

HIV Serodiscordance: Diagnosis Problem in the Douentza Heath District

Coulibaly, M¹, Dembele, K. S^{2*}, Diarra, I⁶, Dicko, A¹, Maiga, S¹, Sissoko, M¹, Cisse, A³, Kassambara, B³, Diarra, M³, Coulibaly, M³, Coulibaly, Y³, Bocoum, A³, Maiga, B³, Malle, K⁴, Sanogo, A⁶, Konate, S⁷, Bah, A¹, Kante, S¹

¹Douentza Reference Health Center, Bamako, Mali

²Tominian Reference Health Center, Bamako, Mali

³NGO <Médecins Sans Frontières> Douentza, Bamako, Mali

⁴Segou Regional Directorate, Bamako, Mali

⁵Commune I Reference Health Center, Bamako, Mali

⁶Douentza Central Community Health Center 2, Bamako, Mali

⁷Kolondiéba Reference Health Center, Bamako, Mali

DOI: [10.36348/sjm.2024.v09i01.002](https://doi.org/10.36348/sjm.2024.v09i01.002)

| Received: 15.11.2023 | Accepted: 24.12.2023 | Published: 04.01.2024

*Corresponding Author: Dembele, K. S

Tominian Reference Health Center, Bamako, Mali

Abstract

Summary: Human immunodeficiency virus (HIV) is an infection that attacks the body's immune system. The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS). HIV is spread through the body fluids of an infected person, including blood, breast milk, semen, and vaginal fluids. **Observation:** These were 2 patients who had been consulted for a transfusion during which routine screening was carried out. Faced with divergent results, the hypothesis of a serodiscordance was raised. Series of tests carried out came back sometimes Negative and sometimes positive. It was the result of the PCR which made it possible to conclude that it was negative for HIV infection. These results had an impact on the psychological state of donors and could contribute to raising questions on the quality, specificity and/or sensitivity of current tests? On the interaction of one or more viral markers of another unknown viral pathology? And on the other hand on a possible genetic predisposition of these blood donors? **Conclusion:** HIV is a preventable disease. Awareness campaigns and promotion of early detection are effective ways to reduce transmission.

Keywords: Serodiscordance, Seroconversion, HIV, Problem, Diagnosis, Douentza.

Copyright © 2024 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Human immunodeficiency virus (HIV) is an infection that attacks the body's immune system. The most advanced stage of HIV infection is acquired immunodeficiency syndrome (AIDS).

HIV is spread through the body fluids of an infected person, including blood, breast milk, semen, and vaginal fluids. You cannot become infected through contact such as kissing or sharing food. It can also be transmitted from mother to child.

The symptoms induced by HIV vary depending on the stage of infection.

The disease spreads most easily in the first few months after initial infection, but many people are unaware of their situation until later stages. During the

first few weeks after infection, people may not have symptoms.

Behaviors and situations that increase the risk of acquiring HIV infection include:

- Unprotected anal or vaginal intercourse;
- The presence of another sexually transmitted infection (STI) – syphilis, herpes, chlamydia, gonorrhea or bacterial vaginosis for example;
- Sexual behavior involving harmful use of alcohol and drug use;
- Sharing, when injecting drugs, contaminated needles, syringes, other injection equipment or solutions;

HIV remains a major public health problem globally, causing 40.4 million cases to date and experiencing ongoing transmission in every country in the world; some of which are reporting an upward trend

in new infections where they were previously declining [1].

There were an estimated 39.0 million people living with HIV at the end of 2022, with more than two-thirds (25.6 million) living in the WHO African Region.

In 2022, 630,000 people died from HIV-related causes and 1.3 million people contracted HIV.

There is no cure for HIV infection. However, with access to effective prevention, diagnosis, treatment and care, including for opportunistic infections, HIV infection has become a chronic condition that can be managed with the possibility of to live a long and healthy life.

HIV is a preventable disease.

The risk of HIV infection can be reduced with the following prevention measures:

- The use of a male or female condom during sexual intercourse;
- Screening for HIV and other sexually transmitted infections;
- Voluntary medical male circumcision; And
- Harm reduction services for people who inject drugs.

