

Evaluation of residual HIV-1 replication among individuals receiving different antiretroviral treatment regimens



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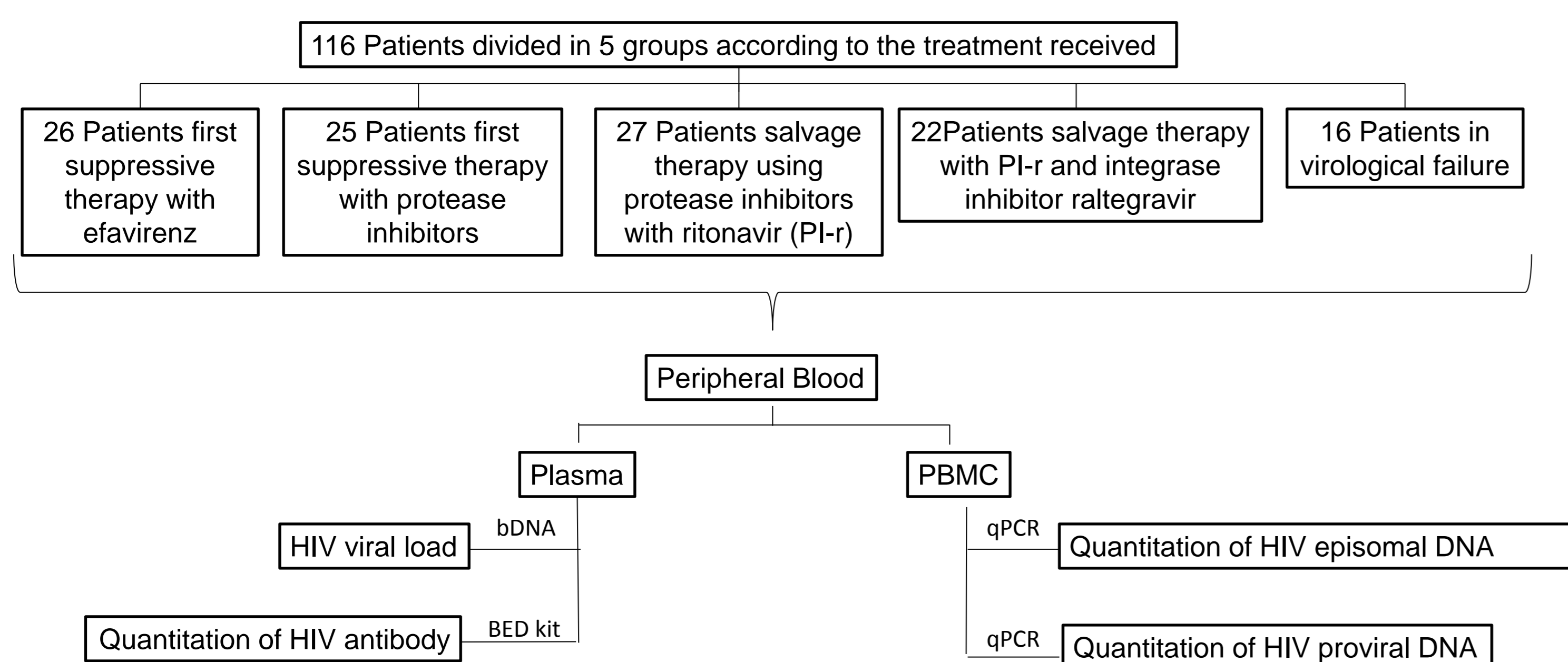


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Introduction

Residual viral replication and HIV-1 latency among individuals under antiretroviral therapy are the two major obstacles towards reduction of chronic micro-inflammation triggered by HIV and the success of sterilizing cure. A number of laboratory methods have been used for detection, quantification and understanding of residual viral replication.

Materials and methods



Results

Table 1: Clinical data from patients included in the study according to treatment group.

