



A Case Report of HIV-2 in Southern India; A Rare Variant of HIV.

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Abstract

Introduction: HIV-2 is a rare variant, which is mainly seen in Africa, and occurs in low numbers sporadically elsewhere. There is a need to estimate the prevalence of HIV-2 separately by NACO/WHO. **Case report:** An elderly male was reactive (positive) for HIV-2 antibodies when tested before surgery. It was further verified by quantitative RNA PCR. He gave h/o treatment for hemorrhoids by informal healthcare providers in the past. **Discussion:** Different studies in India have revealed that HIV-2 accounts for less than 5% of total HIV positive cases and is mainly seen in middle aged males. HIV-2 is resistant to Non-nucleoside reverse transcriptase inhibitors (NNRTI) and hence it should not be used for treatment. **Conclusion:** HIV-2 is a rare variant of HIV and its worldwide and nationwide prevalence has to be estimated and published. Clinicians should be aware about HIV-2 to provide appropriate care and treatment.

Keywords: HIV-2, Human Immunodeficiency Virus, NACO.



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INTRODUCTION

HIV (Human Immunodeficiency Virus) exists in two types. HIV-1 and HIV-2. WHO (World Health Organization) estimates around 40.8 million people are living with HIV with 39.4 million adults at the end of 2024.¹ HIV-2 is endemic in West Africa. But now it is spreading to the rest of the world because of population migration.² As per NACO (National AIDS Control Organization), adult HIV prevalence in India is 0.20%, with more than 2.5 million adults living with HIV.³ But neither WHO nor NACO have estimated the prevalence of HIV-2 separately. Hence the prevalence of HIV-2 worldwide and nationwide is not known. The first case of HIV-2 in India was in 1991, in Mumbai.⁴ Since then, it is being reported sporadically in different states of India. Different studies have been conducted in different parts of the country to know its prevalence in those areas. These studies have reported that HIV-2 accounts for less than 5% of total HIV positive cases.⁵⁻⁷ Here we report one such case of HIV-2, a rare variant of HIV in an elderly male patient.

CASE REPORT

Here is a 52-year-old male patient who hails from Bangalore South, came to orthopedic OPD with h/o self-fall while bike riding and sustained injury to his right wrist. Following this, there was pain and swelling in the wrist area. He also gives h/o hemorrhoids from past 2 years, for which he has taken treatment by varied medical practitioners including informal healthcare providers. Treatment included medical and surgical management. He is a school bus driver. He is married. No h/o sexual contact with wife from past 2 years. He has 2 children. No h/o blood transfusion/ promiscuity in the past. No h/o international travel. Patient was diagnosed with fracture of distal end of right radius. He was admitted and elective surgery was planned. His blood sample was sent for preoperative HIV, hepatitis B and hepatitis C testing. Pre-test counselling was done for HIV, written and informed consent was taken. Serum was separated and it was tested for HIV (HIV-1 & HIV-2) antibodies and hepatitis B and C. He was found to be Non-reactive (Negative) for hepatitis B & C and Reactive (Positive) for HIV antibodies (HIV-2). He was tested as per NACO strategy 3 (HIV testing in general population). Three rapid tests were carried out, which are immuno-concentration assay (vertical flow), immunochromatography assay (lateral flow) and immunocomb (dot immune) assay. The sample was reactive by all 3 tests. Out of this, immuno-concentration and immunochromatography tests were able to detect HIV-2 separately and differentiate it from HIV-1. Later, patient's sample was sent for quantitative RNA PCR for detection of HIV-2 and for estimation of viral load. HIV-2 RNA was detected and the viral load was 1618 IU/ml (952 copies/ml). The diagnosis of HIV (HIV-2) was established.

Post-test counselling was done and report was issued to the patient. His CD4 cell count was 390/mm³. Surgery was performed following standard precautions. Open reduction internal fixation (ORIF) with plating was done. Patient was referred to ART center for treatment and follow up. He was started on standard TLD regimen, which is Tenofovir + Lamivudine + Dolutegravir. His wife's blood sample was tested for HIV (HIV1 & HIV2) and it was negative.



