

Case Report

HIV-SYPHILIS CO-INFECTION AMONG BLOOD DONORS: A CASE REPORT

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ABSTRACT

Blood transfusion is a unique technology that blends science with altruism. Though its collection processing and use are technical its availability depends entirely on the extraordinary generosity of the blood donor who donates this most precious of gifts –the gifts of life. Safe transfusion not only requires the application of science and technology to blood processing and testing, but also social mobilization to promote voluntary blood donation by sufficient number of people who are healthy and are low risk on infections that can be transmitted to the recipients of their blood. We present a case of voluntary blood donor incidentally diagnosed with the co-infection of HIV & Syphilis in our blood bank. This calls for strict donor screening criteria with appropriate serological test in order to maintain safe transfusion services.

Keywords: *HIV, Syphilis, Blood Donors, Blood Transfusion*

INTRODUCTION

Blood transfusion has been contributing about 2 to 10 percent HIV transmission in India and blood safety measurement has been adopted throughout the country to combat HIV spread. Since 1988, it has been made mandatory to screen all collected blood for HIV in the country. Considering the importance Government of India announced National Blood Policy in April 2002, and the policy statement spells out an integrated strategy for collection of voluntary blood, screening of all donated blood for essential transfusion-transmitted infections.

Transfusion medicine has evolved from a mostly laboratory-cantered service with a focus on serological aspects of blood, into a clinically oriented discipline that emphasizes patient care. The implementation of safety and quality measure, progressively put forth during the last half-century, has subsequently reduced the risk of disease transmission through blood transfusion.

Blood transfusion contributes to saving millions of lives every year, improves life expectancy and the quality of life patients suffering from life-threatening conditions, and supports complex medical and surgical procedures. In India, Blood Transfusion Service is highly fragmented. There is no uniformity in the standards of the blood banks which exists in public, private and Non Governmental Organization (NGO). The services provided by each blood bank differ from each other in the same city or within the districts or the states. The condition is even worse in the rural and resource constrains setup like us and hence greater hemo-vigilance with stringent donor selection criteria along with appropriate serological tests is highly recommended.

CASES

One male first time voluntary blood donor of 28 years attended a camp. Standard Operating Procedure (SOP) with regard to donor registration and examination were followed. After registration trained staff administered questionnaire eliciting information on socio-demographic and behavioral characteristic.

Written donor consent in local language was obtained by trained staff. Under the supervision of blood bank officer, donor details & test results confidentiality were ensured.

Serum samples for HIV, HbsAg and HCV by Vitros ECI Chemiluminescence (Johnson & Johnson USA) were tested and sero-positivity for HIV was confirmed by Western Blot (J-Mitra & Co.). Test for syphilis was conducted by Trepolisa (Tulip Qualpro Diagnostic).

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The positive findings in sero-positive by Treponema passive hemagglutination assay (T.P.H.A, Serodia-TP. PA, Fujirebio NC, Japan) and by indirect immunofluorescence test (FTA-abs, Immunofluor Niosientifica SA, Argentina) Reactive specimen were retested in duplicate and determined to be positive if either or both of the repeat tests were reactive. The case was referred to Integrated Counseling Testing Centre (ICTC) for regular follow-up as per NACO guidelines.

DISCUSSION

Blood has a vital role in the human body, and blood transfusion can be life-saving in patients with either massive blood loss or in those unable to produce blood due to defective hematopoiesis. In most developed countries blood is fractionated into components like fresh frozen plasma (FFP), platelets and red cells concentrate for replacement or prophylactic therapies (Henkel *et al.*, 1999).

A number of measures have been introduced in the past decade to prevent transmission of infectious agents during transfusion of blood components. Donor screening and deferral procedures in addition to serologic and nucleic acid testing helped in making blood a safer product for transfusion (Hutchinson *et al.*, 1994). These efforts have drastically reduced the risk of classical transfusion-transmitted infectious agents such as HBV, HCV and HIV. However, even though screening techniques are a very reliable way to detect many lethal viruses, blood transfusion still poses risks for the following reasons: (i) the window period of pathogens during which an infectious donor cannot be detected has been reduced, but not eliminated by NAT screening because NAT testing is generally carried out on pooled donor samples which can raise the chance of infection due to dilution of the signal from infected donors; ii) new emerging pathogens may enter the blood supply; iii) parasites and bacteria also represent an infective risk. Routine serological testing currently does not test for various parasitic diseases, and limited test methods exist (Hutchinson *et al.*, 1994).

Although the risk of infection by blood transfusion is relatively low, breakthrough infections still occur and transfusion-related facilities caused by infections continue to be reported because blood is not usually tested for many unknown pathogens. The current paradigm for increasing the safety of the blood supply is the development and implementation of laboratory screening methods and restrictive donor criteria (Richman, 1999). When considering the large number of known pathogens and the fact the pathogens continues to emerge, it is clear that the utility of new tests and donor restrictions will continue to be a challenge when considering the cost of development and implementing new screening assays, the loss of potential donors, and the risk of testing errors. Despite improving the safety of blood components, testing remains a reactive approach to blood safety because the contaminating organism must be identified before sensitive tests can be developed (Richman, 1999).

