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Improved quality of life after lamivudine dose adjustment in HIV-associated nephropathy with ESKD: A case report from Tanzania

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Abstract
Background: HIV-associated nephropathy (HIVAN) can progress to end-stage kidney disease (ESKD), complicating antiretroviral therapy (ART) management due to renal dosing requirements, particularly for lamivudine.
Case Presentation: We describe a 29-year-old male with ESKD secondary to HIVAN, who developed debilitating headaches after initiating fixed-dose ART (abacavir /lamivudine/ dolutegravir). Due to lack of monotherapy in Tanzania, dose adjustment was not possible. The patient's quality of life declined, and ART adherence suffered.
Management and Outcome: After acquiring lamivudine monotherapy abroad, renal-adjusted dosing (75 mg/day) led to complete headache resolution and improved adherence within two weeks. Symptoms did not recur over six months.
Conclusion: Renal-appropriate ART dosing is critical in ESKD. This case illustrates how fixed-dose regimens in low-resource settings can lead to avoidable side effects and adherence challenges. Policy reform is needed to enable individualized ART access.

Keywords: HIV-associated nephropathy, lamivudine, end-stage kidney disease, antiretroviral therapy, dose adjustment, resource-limited settings

Introduction
HIV-associated nephropathy (HIVAN) is a common cause of chronic kidney disease (CKD) and progression to end-stage kidney disease (ESKD), particularly in people of African descent [2]. As access to antiretroviral therapy (ART) improves in sub-Saharan Africa, an increasing number of patients are living longer with chronic HIV-related complications, including nephropathy [1]. Management of ART in patients with advanced kidney disease requires careful consideration of drug pharmacokinetics, especially those primarily renally excreted, such as lamivudine [3].
Lamivudine, a nucleoside reverse transcriptase inhibitor (NRTI), is commonly included in first-line ART regimens due to its efficacy and safety profile. However, in patients with significantly reduced renal function (eGFR <15 mL/min/1.73 m²), dose accumulation can occur, potentially leading to side effects including fatigue, headaches, and neurotoxicity [5]. In resource-limited settings, where fixed-dose combination (FDC) tablets are the norm due to cost and procurement logistics, individualized dosing is often not feasible [2]. This case highlights how these systemic limitations can adversely affect patient outcomes and the value of tailored treatment when access allows.

Case Presentation
A 29-year-old male with known HIV infection and CKD stage 5 secondary to biopsy-confirmed HIVAN presented to our nephrology clinic with complaints of persistent, severe headaches that began shortly after initiating ART. He had been receiving a fixed-dose combination regimen of abacavir 600 mg, lamivudine 300 mg, and dolutegravir 50 mg once daily.
The patient also received Enalapril 10 mg daily for its antiproteinuric benefits. He had no prior history of migraines or neurological disorders. Despite normal vital signs and no abnormal neurological findings, his headache was disabling enough to interfere with daily

activities and led to frequent use of paracetamol. He reported missing his ART doses 2-3 times per week due to fear of precipitating the headache, raising concerns about adherence and viral resistance.

Laboratory results revealed advanced kidney dysfunction (eGFR 12mls/min/1.73 m²). Blood pressure was within normal range (120/76 mmHg). Other lab values were unremarkable for infectious or metabolic causes. A non-contrast CT brain scan was normal.

Management and Outcome

Through family support, the patient acquired lamivudine monotherapy (150 mg tablets) from another country. The regimen was adjusted to lamivudine 75 mg once daily, alongside Abacavir 300 mg and Dolutegravir 50 mg as separate tablets. Within two weeks of initiating the adjusted regimen, the patient reported complete resolution of his headaches. ART adherence improved, and his overall quality of life significantly increased. There was no recurrence of symptoms during the Six-months follow-up period.

Discussion

This case emphasizes a rarely reported but important clinical scenario where a patient with HIVAN and ESKD experienced neurotoxicity manifesting as persistent headaches likely due to inappropriate dosing of renally cleared antiretrovirals. Lamivudine is recommended at a reduced dose of 25-75 mg daily in ESKD to avoid accumulation and associated toxicity [3]. Our patient was taking 300 mg daily via a fixed-dose tablet, exceeding the recommended dose nearly four-fold.

There are few published reports directly linking lamivudine overdose with headache, though studies suggest CNS side effects can occur with excessive dosing [6]. This reinforces the need for pharmacokinetic vigilance in renal impairment. Additionally, patient-reported symptoms like headache are often under-investigated and may be mistakenly attributed to unrelated causes when, in fact, they reflect drug intolerance. This case also illustrates the broader structural problem: most national ART programs in low-income countries rely on fixed-dose combinations that cannot be easily modified [2]. This inflexibility not only undermines clinical care for subgroups like those with CKD but also compromises adherence, risking viral resistance. Access to monotherapy formulations is crucial to allow for renal-dose adjustments and personalized ART.

Importantly, after acquiring lamivudine monotherapy and adjusting the dose to 75 mg/day, the patient's headaches resolved completely, and ART adherence improved. This clinical turnaround highlights how relatively minor therapeutic modifications can lead to significant improvements in quality of life and treatment outcomes.

Conclusion

This case highlights the clinical impact of inaccessible monotherapy antiretrovirals for patients with ESKD in resource-limited settings. Renal dose adjustment of lamivudine resulted in the resolution of adverse symptoms and improved adherence, underscoring the need for policy interventions to improve ART accessibility and adaptability.

Declarations

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and any accompanying data.

Conflicts of Interest

The author declares no conflict of interest.

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Author Contributions

HA conceived, wrote, and reviewed the manuscript.

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