Group	Gender		Age (years)	T CD4 (cells/mm ³)	T CD8 (cells/mm ³)
	Female	Male			
	Count	Count	Mean	Mean	Mean
1° ARVT with EFV	5	21	47,17	791,27	1033,19
1° ARVT with PI	5	20	48,20	609,36	990,12
Salvage therapy with PI	10	17	50,01*	623,33	923,93
Salvage therapy with Ral	4	18	51,70	485,45	995,50
Virologic Failure	7	9	40,35	185,31	827,63
Total	31	85	47,97	571,40	962,97

* Indicates significant values at a significance level of 5%; Kruskal- Wallis Test

Table 2: Quantitation of episomal DNA from patients included in the study according to treatment group

Group	Episomal DNA (copies/10 ⁶ cells)					p
	Mean	Median	Minimum	Maximum	Total N	
1° ARVT with EFV	22,46	0,00	0,00	437,58	26	0,368
1° ARVT with PI	3,40	0,00	0,00	22,15	25	
Salvage therapy with PI	3,46	0,00	0,00	36,63	27	
Salvage therapy with Ral	1,46	0,00	0,00	9,40	22	
Virologic Failure	5,35	2,54	0,00	14,29	16	

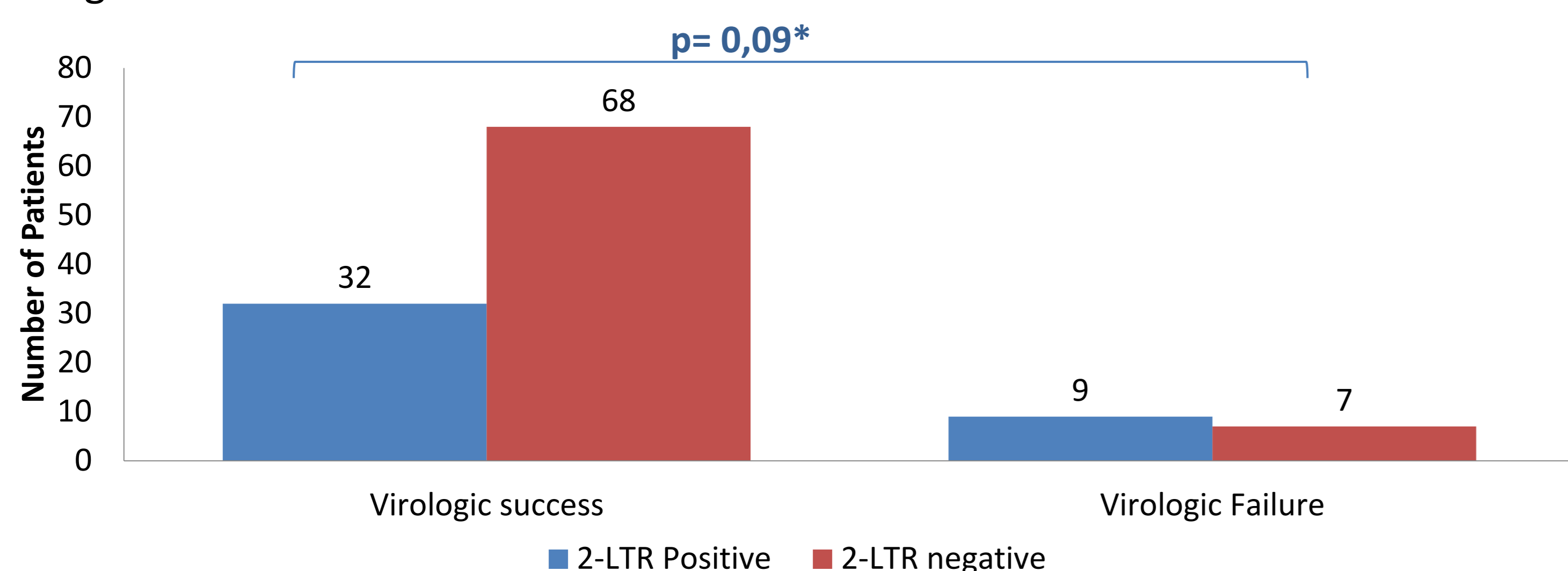
ANOVA Test

Table 3: Quantitation of total HIV DNA from patients included in the study according to treatment group

