Antiretroviral Switching in Colombia: A Retrospective Cohort Study.

Valderrama-Beltran Sandra Liliana[1,2], Martínez-Vernaza Samuel[1,2], Correa-Forero Vanessa[1], Jaimes-Reyes María Alejandra[1], Arévalo-Mora Leonardo[2,3], Martínez-Buitrago Ernesto[2,4], Franco Julieta[2,5], Beltrán-Rodríguez Claudia[6], Urrego-Reyes Juan[6], León Sebastian[6], García Garzón Martha[2,5], González Claudia[2,5], Fonseca Norberto[2,7], Botero Monica[2,8], Andrade Javier[2,9], Alzamora Diana[2,10], Lenis William[2,11], Pardo José[2,3], Alzate-Ángel Juan[2,12], Mantilla Monica[2,3], Sussmann Otto[2,7,9,13], Montero-Riascos Leonardo[2,9], Álvarez-Moreno Carlos Arturo[14,15]. Colombian HIV group (VIHCOL)

Contact
slvalderrama.med@javeriana.edu.co

Division of Infectious Diseases, Department of Internal Medicine. School of Medicine. Research group on Infectious Diseases. Hospital Universitario San Ignacio, Pontificia Universidad Javeriana. Bogotá DC, Colombia.

Phone number: 5716305946161

Background

Antiretroviral therapy (ART) for the human immunodeficiency virus (HIV) has improved life expectancy in people living with HIV/AIDS (PLWHA), however a long-term treatment might lead to the necessity of switching ART. We aimed to analyze the causes of ART Switch, time to ART switch and its associated factors in a Colombian Cohort. Additionally, to explore the association of clinical and sociodemographic variables in patients presenting two or more switches of ART.

Methods

This was an observational, multicenter, retrospective, and analytical cohort study. We conducted a review of databases and clinical records carried out in HIV care centers in Colombia, from 20 different HIV clinics.

The inclusion criteria were patients ≥18 years of age with confirmed HIV infection, with a history of changing ART from 01-Jan-2017 to 31-Dec-2019; who have at least 6 months of follow-up in their HIV clinics. The exclusion criteria was incomplete clinical records regarding date and cause of switch.

A time to event analysis and an exploratory Cox model were performed. Also, we conducted a logistic regression for comparing people with only one switch versus those who had 2 or more switches.

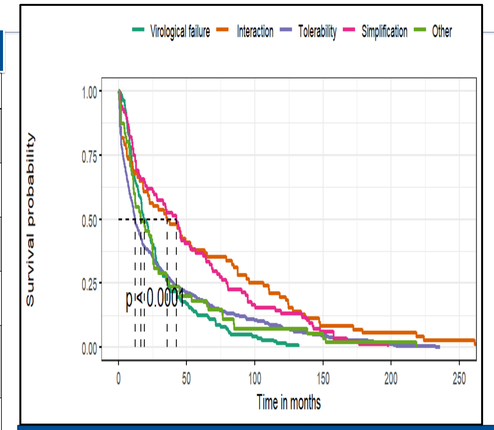
The study was approved by the Ethics Committee of Hospital Universitario San Ignacio (FM-CIE- 0187-21).

Results

A total of 796 patients switched ART during the study period. The main cause of ART switch was tolerability (n=449; 56.4%) followed by virologic failure (n=137; 17.2%). Tolerability had a median time to switch of 12.2 months being the shortest of all causes, whereas the longest median time to switch was due to simplification (42.4 months). The Kaplan Meier curves for causes of switching antiretroviral therapy and by age, sex, CD4 count, and CDC stage in the cohort are shown in **Figure 1.** In the Cox model we found that people 50 years or older [HR= 0.6; 95% CI (0.5-0.7)] and CDC stage 3 [HR= 0.8; 95% CI (0.6-0.9)] had less hazard for switching ART over time. When comparing patients with only one ART switch versus those who had two or more ART switches, we found that having dyslipidemia increased the odds of switching ART more than one time [aOR=1.6; 95%CI (1.1-2.4)]. As opposed to having CD4 counts greater than 200 cell/mL which decreases the odds of having more than one ART switch. [aOR= 0.5; 95%CI (0.2-0.9)] see **Table 1.**

Table 1. Bivariate and multivariate regression analysis comparing one antiretroviral therapy switch vs 2 or more switches in a cohort of people living with HIV in Colombia 2017-2019.

