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Evaluation of kidney toxicity in HIV patients with tenofovir-based regimen: the role of boosted protease inhibitor in real clinical setting

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Purpose of the study

Tenofovir (TFV) disoproxil fumarate (TDF) is an oral prodrug of the nucleotide reverse transcriptase inhibitor TFV. Following oral administration, TDF undergoes rapid conversion to TFV in plasma. TFV is eliminated from systemic circulation renally through a combination of glomerular filtration and active tubular secretion. Active tubular secretion of TFV has been inferred from the observation that TFV renal clearance exceeds that of creatinine clearance in patients. Renal drug-drug interactions may occur between therapeutics that are substrates for the same tubular transport pathways or that inhibit the pathway of a drug subject to renal excretion: both of them, ritonavir (RTV) and tenofovir, share the same transport pathways (MRP4) [Ray *et al. Antim Ag Chem* 2006 (Oct); 50: 3297–3304]. The objective of the present study was to investigate in a real clinical setting the relationship between PI/r co-administration with TDF and changes in estimated renal function.

Methods

Our study involved 187 patients in TFV-based regimen: 49 in NNRTI and 138 with PI/r. In a follow-up of one year, we evaluated renal function by calculated glomerular filtrate using the Cockcroft-Gault (C-G) equation and the unabbreviated Modification of Diet in Renal Disease (MDRD) equation.

Results

The mean baseline renal function was within the normal range and was similar between treatment groups. In univariate analysis, decreases in C-G estimates of CrCl were not significantly different among the two groups during the first 12 months of therapy.

Conclusion

In conclusion, our study demonstrated that also in real-life conditions, patients receiving TDF in combination with PI/r-based regimens had greater declines in renal function than did TDF NNRTI.