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Incidence of the resistance mutation K65R on reverse transcriptase in different HIV-1 subtypes

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Purpose of the study

The relatively uncommon mutation K65R on reverse transcriptase is mainly selected by tenofovir (TDF), one of the widely used nucleoside reverse transcriptase inhibitors, as well as by abacavir (ABC) and didanosine (DDI). Recent in vitro studies have shown that it is selected in cell cultures sooner in subtype C than in subtype B [1]. We evaluated the rate of the K65R mutation in sequences performed in the Tel-Aviv AIDS Center.

Methods

We retrospectively analyzed sequences performed between 1999–2007 from patients treated by TDF, ABC, and/or DDI and compared the rates of mutational prevalence between different subtypes. We also analyzed the duration of therapy by these drugs in order to compare the time to therapeutic failure.

Summary of results

Forty-four sequences from patients treated by the above-mentioned drugs were analyzed. Subtypes A, CRF01_AE, CRF02_AG, B, C, D, F and G were represented. Eight viruses had the K65R mutation. There was only one subtype B virus and seven viruses from other subtypes (88%: four subtype C, one subtype CRF01_AE, and two subtype CRF02_AG). Twenty (56%) viruses without K65R were represented by subtype B vs. 16 non B (44%) ($p < 0.05$) in whom there were seven subtype C (19%) ($p < 0.05$) and three subtype CRF01_AE. The median time on TDF, ABC or DDI was 23 months in subtype B without the K65R mutation, 6 months in the non B subtype with the K65R mutation ($p < 0.05$), and 12 months in the non B subtype without the K65R mutation.

Conclusion

Non subtype B selects for the K65R mutation with a higher incidence than for subtype B viruses. Effective strategies must be developed to handle non-B infections, with particular emphasis on subtype C, especially in countries where non B subtypes are highly represented.

References

1. Brenner BG, *et al.*: **HIV-1 subtype C viruses rapidly develop K65R resistance to tenofovir in cell culture.** *AIDS* 2006, **20:**F9-13.