Rifampicin and Tenofovir Alafenamide Containing Regimen Drug Interaction in People Living with HIV: Case Series Report

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INTRODUCTION

People living with HIV (PLWH) are prone to developing tuberculosis (TB). Since tenofovir alafenamide (TAF) is the preferred tenofovir (TFV) prodrug and rifampicin is a key component of TB therapy, the co-administration of rifampicin and TAF is unavoidable. However, there is little data regarding the impact of this drug-drug Interaction in PLWH, which makes health care providers more reluctant.

OBJECTIVES

The primary objective of our study was to evaluate of concomitant use of rifampicin and TAF in People Living with HIV (PLWH).

METHODS

Study Design, and Setting :

- This was an observational, retrospective case series study carried out in the King Faisal Specialist Hospital & Research Centre (KFSH&RC), Jeddah.

Participant Selection:

- The medical record of PLWH (≥ 18 years old), who received rifampicin-based anti-TB therapy with a TAF-containing ARV regimen for 4 weeks or longer was evaluated to be included.
- Participants were categorized into two groups based on their HIV viral load status at the time of rifampicin-based anti-TB therapy and the TAF-containing ARV regimen co-administration was established:
    - PLWH with viral load >200 copies/ml
    - PLWH with viral load <200ml copies/ml

METHODS

The clinical outcome measure is classified according to the following definitions:

Maintaining HIV viral load suppression (<200 copies/mL) for those with suppressed viral load at the time of co-administration of rifampicin-based anti- TB therapy and TAF-containing ARV regimen.	Attainment of the viral load suppression (<200 copies/mL) for those with unsuppressed HIV viral load at the time of co-administration of rifampicin-based anti-TB therapy and TAF-containing ARV regimen.	HIV treatment failure: Loss of HIV viral load control for those with suppressed HIV viral load at the time of co-administration of rifampicin-based anti-TB therapy and TAF-containing ARV regimen. And this treatment failure is attributed only to the impact of rifampicin used with the TAF-containing ARV regimen.

Data Analysis:

Descriptive analysis (median with interquartile range, frequencies, and percentages) was used to describe quantitative and categorical variables as appropriate. Analysis was conducted using R Core Team (2020) software (R Foundation for Statistical Computing, Version 4.0.1, Vienna, Austria).

RESULTS

TABLE 1: Baseline Characteristics

Characteristic	Number
Total number of participants	7
Gender, n (%)	
Male	5 (71.4)
Female	2 (28.5)
Age (years), median (range)	47 (26-68)
Weight (kg), median (range)	60 (50-80)
Height (cm), median (range)	169 (149-174)
ART regimen, n (%)	
DTG+ TAF and FTC	7 (100)
HIV viral load at the time of Rif and TAF were established, n (%)	
>200 copies/milliliter	4(57.1)
<200 copies/milliliter	3(42.8)
CD4 count at the time Rif and TAF co-administration were established, n (%)	
>200 cells per cubic millimeter	5 (71.4)
<200 cells per cubic millimeter	2 (28.5)
Indication of Rif, n (%)	
PTB	7(100)
Dose of the Rif, n (%)	
600 mg	6(85.7)
450 mg	1(14.2)
Anti-TB therapy, n (%)	
HREZ	6(85.7)
Levo+REZ	1(14.2)
Duration of the anti-TB therapy (week), median (range)	30 weeks (27-35)

N: number, %: percentage, Kg: kilogram, cm: centimeter, ART: antiretroviral therapy, DTG: dolutegravir, TAF: tenofovir alafenamide, FTC: emtricitabine, Rif: rifampicin, PTB: pulmonary tuberculosis, TB: tuberculosis, HREZ: isoniazid, rifampicin, ethambutol, pyrazinamide, Levo: levofloxacin

RESULTS

TABLE 2: Clinical Outcomes

Variable	Cases with suppressed HIV viral load at the baseline				Cases with unsuppressed HIV viral load at the baseline		
Cases No.	Case 1	Case 2	Case 3	Case 4	Case1	Case 2	Case 3
HIV viral at baseline	Undetected	< 20	Undetected	Undetected	5789	16052	15251
HIV viral load at the 2-month post adding the Rif	< 40	Undetected	Undetected	Undetected	Undetected	Undetected	< 40
HIV viral load at the 4-month post adding the Rif	Undetected	Undetected	Undetected	Undetected	Undetected	Undetected	Undetected
HIV viral load at the 6-month adding post the Rif	Undetected	Undetected	Undetected	Undetected	Undetected	Undetected	Undetected
HIV viral load at the 2-month post-D/C the Rif	Undetected	< 20	Undetected	Undetected	Undetected	< 50	Undetected

HIV: human immunodeficiency virus, Rif: Rifampicin, D/C: discontinuation

CONCLUSION

This case series study demonstrated the possibility of RIF-TAF co-administration, without mitigating the efficacy of TAF. However, further work on a large sample is warranted to confirm our findings.

REFERENCES