitabine / Tenofovir Alafenamide (BIC/FTC/TAF)

METHODS

- ❑ Design: Open-label, randomized, multicenter, pilot clinical trial.
- ❑ Inclusion criteria: ART–naive cisgender males with plasma HIV-1 RNA <500,000 copies/mL, CD4 cell count >200/µL, negative for HBV and absence of mutations associated with resistance to the study treatments at screening. Individuals with acute HIV infection were not eligible.
- ❑ Participants were randomized 2:1 to initiate first-line ART with DTG 50 mg plus 3TC 300 mg OD or BIC/F/TAF 50/200/25 mg OD, respectively, and randomization was stratified by plasma HIV-1 RNA below or above 100,000 copies/mL and CD4 count below or above 350 cells/µL.
- ❑ HIV-1 RNA was measured in BP, SP and RF at baseline (BL), days 3, 7, 14 and 28, and weeks 12 and 24 (Alinity m HIV-1 AMP assay, Abbott Molecular; limit of quantification, 20 copies per mL or per swab in case of RF).

Statistical Methods

- The nominal categorical variables were described as number of cases and the percentage. Continuous variables that followed a normal distribution were described with the mean and standard deviation. Continuous variables that did not follow a normal distribution were described with the median, the first and second quartiles
- HIV-1 RNA (log10) at each time point and differences from baseline were described using the median and interquartile range (IQR). The Kruskal-Wallis test was used for comparisons between groups.
- To study the evolution of the differences of HIV-1 RNA (log10) with respect to baseline according to treatment groups, mixed linear regression models with patient clusters were carried out.
- Kaplan-Meier method censored by intervals was used to assess the median time to achieve undetectable HIV-1 RNA. The asymptotic Log-Rank test was used to compare risk between treatment groups.

RESULTS

Figure 1. Participant Disposition

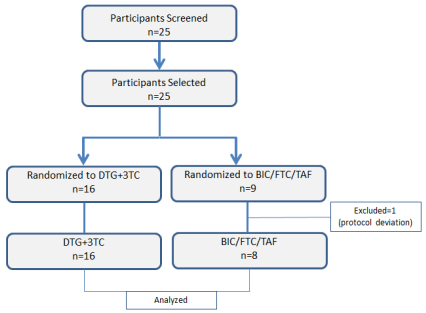


Table 1. Baseline Characteristics

Characteristic	DTG/3TC N = 16	BIC/FTC/TAF N = 8
Age (years), median (range)	31 (22-60)	32 (20-49)
CD4 count, cells/µL, median (range)	392 (331-463)	436.5 (216-716)
Blood plasma HIV-1 RNA, log_{10} Copies/mL, Median [IQR]	4.56 [4.22;4.86]	4.48 [4.15;5.04]
Seminal plasma HIV-1 RNA, log_{10} Copies/mL, Median [IQR]	2.38 [1.30;2.95]	2.71 [1.30;3.90]
Rectal fluid HIV-1 RNA, log_{10} Copies/swab, Median [IQR]	2.92 [2.36;3.73]	3.55 [3.05;4.13]

HIV-1 RNA Decline Through Week 24

Figure 2. Median (IQR) HIV-1 RNA (Log10) at each time point in BP

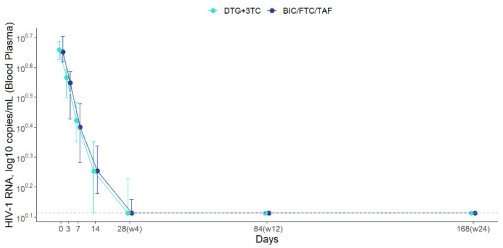


Table 2. Median [IQR] HIV-1 RNA (Log10) at each time point in BP

Compartment	Treatment Group	Median [IQR] Difference of HIV-1 RNA, log_{10} copies/mL (or swab in RF) from baseline					
		Day 3	Day 7	Day 14	Day 28	Week 12	Week 24
Blood Plasma	*DTG+3TC (n=16)*	0.96 [0.88;1.13]	2.05 [1.71;2.14]	2.72 [2.36;2.98]	3.08 [2.79;3.39]	3.08 [2.79;3.39]	3.20 [2.89;3.56]
	BIC/FTC/TAF (n=8)	1.12 [0.95;1.28]	2.21 [2.13;2.23]	2.61 [2.49;3.01]	3.07 [2.85;3.13]	3.07 [2.85;3.13]	3.18 [2.85;3.50]
	P value	*0.098*	*0.107*	*0.951*	*0.903*	*0.903*	*1.000*
Seminal Plasma	*DTG+3TC (n=16)*	0.11 [0.00;0.61]	0.83 [0.00;1.12]	0.97 [0.00;1.65]	0.95 [0.00;1.64]	1.08 [0.00;1.61]	1.08 [0.00;1.65]
	BIC/FTC/TAF (n=8)	0.17 [0.00;0.47]	0.90 [0.00;1.22]	1.07 [0.00;1.98]	1.41 [0.00;2.01]	1.41 [0.00;2.60]	1.41 [0.00;2.60]
	P value	*0.801*	*0.717*	*0.529*	*0.248*	*0.314*	*0.414*
Rectal Fluid	*DTG+3TC (n=16)*	0.96 [0.14;1.64]	1.04 [0.18;2.29]	1.35 [0.51;2.17]	1.55 [0.84;2.23]	1.62 [1.06;2.26]	1.62 [1.06;2.43]
	BIC/FTC/TAF (n=8)	1.27 [1.00;1.78]	1.91 [1.22;2.18]	2.23 [1.71;2.71]	2.17 [1.75;2.56]	2.25 [1.75;2.83]	2.25 [1.75;2.82]
	P value	*0.221*	*0.159*	*0.076*	*0.111*	*0.159*	*0.159*

