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A False-Positive Repeat HIV Test during Labor in Poorly Controlled Seropositive Rheumatoid Arthritis in a Rural Kenyan Hospital

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Abstract: **The Kenya Ministry of Health guidelines for HIV screening and testing recommend the use of facility-based point-of-care antibody-based rapid diagnostic tests. A positive HIV test is made using 3 consecutive reactive assays in a 3-test algorithm that ensures the maintenance of about 99% positive predictive value. However, false positive HIV tests have been reported in pregnancy, COVID-19, lymphomas, metastatic cancers, viral infections, and autoimmune diseases. Seropositive rheumatoid arthritis (RA) has been particularly associated with false positive HIV antibody tests due to a cross-reactivity of the autoantibodies to the rheumatoid factor (RF) and cyclic citrullinated peptide (CCP) with the HIV-specific antigens. The result may lead to unnecessary treatment of patients with antiretroviral therapy (ARVs). In this study, we report the case of a 44-year-old Kenyan woman with poorly controlled seropositive RA in pregnancy whose repeat HIV test during labor was falsely positive, leading to her and her baby being inadvertently treated with ARVs. We point out the value of a cautious interpretation of a positive HIV test in this population, the need for confirmatory testing, and call for clear algorithms in managing false positive HIV tests in the Kenyan guidelines.**

Keywords: **HIV testing, false positive HIV test, seropositive RA, RF-positive, anti-CCP, Kenya.**

1. INTRODUCTION

The Ministry of Health (MOH) in Kenya has approved various validated point-of-care HIV testing kits for use in both public and private health institutions (1). These include oral fluid-based tests (OraQuick) for both hospital and home-based self-testing and the rapid qualitative in vitro diagnostic tests for detecting antibodies specific to HIV-1 and HIV-2 in human serum, plasma, or venous and capillary whole blood (2). The rapid antibody-based diagnostic tests are premised on the principle of immunochromatography for the qualitative detection of antibodies specific for HIV-1 capture antigens (glycoprotein 120/glycoprotein 41) and HIV-2 capture antigen (glycoprotein 36) (2). The MOH has approved various commercial assays for use in Kenya. The MOH 2022 ARV guidelines (1) capture the testing algorithms and interpretations for various population groups. In summary, a patient is first tested on Assay 1 (A1). If the test is non-reactive (A1-), it is reported as HIV-negative. If it is positive (A1+), it is retested on a separate and distinct Assay 2 (A2). If it is reactive on both A1 and A2 (A1+; A2+), it is again tested on a separate and distinct Assay 3 (A3). A positive HIV test is made when it

is reactive on A3 (A1+; A2+; A3+) (1). Other result permutations are captured in the testing algorithms. Thus, a 3-test algorithm is used to make a diagnosis to ensure that at least a 99% positive predictive value is maintained and false positive misdiagnosis is avoided (1). There are reports in the literature of patients with seropositive rheumatoid arthritis (RA), i.e., a positive serum rheumatoid factor (RF) or a positive anti-cyclic citrullinated peptide (CCP), falsely testing HIV positive using the antibody-based HIV testing assays. Autoantibodies to the RF (RF-IgG, RF-IgM, RF-IgA) and to CCP (CCP-IgG) in seropositive RA may cross-react with the HIV-1 and HIV-2 test kits impregnated with HIV-specific antigens during HIV antibody-based testing to cause a false positive HIV test, as demonstrated by Yun-Chun Lin et al. in a study of 100 RA patients in China who were also screened for HIV antibodies (3). A systematic review by Cunha, BM. et al. showed the linkage between HIV and RA testing to be bidirectional: HIV infection may lead to RF and anti-CCP positivity, but usually at low titers, while RA might cause false-positive HIV antibody serologies. They proposed ELISA to be a more specific test for HIV in seropositive RA patients (4). The Kenyan MOH guidelines on HIV testing and diagnosis advise the use of HIV DNA PCR testing for results that are persistently inconclusive following initial antibody-based test results (1). The guidelines do not adequately address the possibility of false positive findings in certain clinical scenarios, like seropositive RA. We present the case of a woman in rural Kenya with poorly controlled seropositive RA during the third trimester of pregnancy who had false positive HIV antibody-based test results leading to inadvertent treatment of both mother and baby with antiretroviral therapy for prevention of mother-to-child transmission (PMTCT). She later on tested HIV negative on follow-up, as did the baby. The false positive result was most likely due to RF autoantibodies cross-reacting with the HIV-specific antigens. We emphasize the need for confirmatory tests with HIV DNA PCR in such specific case scenarios.