Group	Total DNA (copies/10 ⁶ cells)					p
	Mean	Median	Minimum	Maximum	Total N	
1° ARVT with EFV	89,48	65,09	0,00	316,96	26	0,391
1° ARVT with PI	138,99	34,39	0,00	845,68	25	
Salvage therapy with PI	150,84	54,82	0,00	987,42	27	
Salvage therapy with Ral	131,24	101,63	0,00	946,69	22	
Virologic Failure	225,55	118,33	0,00	1144,75	16	

ANOVA Test

Graph 1: Positive and negative samples in episomal DNA Quantitation in groups of virological failure and success.



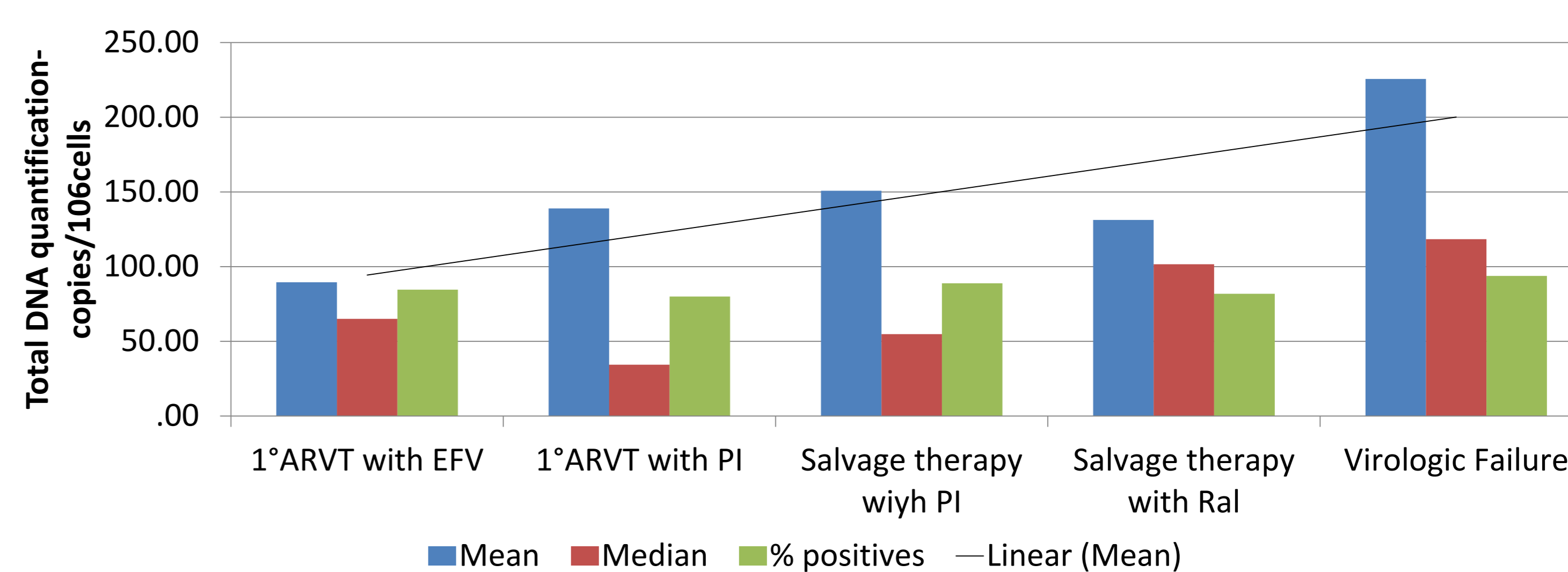
* Indicates significant values at a significance level of 5%; Fisher's Exact Test

Table 3: Spearman correlation between positive samples in episomal DNA quantification.

