clinical cases DDIs

Date of report 12 Dec 2024

Reported case interaction between **Tenofovir-DF** and **Clarithromycin**

Drugs suspected to be involved in the DDI

Tenofovir-DF

Daily Dose
300 (mg)

Dose adjustment performed
No

Administration Route
Oral

Start date
Unknown

End date
Ongoing

Perpetrator

Clarithromycin

Daily Dose
1000 (mg)

Dose adjustment performed
No

Administration Route
Oral

Start date
Unknown

End date
Unknown

Complete list of drugs taken by the patient

Antiretroviral treatment

Raltegravir
Emtricitabine/Tenofovir-DF

Complete list of all comedications taken by the patient, included that involved in the DDI

14-days course with clarithromycin (500 mg BID), lansoprazole (30 mg BID), amoxicillin (1000 mg orally BID)

Clinical case description

Gender

Male

Age

52

eGFR (mL/min)

>60

Liver function impairment

No

Description

52-year-old Caucasian male on antiretroviral therapy (ART)with raltegravir (400 mg BID) and emtricitabine/ tenofovir disoproxil fumarate (200/300 mg QD) since 2019. He maintains undetectable HIV viral load, and CD4+ T-cell count above 800 cells/mm³.
In 2023, he was diagnosed with a Helicobacter pylori infection, and he was prescribed a 14-day eradication regimen, which included clarithromycin (500 mg BID), lansoprazole (30 mg BID), and amoxicillin (1000 mg BID). On the 10th day of the eradication treatment, his HIV RNA viral load remained undetectable.
In this case, no clinically significant drug-drug interactions were observed between clarithromycin and his current ART regimen (raltegravir/emtricitabine/tenofovir disoproxil

fumarate). However, it is important for clinicians to note that clarithromycin is a potent inhibitor of CYP3A4 and P-glycoprotein (P-gp), which may potentially enhance the absorption of tenofovir disoproxil fumarate. This could lead to increased systemic concentrations of tenofovir, potentially exacerbating its side effects, particularly those related to renal function. Therefore, close monitoring of renal function is recommended.

Clinical Outcome

No unwanted outcome

Editorial Comment

This case highlights the importance of investigating potential drug-drug interactions, even when they may not seem evident at first glance. While most interactions are mediated through the inhibition or induction of CYP450 isoenzymes, a significant proportion arises from the inhibition or induction of renal or intestinal transporters.
In this specific case, a clinically significant interaction involving clarithromycin via CYP3A4 inhibition is unlikely, as tenofovir disoproxil fumarate (TDF) does not utilize this pathway for its metabolism. However, TDF is a substrate of P-glycoprotein (P-gp), an intestinal and renal transporter. Inhibitors of P-gp, such as clarithromycin, may potentially enhance the absorption of TDF, leading to increased systemic concentrations.
In the present case, treatment with clarithromycin was indicated for 14 days, so a clinical impact of the increased

TDF absorption was unlikely. However, in situations where clarithromycin treatment duration may be longer (e.g. atypical mycobacteria therapy) the longer exposure to increased tenofovir levels may cause renal function impairment. In such cases, careful monitor should be advised, or switch to an ART regimen without TDF.

University of Liverpool Recommendation

■ Potential interaction - may require close monitoring, alteration of drug dosage or timing of administration

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