

# Mode of Detection of HIV Infection – A Retrospective Study of 612 Cases

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## Abstract

**Background:** Trends in mode of detection of HIV infection in the Armed Forces required to be analyzed to formulate future strategies for early detection.

**Methods:** A retrospective study was thus conducted in 612 newly diagnosed HIV-positive cases between January 1997 to August 2002.

**Results:** 182(29.74%) patients had already developed Category C conditions when detected to be HIV-positive, 176(96.70%) with mycobacterial disease, majority (67.61%) of them being pulmonary tuberculosis, followed by recurrent bacterial pneumonia in 3 (1.65%), pneumocystis carinii pneumonia (PCP) in 2(1.1%) and oesophageal candidiasis in one (0.55%). Herpes zoster was the third most common mode of detection accounting for 86 (14.05%) of the cases (24.6% of them with involvement of ophthalmic branch of trigeminal nerve), after tuberculosis in 176(28.76%) and blood donors in 98(16.01%), followed by constitutional symptoms in 59(9.64%) cases, investigation for STDs in 56(9.15%), bacterial pneumonia in 6(0.98%) and oral mucosal candidiasis in only one (0.16%) case. None was detected during acute retroviral illness and only 5(0.82%) cases were detected while being investigated for generalized lymphadenopathy. Amongst the cases detected during investigation for STDs, majority (26.79%) were on STD surveillance. 22(3.60%) cases tested positive when their spouses were detected to be HIV-positive, 20(3.27%) while being screened for surgery, 4(0.65%) for posting abroad and 2(0.32%) each during investigation when child was found HIV-positive and investigation for HBV infection. Remaining 69(11.27%) patients were detected during investigation of various related or unrelated conditions including one (0.16%), which reported voluntarily after a high-risk exposure.

**Conclusion:** There is a need to encourage voluntary reporting and identify more number of cases during acute retroviral syndrome and PGL stage.

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**Key Words :** HIV infection, Mode of detection

## Introduction

HIV infection has attained epidemic proportions. As per the latest WHO estimates, 40 million people were infected with HIV, 25 million had died of AIDS by the end of 2001 and five million new cases were diagnosed in 2001 alone [1,2]. Thus it is very important to identify persons who require screening for HIV infection, so that HIV-infected can be identified at the earliest for therapeutic intervention, thereby delaying the inevitable and giving them a good quality of life. At the same time, HIV testing should be cost effective. Over the years, the modes of transmission and high-risk groups susceptible to acquire this infection have become increasingly clear. How to identify this high-risk population, diagnose HIV-infected amongst them, counsel them and prevent further spread of this dreaded virus, are the questions that need to be answered. We expected some answers to emerge from some facets of this retrospective epidemiological study regarding the

trend in the detection of HIV infection in the Armed Forces and need for any future modification in our strategies.

## Material and Methods

Study was carried out in 612 newly diagnosed cases of HIV infection in serving Armed Forces personnel, which were registered in a tertiary care teaching hospital between January 1997 to August 2002. The records of these patients were analyzed with a view to find out the mode of presentation of these cases, which led to the detection of HIV-infection.

## Results

Only two out of the 612 patients were females, Armed Forces being male dominated. Mode of detection of HIV infection in these patients is shown in Table 1. Investigation of cases of tuberculosis was found to be the most common mode of detection in 176 (28.76%), followed by investigation of blood donors and cases of herpes zoster, constitutional illness and STDs.

Type of tuberculosis in those found to be HIV positive is

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**Table 1**  
Mode of detection of HIV infection

Mode of detection	Number (%)
Tuberculosis	176 (28.76)
Blood donation	98 (16.01)
Herpes zoster	86 (14.05)
Constitutional illness	59 (9.64)
Investigation for STDs (including one with syphilitic meningitis)	56 (9.15)
Spouse positive	22 (3.60)
Surgery	20 (3.27)
Bacterial pneumonia (including 3 with recurrent pneumonia)	6 (0.98)
Generalised lymphadenopathy	5 (0.82)
Screening for posting abroad	4 (0.65)
Recurrent bacterial pneumonia	3 (0.48)
PCP	2 (0.32)
Child positive	2 (0.32)
HBV infection	2 (0.32)
Candidiasis oral mucocutaneous	1 (0.16)
Oesophageal candidiasis	1 (0.16)
Miscellaneous and unrelated conditions	69 (11.27)
<b>Total</b>	<b>612 (100)</b>

shown in Table 2. Out of 176 cases of tuberculosis found to be HIV positive, pulmonary tuberculosis was found to be the most common presentation in 119 cases.

Out of total of 86 cases of herpes zoster, dermatomal involvement was recorded in only 65 cases. The distribution of herpes zoster is shown in Table 3. Thoracic spinal segment involvement in 32(49.23%) cases was the most common presentation followed by herpes zoster ophthalmicus in 16(24.62%) cases. Distribution of various types of STDs, investigation for which led to the diagnosis of HIV infection is as seen in Table 4. Maximum 15(26.79%) cases were detected to be HIV positive, while on STD surveillance. Condylomata acuminata was next common in 10 (17.86%).

