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### Tenofvir Disoproxil Fumarate-Associated Nephrotoxicity in HIV-Infected Patients: A Prospective Controlled Study

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#### Abstract

**Objective:** To evaluate all renal functions in patients receiving TDF and other nucleoside analogues.

**Material and Method:** A prospective controlled study evaluating glomerular and tubular functions was conducted in patients receiving either TDF- or AZT-containing antiretroviral therapy regimen between 2008 and 2009 at King Chulalongkorn Memorial Hospital, Bangkok, Thailand.

**Results:** Of 51 patients, there were 39 and 12 patients, with the mean age of  $40.03 \pm 7.7$  and  $37.2 \pm 7.6$  years in the TDF and AZT groups. There was no difference between the two groups, except longer HIV infection duration, higher patient number with previous antiretroviral therapy and undetectable HIV RNA, and higher CD4 count in the TDF group. All and most patients had received lamivudine and a non-nucleoside analogue. The mean change of eGFR from the baseline to the six months of follow-up was  $+1.32$  and  $+5.88$  mL/minute in the TDF and AZT groups. Proximal tubular dysfunction was not noted at three and six months of follow-up. However, patients in the TDF group had lower serum phosphate and higher renal potassium loss than the AZT group at six months of follow-up ( $p = 0.08$  and  $p = 0.09$ , respectively). No patients in the two groups with distal tubular dysfunctions were noted.

**Conclusion:** To our knowledge, this is the first prospective controlled study extensively evaluating all renal functions in patients receiving TDF and AZT. There are no differences in the eGFR decline between the two groups during the six months of follow-up. However, a trend towards greater renal loss of potassium and phosphate is noted in the TDF group. A study with longer duration of follow-up is needed.

**Keywords:** Tenofvir disoproxil fumarate, Nephrotoxicity, HIV, AIDS, Fanconi syndrome, Thailand

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