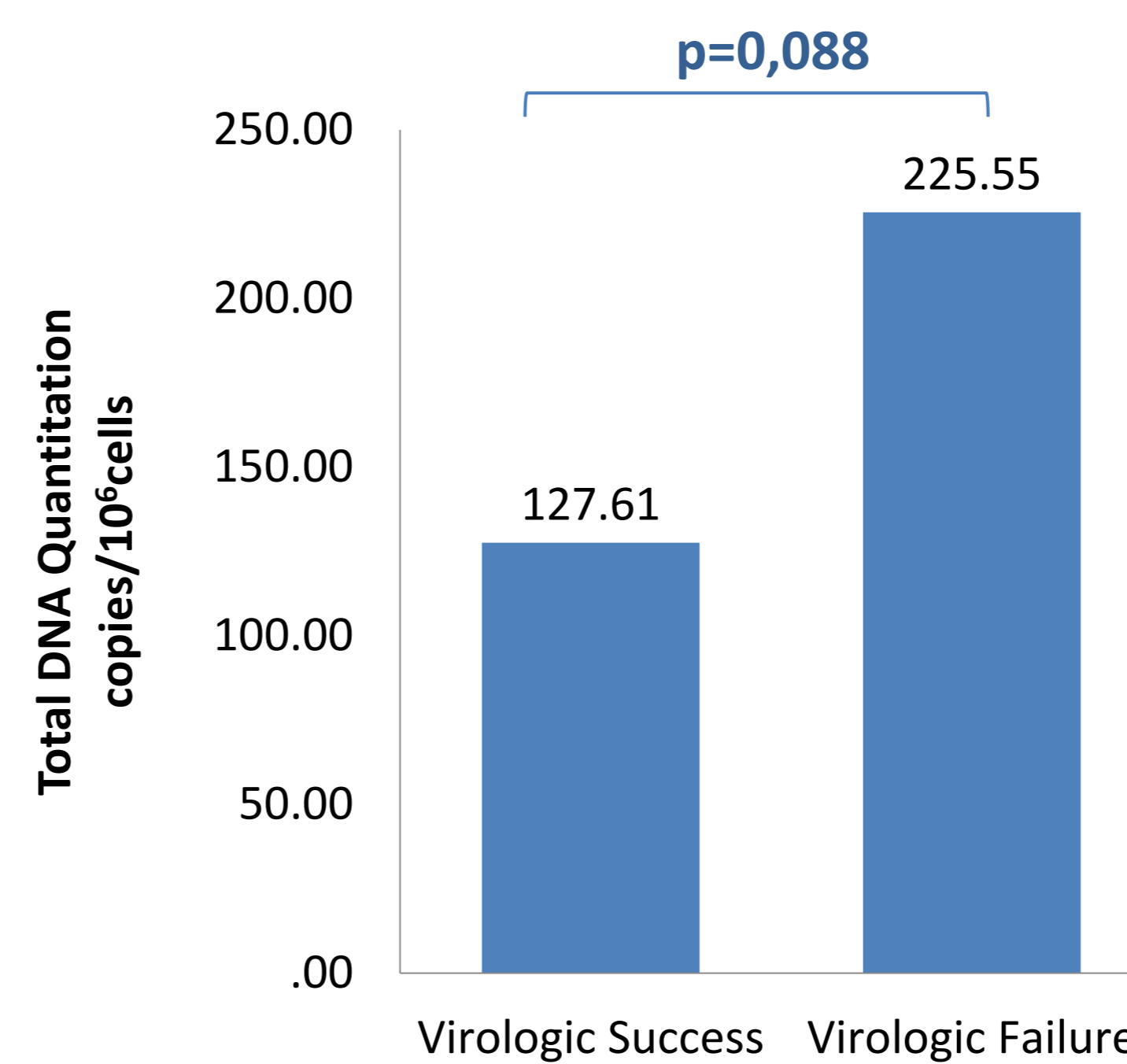
	Epissomal quantitation	
	r	p
Group	0,075	,440
T CD4 count	-0,295	0,061
T CD8 count	-0,467	0,002*
Proviral quantitation	-0,055	0,732

* Indicates significant values at a significance level of 5%; Spearman's Correlation test

Graph 2: Total viral DNA quantification mean and median and percentage of positive samples positives for total viral DNA, according to the treatment group.