According to figures presented by Public Health France on December 1, between 4,200 and 5,700 people discovered their HIV status in 2022, which, “in a context of an increase in the volume of screening, is encouraging in terms of the dynamics of the epidemic,” indicates the institution [6].

To better combat this disease through screening, a manual was developed in 2009 as part of home screening while respecting national guidelines. This manual serves as a guide for providers of counseling and testing services in some sub-Saharan countries [2].

We report 2 cases of serodiscordance observed during routine screening.

Observation No. 1:

It was a 20-year-old patient, a student, with no particular medical or surgical history, who came to the reference health center to donate blood, as part of solidarity as encouraged by the national authorities. The donor had no symptoms. The results of the assessments carried out came back with Syphilis negative, HBs antigen Positive, Hbc Ab negative, HIV serology Positive. According to the protocol, a second test called a confirmation test with typing came back Negative. Given these results, the hypothesis of the seroconversion period in the case of primary HIV infection was raised. Our behavior was to reassure the donor and plan a new three-month appointment which was respected. The purpose of the appointment was to confirm or deny HIV after counseling. The two tests carried out after three

months, notably the Determine or Alère test, came back Positive and the SD Bioline confirmation and typing test was Negative; a third test which was the First Rest Respons associated with viral load all came back Negative. Faced with this new result, a diagnostic problem was posed. It was in view of the opinion of the national body and the Negative PCR result that the donor was declared free of any HIV infection.

Observation No. 2:

It was a 36-year-old patient, Police officer, with no particular medical-surgical history, who came to the reference health center as part of a blood donation, after the usual counseling and preparations, a first test was carried out which came back positive. Faced with this result, a confirmation test carried out came back Negative. It was in the face of this discordant result that the hypothesis of the seroconversion period in the case of primary HIV infection was raised and an appointment was planned for three months which was respected by the patient. Note that the patient had carried out a previous assessment which was negative. After the 3 months, the patient returned and a PCR performed came back Negative. It is in view of this last result that we declared the patient free of HIV infection.

DISCUSSION

According to the national policy of Mali and within the framework of transfusion safety, certain tests are systematically carried out on donors, these tests were syphilis, HbsAg, Hbc Ac, and HIV.

Systematic HIV screening is a recommendation of the Malian state in the context of blood safety.

This screening is also carried out routinely among applicants. The New CDC recommendations of 2006 which focused on the significant proportion of delays in diagnosis (39%), and people unaware of their diagnosis; knowing one's HIV+ status leads to a change in behavior and Routine screening is cost-effective. This reinforces the provisions of the Malian state [3].

Screening for the AIDS virus (HIV) consists of a simple blood test which makes it possible to identify the presence of anti-HIV antibodies but also, for the most recent tests, to detect the possible presence of circulating viral antigens. It is considered that you must wait at least six weeks between the risk situation and the test to be certain of a negative result. When you are infected, the screening test can be positive as early as the third week after exposure. You should therefore not hesitate to consult early after a risky situation. Confirmatory testing is absolutely necessary before making the diagnosis of HIV infection.

These tests are carried out in most reference laboratories in Mali.

The activities of the reference health center are also focused on the diagnosis and treatment of HIV as part of the HIV control program.

In the context of transfusion in patients at the center, HIV screening is systematic in donors; this is how the diagnostic unit was confronted with this diagnostic problem.

In our observation, after the first results, the patient was advised to respect the seroconversion time with avoidance of any behavior risking HIV infection in order to guarantee the reliability of the test which was between 6 weeks and 6 months [4].

HIV can be diagnosed using rapid diagnostic tests that provide same-day results, making early diagnosis and linkages to treatment and care much easier. You can also use an HIV self-test to test yourself. However, there is no test that can, on its own, establish a definitive positive diagnosis of HIV. Confirmatory testing is required, carried out by a trained and qualified health worker or community worker at a community center or clinic. HIV infection can be detected with high accuracy using WHO prequalified tests under a nationally approved testing strategy and algorithm.

Most common HIV tests detect antibodies produced by the infected person as part of their immune response against the virus. Most often, antibodies against HIV are produced by the body within 28 days of infection.