Figure 3. Median (IQR) HIV-1 RNA (Log10) at each time point in SP

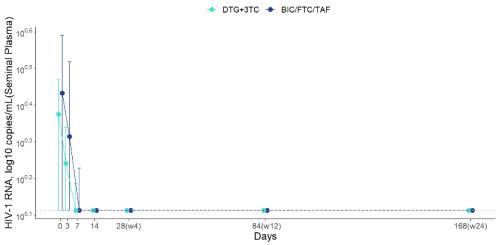
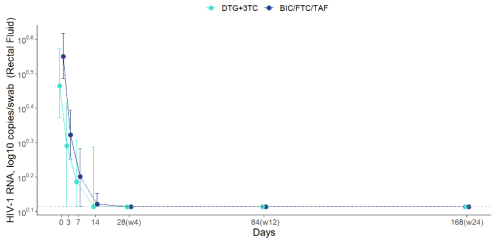


Figure 4. Median (IQR) HIV-1 RNA (Log10) at each time point in RF



No statistically significant differences were observed between treatment groups regarding the median HIV-1 RNA (log10) at each time point (Figure 2,3 and 4) and the median decline from baseline at each time point in BP, SP and RF (Table 2).

A mixed linear regression model adjusted for HIV-1 RNA at baseline and time was carried out to assess the HIV-1 RNA decline from baseline through week 24. The model did not show a significant association between HIV-1 RNA decline difference and treatment arm in BP, SP or RF. The interaction between time and treatment arm was neither statistically significant.

HIV-1 RNA below 20 copies/mL (or swab) Through Week 24

Table 3. Number and percentage of individuals with HIV-1 RNA <20 copies/mL (or swab) at each time point

Compartment	Treatment Group	Individuals with HIV-1 RNA <20 copies per mL (or swab in case of RF)						
		Baseline	Day 3	Day 7	Day 14	Day 28	Week 12	Week 24
Blood Plasma	DTG+3TC (n=16)	0	0	0	5 (31%)	9 (56%)	14 (87%)	15 (94%)
	BIC/FTC/TAF (n=8)	0	0	1 (12%)	2 (17%)	6 (75%)	7 (87%)	7 (87%)
Semen	DTG+3TC (n=16)	6 (37%)	6 (37%)	11 (69%)	14 (87%)	13 (81%)	15 (94%)	14 (87%)
	BIC/FTC/TAF (n=8)	3 (37%)	4 (50%)	6 (75%)	7 (87%)	7 (87%)	8 (100%	8 (100%)
Rectal Fluid	DTG+3TC (n=16)	1 (6%)	6 (37%)	6 (37%)	10 (62%)	13 (81%)	15 (94%)	16 (100%)
	BIC/FTC/TAF (n=8)	0	1 (12%)	4 (50%)	4 (50%)	7 (87%)	8 (100%)	7 (87%)

Figure 5. Median Time to achieve HIV-1 RNA <20 copies/mL in SP

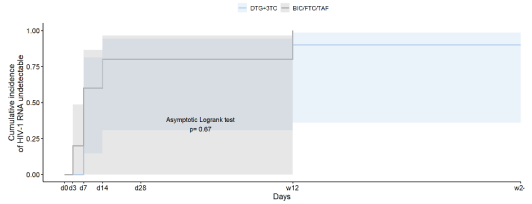
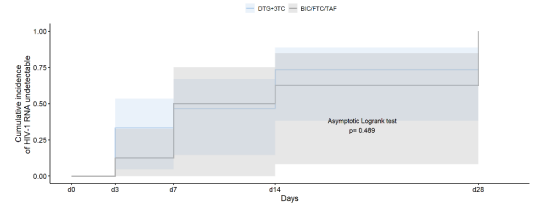


Figure 6. Median Time to achieve HIV-1 RNA <20 copies/swab in RF



No statistically significant differences were observed between treatment groups in the percentage of individuals with HIV-1 RNA <20 copies per mL (or swab) in BP, SP and RF at each study time point (Table 3). The Kruskal-Wallis model did not show differences in the median time to achieve undetectable HIV-1 RNA in BP (not showed), SP (Figure 5) or RF (Figure 6)

CONCLUSIONS

Both DTG+3TC and BIC/F/TAF achieved rapid HIV-1 RNA suppression in BP, SP and RF.

No significant differences were observed between treatment groups in HIV-1 RNA decline from baseline or the percentages of individuals with undetectable HIV-1 RNA at each time point in BP, SP and RF.

CORRESPONDENCE: Dr. Arkaitz Imaz. Email: aimaz@bellvitgehospital.cat
HIV and STI Unit, Infectious Diseases Department. Bellvitge University Hospital- Bellvitge Biomedical Research Institute (IDIBELL). L'Hospitalet de Llobregat, Barcelona, Spain