Characteristics responsible for TTI include low to moderate level of sero-prevalence in potential blood donors, carrier status of the donors during which the individual may be relatively asymptomatic and stability of the organisms in stored blood and blood components (St. Louis and Wasserheit, 1998).

Retention of voluntary blood donors, found sero-negative for transfusion infections is a good way to enhance blood safety. However, this is easier said than done. A good reliable history of the blood donor is always a concern when it comes to blood donation. As a result of all the above concerns, the techniques and technology and used for blood screening in blood banks play a major role in enhancing blood safety (Henkel, 1999).

In our country there are 2545 licensed blood banks in private and government sector, the testing for transfusion transmitted diseases in not up to mark. In a country with limited resources and where cost economics playing vital role we have to delicately strike a balance between cost, quality, manpower & infrastructural constraints as well as opining for new testing technologies prevalent in the world (Jacob *et al.*, 1995).

In order to keep pace with the growth and safety for blood receipts we need to gear up for acceptance and incorporation latest testing facilities for our blood banks (Weitz, 1990). Over the last two decades certain important changes have been noted with regard to HIV- STI pandemic with includes (a) emergence of new STI organisms and etiologies, (b) reemergence of old STI's, (c) shifts in the population in which

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STI's are concentrated, (d) shifts in the etiological spectra of STI syndromes, (e) alterations in the incidence of STI complications and (f) increase in antimicrobial resistance (Weitz, 1990).

HIV infection and other STI's share common dominant modes of transmission, common human reservoirs and common behavioral risk factors (Wasserheit, 1992). The relationship between HIV infection and other STI's have been postulated: 1) increased transmission of HIV in the presence of other STI's 2) accelerated progressive of HIV diseases in the presence of other STI's in the presence of HIV infection (Wasseheit, 1992; Mertens *et al.*, 1990).

Blood safety is a challenging task in India; with a population of around 1.23 billion and a high prevalence rate of HIV (0.29%), HBV (2-8%) and HCV (2%) in general population (St. Louis and Wasserheit, 1998; Weitz, 1990). Approximate blood collection is only 60% of the required units and more than 50% of that collection comes from replacement donors. Prevention of transfusion transmitted infections (TTI) is even more difficult as the required infrastructure and resources are not always available, even when policies and strategies are in place (Mertens *et al.*, 1990).

A major challenge in transfusion medicine is to develop screening assays with maximum analytical sensitivity and analytical specificity to reduce the diagnostic window period as much as possible. Until the last 1990s, blood screening for TTIs depended entirely on serological assays. Except for HBV, where the virus can be detected using HBs-antigens assays, tests for the detection of other TTIs relied almost exclusively on antibody detection. These tests, however, are associated with a relatively long diagnostic window period because they detect the response of the immune system to an infection (Hook, 1992).

An Indian study showed a positive correlation between HIV & VDRL positivity. VDRL positivity was 1.75% and HIV positivity was found to be 3.05% (Patil *et al.*, 1996). In a study there was seen increasing prevalence of HIV among patients attending a clinic for sexually transmitted diseases (Jacob *et al.*, 1995). Increasing demand for fresh blood components especially platelets, fresh frozen plasma & blood for exchange transfusion in newborn infants, increase the risk of transmission of syphilis. Incidence of syphilis is rising recently. So, it seems that syphilis screening of blood donors should be continued (Patil *et al.*, 1996).

Further studies are needed in order to better define the epidemic of syphilis infection, a sensitive marker of sexual risk behavior and a co-factor in HIV transmission. Integrated HIV/STD intervention programs and effective surveillance, e.g. panel surveys and sentinel surveillance of laboratory diagnosed infections, should target not only high risk groups but also the population (Jacob *et al.*, (1995).

Conclusion

The increase in the HIV incidence among voluntary donors is a matter of great concern. It is hereby suggested to have a uniform testing policy for blood banks, to ensure safe blood supply. A centralized reference system, for confirmatory test for the virus after screening HIV reactive, is also the need of the hour (St. Louis and Wasserheit, 1998).

In India, it is mandatory that blood banks screen every donation for syphilis. There are currently a large number of different commercial treponemal and non-treponemal tests available for syphilis screening in blood donors. Rapid plasma regain (RPR), the most common screening tests has disadvantages of false positive reactions. Apart from this particle gel immunoassay (PaGIA) and solid phase immunochromatographic test are also currently available as specific assays for syphilis. The confirmatory assays include treponemal tests such as TPHA and ELISA which should be commonly used in blood bank settings (Richman, 1999).

Rapid immunochromatographic test shows an excellent sensitivity and specificity compared to PaGIA and RPR. It can be used as a rapid treponema test for screening of blood donors especially in resource poor countries. ELISA can be used for further confirmation of syphilis.

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