Figure 1: Picture of Rapid Test Cards

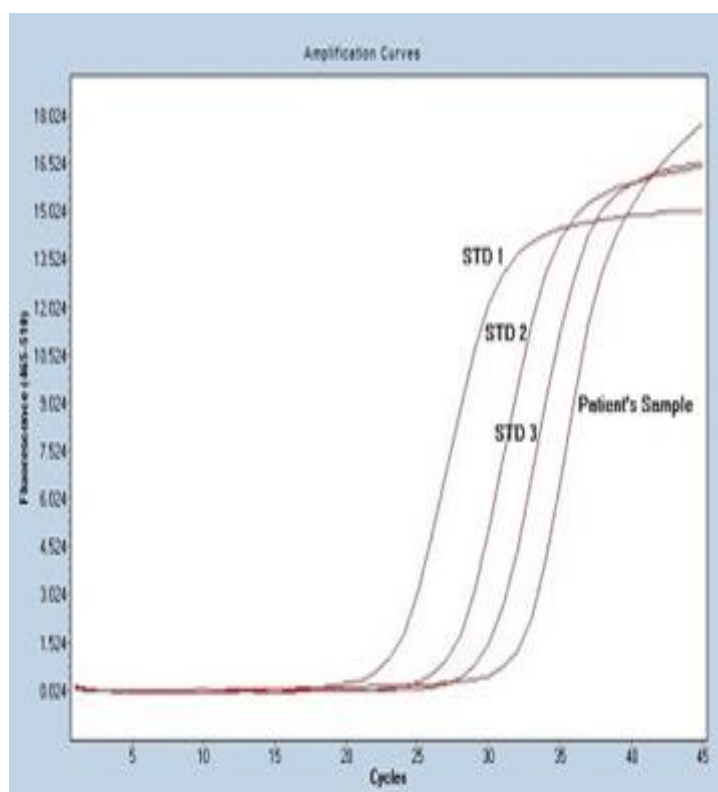


Figure 2: HIV-2 Amplification Curve

DISCUSSION

HIV-2 is less common and less pathogenic than HIV-1. The time taken for HIV infection to develop into AIDS (Acquired immunodeficiency syndrome) is long and the survival time of HIV-2 patients is longer compared to HIV-1. The decline in CD4 count is also slow in HIV-2 compared to HIV-1.⁸ This is why these patients survive long. This is probably the reason why in most studies, HIV-2 is more prevalent in middle aged individuals compared to young. Also, studies have revealed that it is more common in males than females. In table 1, proportion of HIV-1 & 2 in HIV positive individuals, gender prevalence and common age group of HIV-2 in different studies are shown.

Table 1: Proportion of HIV-1 & 2 among HIV positive individuals, gender prevalence and common age group of HIV-2

	Proportion of HIV-1	Proportion of HIV-2	HIV-2 Gender prevalence	HIV-2 Common age group
Tiewsoh et al⁵	95.8 %	2.8 %	Common in Males	41-50
Ingole et al⁶	97.05 %	1.83 %	Common in Males	35-49
Valentina & Pandian⁷	95.12 %	4.8 %	Common in Males	40-45

It is also important to know that in HIV-2, RNA levels will be low and hence sometimes it may be undetectable by PCR. Hence if two out of three positive antibody tests can identify HIV-2 separately, the diagnosis of HIV-2 can be made.⁹ Though Antiretroviral therapy (ART) is recommended for all the patients with HIV-2, Non-nucleoside reverse transcriptase inhibitors (NNRTI) are not used for the treatment of HIV-2 as it is intrinsically resistant to them. Nucleoside reverse transcriptase inhibitors (NRTI) and Protease inhibitors (PI) are the main drugs of choice for the treatment of HIV-2.¹⁰ NACO suggests use of TLD regimen for all cases of HIV (HIV-1, HIV-2 or HIV-1&2) which is, Tenofovir + Lamivudine + Dolutegravir. Tenofovir is a Nucleotide Reverse Transcriptase Inhibitor (NtRTI), lamivudine is a Nucleoside Reverse Transcriptase Inhibitor (NRTI) and Dolutegravir is an Integrase Strand Transfer Inhibitor (INSTI).¹¹ Wife's HIV status was negative, probably due to no sexual contact with her from past 2 years, though main mode of transmission of HIV-2 is sexual contact.^{7,12}

CONCLUSION

HIV-2 is a rare variant of HIV compared to HIV-1. It is more prevalent in middle aged males. This patient was asymptomatic and the only relevant history was treatment history for hemorrhoids in the past. Since the patient has taken medical and surgical treatment from varied medical practitioners including informal healthcare providers, possible transmission through unsterile equipments cannot be excluded. HIV testing methods used in the labs should not only detect HIV, but also differentiate HIV-1 and HIV-2. There is need to estimate and publish worldwide and nationwide prevalence of HIV-1, HIV-2 and HIV-1&2 co-infection separately. More studies are needed to confirm facts that in HIV-2, viral load will remain low in general and the fall in CD4 counts is slow. Clinicians should have knowledge about this rare variant of HIV, to provide appropriate care and treatment. As viral load in HIV-2 is said to be always low, its usefulness in monitoring treatment response needs to be evaluated.

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