2. CASE SUMMARY

A 44-year-old married mother of four, a business lady from Bahati, Nakuru County, Kenya, presented to us in October 2025 with poorly controlled seropositive rheumatoid arthritis (RA) that had been diagnosed elsewhere in 2023 (on the basis of a compatible clinical symptomatology, the finding of symmetrical polyarthritis predominantly of the small joints, polysynovitis, and a positive RF). She was in a severe flare-up at presentation to us, with polyarthritis, polysynovitis, sicca symptoms (keratoconjunctivitis sicca and xerostomia), an erythrocyte sedimentation (ESR) rate of 60 mm/hr, and a positive rheumatoid factor. She had no other extraarticular manifestations of the RA. She had been to several health facilities since 2023 and had used hydroxychloroquine (HCQ), leflunomide, tofacitinib, various brands of non-steroidal anti-inflammatory drugs, and prednisone at various intervals. She was presently breastfeeding an 8-month-old baby. During her most recent pregnancy, she reported that her screening blood-based HIV test was negative in the first trimester at her first antenatal clinic visit. It was rechecked during her labor period, where it was reportedly positive. Her husband tested HIV negative at the time. The HIV tests done were antibody-based rapid diagnostic tests. Consequently, she was put on emergency PMTCT using antiretroviral fixed drug combination therapy comprising tenofovir, lamivudine, and dolutegravir (TLD), while the baby was put on zidovudine (AZT) syrup, as per local guidelines. This finding created significant psychosocial tension between her and the husband, requiring extensive counseling and family intervention. Notably, during the second and third trimesters of the pregnancy, her RA had flared up with polyarthritis, polysynovitis, sicca symptoms, and erythema nodosum (painful nodular swellings on both legs). She had been put on HCQ and prednisone by a rheumatologist in the second trimester, but she admitted to non-adherence to the treatment. Following an uneventful vaginal delivery, she was discharged on a standing dose of TLD, tapered prednisone, and celecoxib, while the baby was discharged on AZT syrup. Two weeks postpartum, she had mild oligoarthritis but no synovitis. Her repeat HIV test was negative, while the baby also had a negative HIV DNA PCR test. She and her husband had also done an HIV PCR test in a different laboratory, which was negative. Her TLD and the baby's AZT were stopped. She was informed that the initial HIV test was probably a false positive test during her labor. At our hospital, we repeated the serum antibody-based HIV test at her request, which was negative. We explained the most likely scenario of a false positive HIV test due to cross-reactivity of the autoantibodies in RA with the HIV antibody-based tests, in view of her uncontrolled seropositive RA at the time of labor. She was rightly concerned about her baby having been given unnecessary zidovudine for 2 weeks after birth and the possible health effects of the same. She admitted to having gone into depression since the "misdiagnosis" and treatment for HIV. A pediatrician conducted extensive reviews and assured her that the baby was in good health. We got her effective psychological counselling and managed her with antidepressants. Her RA has since been brought into clinical and serological remission with HCQ, tapered prednisone, and analgesics, in view of her breastfeeding status. She has had extensive health education on the management of RA and is presently adherent to treatment. She is currently well.

3. DISCUSSION

HIV testing in Kenyan health care institutions is based on the rapid diagnostic assays that detect antibodies to HIV-1 and HIV-2 as per the Kenyan MOH guidelines and algorithms (1). Our patient had a negative HIV test in the first antenatal care visit in her first trimester. The test was repeated in the third trimester (in her case, during labor) as per the local guidelines. She tested positive during labor using the MOH 3-step algorithmic testing protocols. It is understandable that she was put on ARVs for PMTCT as per the guidelines. Her baby was also put on AZT as per protocol. However, the false positive HIV test during labor and the subsequent treatment with ARVs brought significant marital conflict, given that her husband tested negative on the same tests. HIV among adults in Kenya is mostly transmitted by unprotected heterosexual intercourse (5). This situation raised suspicions about her marital unfaithfulness during the pregnancy, which contributed to her depression. She should have been referred for a specialized diagnostic review at discharge. Antibody-based HIV testing may result in false positive tests in such cases as seropositive RA. This is due to cross-reactivity between the RA autoantibodies (e.g., RF antibodies like RF-IgG, RF-IgM, or RF-IgA and anti-CCP antibodies like CCP-IgG) and the HIV test kits loaded with HIV-specific antigens like glycoprotein 120, glycoprotein 36, and glycoprotein 41 (3). Our patient had clearly poorly controlled seropositive RA (positive RF with a compatible clinical profile for RA) during her pregnancy due to poor treatment compliance. False positive HIV antibody-based test results have also been reported in other autoimmune diseases. As early as 1992, Esteva, MH, et al. reported the case of two men with lupus who had false positive HIV antibody-based results due to cross-reactivity of lupus autoantibodies with the HIV test kits (6). In 2015, Jian L et al. also reported the case of a 76-year-old woman with lupus who had a false positive HIV antibody test due to antibody cross-reactivity (7). Chen X et al. described a false positive HIV antibody test in a patient who was later diagnosed with rapidly progressive interstitial lung disease in clinically amyopathic dermatomyositis (8). Other conditions associated with false positive HIV antibody tests include pregnancy, lymphoma, and acute cytomegalovirus infections (9, 10, 11). To mitigate the risks of false positive HIV tests, the 4th generation HIV screening and testing method has widely been adopted in clinical settings as recommended by the CDC (12). It narrows the window period by identifying HIV-1 and HIV-2 antibodies, as well as the HIV p24 antigens, with sensitivity and specificity above 99% (13). But there have been published reports of false positivity even with the 4th generation HIV tests due to COVID-19, Epstein-Barr virus, and metastatic cancer in the literature (14, 15). There is a need for thorough caution in interpreting positive antibody-based HIV test results in patients with RA and the other cited conditions. A definitive diagnosis of HIV in RA may need to be ruled out using HIV DNA PCR (as was done in our patient) or even HIV viral load (which detects the viral copies of HIV in the blood) (2). These tests should be applied on a case-by-case basis as necessary since they are too expensive and time-consuming to apply to a general programmatic HIV management.