Characteristic	Only 1 switch N= 646	2 or more switches N=150	Crude OR 95%CI	Adjusted OR 95%CI
Sex n (%)				
Female	149 (23.1)	33(22.0)	Ref	Ref
Male	497 (76.9)	117(78.0)	1.13 (0.7 - 1.6)	1.0 (0.7 - 1.7)
Age years n (%)				
<50	456 (70.6)	114 (76.0)	Ref	Ref
≥50	190 (29.4)	36 (24.0)	0.8 (0.5 - 1.2)	0.7 (0.5 - 1.1)
Race n (%)				
Mixed race	571 (88.4)	128 (85.3)	Ref	
Others	61 (9.4)	19 (12.7)	1.3 (0.7 - 2.3)	
Education level n (%)				
Low	360 (56.4)	82 (56.2)	Ref	
High	278 (43.6)	64 (43.8)	1.1 (0.7 - 1.6)	
CDC stage at first switch n (%)				
1	139 (22.0)	37 (25.9)	1.1 (0.7 - 1.8)	1.9 (0.9 – 4.0)
2	277 (43.8)	53 (37.1)	0.8 (0.5 - 1.2)	1.2 (0.6 - 2.5)
3	216 (34.2)	53 (37.1)	Ref	Ref
Type of Insurance n (%)				
Contributory	370 (57.3)	95 (63.3)	Ref	Ref
Others	276 (42.7)	55 (36.7)	0.8 (0.5 - 1.1)	0.8 (0.5 - 1.1)
Cause of first switch n (%)				
Virologic failure	106 (16.3)	31 (20.0)	Ref	Ref
Others	540 (83.8)	119 (80.0)	0.7 (0.5 - 1.2)	0.7 (0.5 - 1.3)
Cause of first switch n (%)				
Tolerability	367 (56.8)	82 (54.7)	Ref	Ref
Others	279 (43.2)	68 (45.3)	1.0 (0.7 - 1.5)	0.74 (0.5 - 1.3)
CD4 at first switch n (%)				
≤200	123 (19.0)	40 (26.7)	Ref	Ref
>200	485 (75.1)	97 (64.7)	0.6 (0.4 - 1.0)	0.5 (0.2 - 0.9)
Arterial Hypertension n (%)	57 (8.8)	11 (7.3)	0.8 (0.4 - 1.6)	
Dyslipidemia n (%)	202 (31.3)	59 (39.3)	1.5 (1.0 - 2.2)	1.6 (1.1 - 2.4)
Osteopenia n (%)	20 (3.1)	6 (4.0)	1.4 (0.5 - 3.3)	
Osteoporosis n (%)	23 (3.6)	6 (4.0)	1.2 (0.4 - 2.9)	
Hypothyroidism n (%)	56 (8.7)	15 (10.0)	1.1 (0.6 - 2.1)	



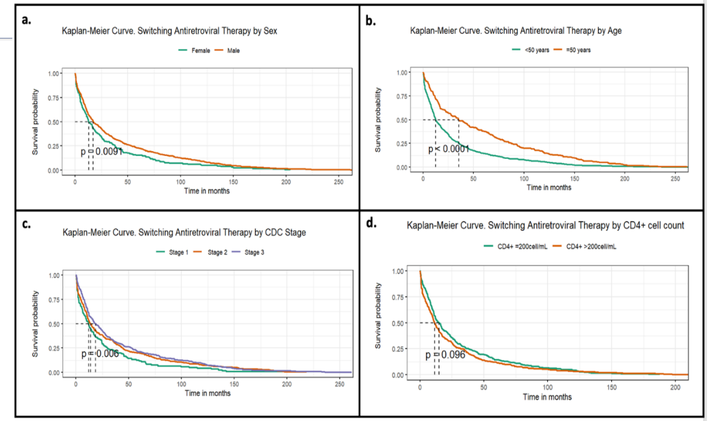


Figure 1. Kaplan Meier Curves for causes of switching antiretroviral therapy in a cohort of people living with HIV in Colombia 2017-2019. Log rank test, p: <0.01 . **a.** Kaplan Meier Curves for time to antiretroviral therapy switch by sex. Log-rank test, p: 0.0091. b. Kaplan Meier Curves for time to antiretroviral therapy switch by age. Log rank test, p: <0.0001. c. Kaplan Meier Curves for time to antiretroviral therapy switch by CDC Stage. Log rank test, p: 0.006. d. Kaplan Meier Curves for time to antiretroviral therapy switch by CD4 cell count. Log rank test, p: 0.096

Conclusions

In this Colombian cohort, tolerability was the main cause of ART switch and the time to change the first ART is shorter than reports in other countries. Dyslipidemia and having CD4 counts smaller than 200 cells/mL increased the odds for requiring two or more changes. In Colombia is crucial to apply current recommendations of ART initiation in order to choose regimens with a better tolerability profile.

Disclosure

This study was funded by MSD Colombia, a subsidiary of Merck & Co., Inc., RAHWAY, NJ, U.S.A.. Juan Urrego-Reyes, Claudia C. Beltran and Sebastian Leon are MSD Colombia Employees.