During this period known as the “window period,” where an infected person has low levels of antibodies that cannot be detected by many rapid tests, but can transmit the infection to others. People who have recently been exposed to high risk and test negative can take another test after 28 days.

After a positive diagnosis, a new test should be carried out before starting treatment and care to exclude any errors in screening or reporting. If screening in adolescents and adults is now simple and effective, the same is not true for children born to HIV-positive mothers.

Before the age of 18 months, the rapid antibody detection test is not sufficient to identify HIV infection and virological screening should be carried out (from birth or at six weeks of age). However, new techniques now make it possible to perform this type of testing at the point of care and obtain results the same day to expedite appropriate referral to treatment and care services.

HIV tests are very reliable. Once the confirmatory test has been performed, the possibility of a positive result being false is essentially zero; HIV tests used in Canada (including third and fourth generation tests) all have a sensitivity of up to 99.9%. In other

words, if 1,000 HIV-positive people were tested for HIV, 999 of them would receive a positive result and one would receive a false negative. Since the specificity is lower, this means that the likelihood of screening tests giving a false positive result is slightly higher. This is why all positive results are subject to a confirmation test whose specificity is very high [7].

In our observation, despite the fact that the standards for storing HIV tests are respected, the first tests were positive, but in the logical continuation of the national protocol, the confirmation posed a doubt because it became negative.

This posed two dilemmas for the team, on the one hand what result announced to patients and on the other hand, the quality of the tests according to their sensitivity and specificity.

No test can detect HIV immediately after infection. The window period refers to the time between when a person is exposed to HIV and when the screening test can detect the virus. The length of the window period can vary from two weeks to three months; it varies from one person to another and also depends on the type of test used [7].

The window period for these tests varies from three to 12 weeks. These tests can detect HIV antibodies in 50% of people about 22 days after exposure to HIV and in 99% of people 12 weeks after exposure [7]. This period was respected in our observations.

The psychological stress observed among patients was worrying because it jeopardized the quality of our services at the center.

Psychological support for the patient is essential after the announcement of a diagnosis of infection with the AIDS virus (HIV) [5]. Strict respect for confidentiality is absolutely necessary to allow the patient to feel confident with the medical world. The patient must understand that the situation involves his own health but also that of the person who transmitted the virus to him and the partners with whom he may have had unprotected sex.

One of the first laboratory tests, in the event of a positive diagnosis, consists of measuring the viral load (the number of copies of virus present in a milliliter of plasma).

This data is a good indicator of the rate of replication (reproduction) of the virus and allows the therapist to assess the risk of progression towards immunosuppression. Viral load also helps monitor response to treatment. Antiviral treatment actually causes the viral load to drop 100 times after one month of treatment. Below 40 copies per milliliter, the viral load is no longer detectable (virus replication is under control

and the risk of virus transmission is significantly reduced).

CONCLUSION

HIV is a preventable disease. Awareness campaigns and promotion of early detection are effective ways to reduce transmission.

The reminder on the means of storing tests, the techniques of carrying out them and other in-depth studies can be used to better understand the rare cases of seroconversion.

REFERENCES

1. WHO: <https://www.who.int/fr/new-room/fact-sheets/detail/hiv-aids>; 2023.
2. Miriam Taegtmeier: Planning, implementation and monitoring of home-based HIV counseling and testing / practical manual for sub-Saharan Africa. WHO Library 2013; ISBN 978 92 4 250431 6; (NLM classification: WC 503.1).
3. Caroline Semaille, Stéphane Le Vu, Annie Velter, Françoise Cazein: Screening for HIV infection in France; Saint Vigil Institute; JN1, Lyon June 12, 2009.
4. Baramperanye E. Transmission and prevention of HIV/AIDS infection; International Federation of Library Associations and Institutions; <https://www.ifla.org/files/assets/faife/publications/raining-materials/hiv-aids-workshop-pt2-fr...ppt>;
5. Jean-Christophe Goffard. HIV diagnosis; HIV-AIDS - Diagnosis | Medipedia.
6. Christelle Destombes, Vih.org. Accessed December 4, 2023.
7. Harrigan, M. Cloutier Provencher M: HIV screening technologies; <https://www.catie.ca/fr/les-technologies-de-depistage-du-vih>; Updated: 2022.