4. CONCLUSIONS AND RECOMMENDATIONS

Health care workers need to be aware of clinical scenarios in which a false positive HIV antibody-based test may be encountered. Patients with seropositive RA and other autoimmune diseases may have a false positive HIV test due to the cross-reactivity of disease-specific autoantibodies with HIV target antigens. Awareness of this will lead to appropriate management pathways that avoid unnecessary use of ARVS, offer psychosocial care, and provide linkages for effective management of underlying confounders. The Kenyan MOH guidelines on HIV testing and management should include recommendations on how to manage a false positive HIV test result.

Ethical Consideration

Informed consent was obtained from the patient for this publication.

REFERENCES

[1] 2022 NASCP. Ministry of Health, National AIDS & STI Control Program. Kenya HIV Prevention and Treatment Guidelines, 2022 Edition. Nairobi, Kenya: NASCOP, Aug 2022. Print. : National AIDS & STI Control Program; 2022 [cited 2025. Available from: https://www.differentiatedservicedelivery.org/wp-content/uploads/Kenya-ARV-Guidelines-2022-Final-1.pdf.

[2] Huynh K, Zubair M, Kahwaji CI. HIV Testing. StatPearls. Treasure Island (FL): StatPearls Publishing Copyright © 2025, StatPearls Publishing LLC.; 2025.

[3] Li Y-c, Yang F, Ji X-y, Fang Z-j, Liu J, Wang Y. False Human Immunodeficiency Virus Test Results Associated with Rheumatoid Factors in Rheumatoid Arthritis. Chinese Medical Sciences Journal. 2014; 29(2):103-6.

[4] Cunha BM, Mota LMH, Pileggi GS, Safe IP, Lacerda MVG. HIV/AIDS and rheumatoid arthritis. Autoimmunity Reviews. 2015; 14(5):396-400.

[5] Council KNSDC. THE KENYA HIV MODES OF TRANSMISSION STUDY REPORT 2024 MINISTRY OF HEALTH KENYA 2024 [cited 2025. Available from: https://analytics.nsdcc.go.ke/estimates/KMoT%20Report%20-%20November-2024.pdf.

[6] Esteva MH, Blasini AM, Ogly D, Rodríguez MA. False positive results for antibody to HIV in two men with systemic lupus erythematosus. Ann Rheum Dis. 1992; 51(9):1071-3.

[7] Jian L, Liang W, Zhang Y, Li L, Mei Y, Tan R, et al. Systemic lupus erythematosus patient with false positive results of antibody to HIV: A case report and a comprehensive literature review. Technol Health Care. 2015; 23 Suppl 1:S99-s103.

[8] Chen X, Cai M, Ma Y, Zhang T, Zhang Y. Positive HIV Screening Test in a Patient with Rapidly Progressive Interstitial Lung Disease: A Case Report. Infect Drug Resist. 2024; 17:5111-6.

[9] Doran TI, Parra E. False-positive and indeterminate human immunodeficiency virus test results in pregnant women. Arch Fam Med. 2000; 9(9):924-9.

[10] Shida S, Takahashi N, Fujishima N, Kameoka Y, Nara M, Fujishima M, et al. False-Positive Human Immunodeficiency Virus Antibody Test and Autoimmune Hemolytic Anemia in a Patient with Angioimmunoblastic T-Cell Lymphoma. Internal Medicine. 2011; 50(20):2383-7.

[11] Bronze MS, Warr AG, Spigel D, Smith VD, Smalley D. False-Positive Enzyme Immunoassay for Human Immunodeficiency Virus Due to Acute Cytomegalovirus Infection. Clinical Infectious Diseases. 1998; 27(1):221-2.

[12] Burrage JW, Zimet GD, Cox DS, Cox AD, Mays RM, Fife RS, et al. The Centers for Disease Control and Prevention revised recommendations for HIV testing: reactions of women attending community health clinics. J Assoc Nurses AIDS Care. 2008; 19(1):66-74.

[13] Chavez P, Wesolowski L, Patel P, Delaney K, Owen SM. Evaluation of the performance of the Abbott ARCHITECT HIV Ag/Ab Combo Assay. J Clin Virol. 2011; 52 Suppl 1:S51-5.

[14] Tan SS, Chew KL, Saw S, Jureen R, Sethi S. Cross-reactivity of SARS-CoV-2 with HIV chemiluminescent assay leading to false-positive results. J Clin Pathol. 2021; 74(9):614.

[15] Liu P, Jackson P, Shaw N, Heysell S. Spectrum of false positivity for the fourth generation human immunodeficiency virus diagnostic tests. AIDS Res Ther. 2016; 13:1.