Graph 3: Comparison between the means of the quantitation of the total DNA from virologic failure and success group



* Indicates significant values at a significance level of 5%; ANOVA Test.

Graph 4: Comparison between total DNA means between patients with positive and negative episomal DNA.

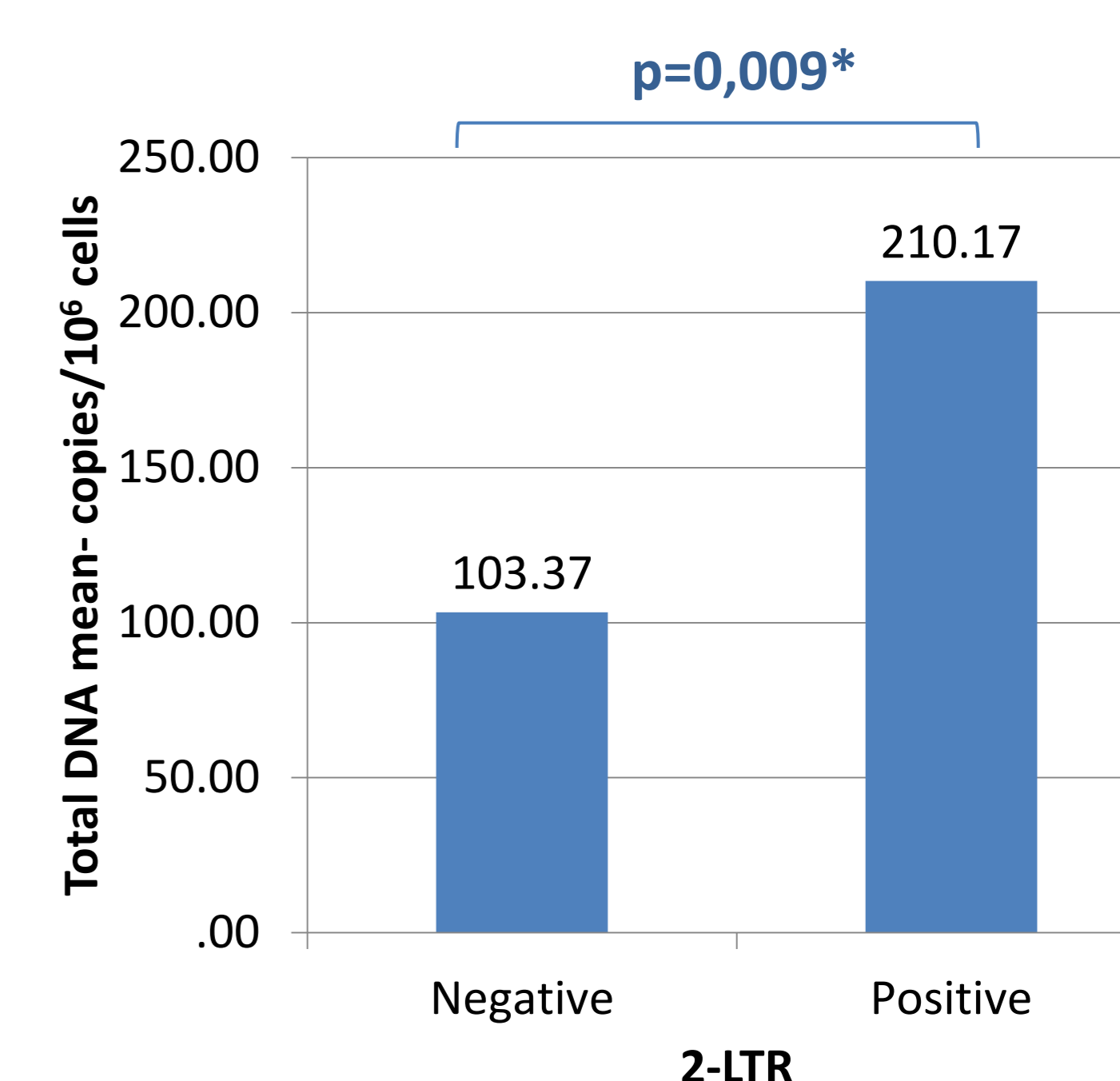
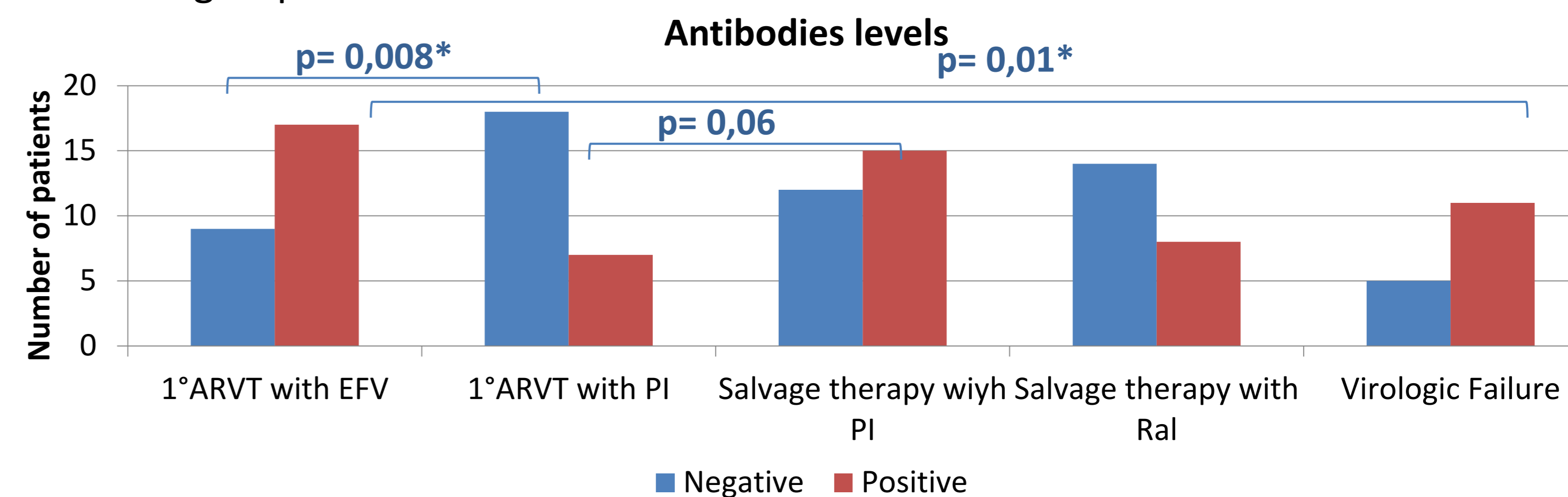


Table 4: Optical density normalized from patients included in the study according to treatment group

Group	ODn				p
	Mean	Median	Minimum	Maximum	
1° ARVT with EFV	1,51	1,20	0,08	3,35	0,161
1° ARVT with PI	0,91	0,65	0,21	3,50	
Salvage therapy with PI	1,19	1,25	0,09	2,96	
Salvage therapy with PI/Ral	1,09	0,78	0,14	3,30	
Virologic Failure	1,47	1,41	0,09	3,30	
Total	1,22	0,89	0,08	3,50	

ANOVA Test

Graph 5: Quantitation of antibodies in positive and negative samples according to the treatment group.



* Indicates significant values at a significance level of 5%; Fisher Exact Test.

Conclusions

CD4, CD8 counts, and raltegravir based regimens relate to decreased residual viral replication as inferred by episomal DNA. The relationship between episomal DNA and total DNA suggests replenishment of proviral reservoir with potential impact on HIV persistence. Lower antibodies levels among patients with PI based initial treatment may suggest a more effective HIV suppression of these regimens, with higher capacity of decreasing the HIV antigenic component.

References

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