Details of constitutional illnesses in 59 patients, investigation for which led to the diagnosis of HIV infection is shown in Table 5. Investigation of cases of pyrexia of unknown origin was the most common mode of detection in 25(4.08%), followed by patients with diarrhoea with weight loss, in 10(1.63%) cases. Diarrhoea alone and weight loss alone was seen in 9(1.47%) and 6(0.98%) cases respectively.

In the group of patients with miscellaneous or unrelated illnesses, 5(0.82%) were detected when investigated for alcohol dependence syndrome, 4(0.62%) for arthritis, 3(0.49%) for tinea pedis et cruris, 2(0.32%) each for extensive dermatophytosis, seborrhoeic dermatitis, psoriasis, chronic urticaria, drug rash, veruccae, weakness, seizures, DVT, infertility and 1(0.16%) each for investigation of jaundice, tinea pedis with cellulitis, seborrhoeic dermatitis with xerosis, herpes labialis, abscess thigh, papular urticaria, cellulitis, erythroderma, parotid abscess, amoebic liver abscess, renal abscess, COPD, needle stick injury, subdural haematoma, ecchymosis leg, swelling left thigh, skin rash, dyspepsia, cirrhosis liver, pain abdomen, abnormal behaviour,

**Table 2**  
Type of tuberculosis in HIV - positives at the time of diagnosis

Type of tuberculosis	Number (%)
Pulmonary	119 (67.61)
Disseminated	47 (26.70)
Lymph node	8 (4.55)
Abdominal	2 (1.14)
<b>Total</b>	<b>176 (100)</b>

**Table 3**  
Distribution of herpes zoster in HIV-positive cases

Affected dermatome	Number (%)
Thoracic	32 (49.23)
Ophthalmic	16 (24.62)
Lumbar	10 (15.38)
Cervical	7 (10.77)
<b>Total</b>	<b>65 (100)</b>

hypertension, bilateral posterior uveitis, thyrotoxicosis, dog bite, paraparesis, hemiparesis, acquired ichthyosis, urticaria, folliculitis and thrombophlebitis.

Only one (0.16%) case reported for voluntary blood testing after high-risk sexual exposure. None of the cases was suspected to be HIV-infected during acute retroviral sickness, followed-up and later detected to be HIV-positive.

**Discussion**

HIV positive cases have been grouped into three categories as per the CDC new case definition of 1993 [3], which added three new AIDS-defining illnesses: Mycobacterium tuberculosis infection, recurrent bacterial pneumonia and cervical carcinoma. In the present study 182 (29.74%) i.e. almost one third of the patients were detected to be HIV-positive when they had already developed AIDS-defining illnesses, majority (96.70%) with mycobacterial disease, followed by recurrent bacterial pneumonia in 3(1.6%), PCP in 2(1.1%) and oesophageal candidiasis in one (0.55%). Among the first 243 HIV-positive cases registered in our center between January 1990 to April 1994, only 15(6.2%) were found to be suffering from tuberculosis [4], in contrast to 28.7% in the present study. Other studies from India have reported clinical tuberculosis in almost 50% of the patients of AIDS [5]. Kaur et al [6] found 13 out of 19 of their patients of AIDS having tuberculosis, 7 with pulmonary, 5 with both pulmonary and extra pulmonary and one with only extra pulmonary TB. In developed countries like United States, Pneumocystis carinii is the commonest opportunistic infection, (found in only 0.32% of our cases) and only 10% of AIDS patient have mycobacterial disease [7]. Hence it is becoming increasingly clear that more and more cases of HIV-infection are going to present with

**Table 4**  
Investigation for sexually transmitted diseases and detection of HIV infection

Sexually transmitted disease group	Number (%)	Remarks
STD surveillance	15 (26.79)	Chancroid-3, gonococcal urethritis-2, LGV-2, primary syphilis-1, NGU-1, not known-6
Condylomata acuminata	10 (17.86)	
LGV	9 (16.07)	
Chancroid	7 (12.5)	
Herpes genitalis	6 (10.71)	1 each with LGV and condylomata acuminata
STD investigation	5 (8.93)	
Syphilis	3 (5.36)	Including one with syphilitic meningitis
Molluscum contagiosum	1 (1.79)	
Gonococcal urthritis	1 (1.79)	
Balanoposthitis	1 (1.79)	
<b>Total</b>	<b>56(100)</b>	

mycobacterial infection in countries like India where both tuberculosis and HIV infection are endemic. Thus there is a need to diagnose HIV infection early, keep those diagnosed on surveillance so as to give prophylactic treatment for tuberculosis at an appropriate time. Moreover criteria for prophylactic treatment need to be deliberated and guidelines laid down clearly.

Extrapulmonary involvement, one of the most frequently reported features of TB in HIV infection, has been reported to occur in 40% to 75% of patients with both diagnosis [8]. In San Francisco, 60% of patients with AIDS and TB had at least one extrapulmonary site of disease, compared with 28% of non-AIDS patients with TB [9]. However, in the present study majority (67.61%) of the patients presented with pulmonary tuberculosis and only 32.39% had extra pulmonary disease.

Herpes zoster has been found to be the third most common mode of detection after tuberculosis and screening for blood donation. Reactivation of latent varicella zoster virus (VZV) from nerve root ganglia is more common in HIV-positive persons, and they are 17 times more likely to have Shingles than HIV-negative persons [10]. While Melbye et al [11] reported that 8-13% of AIDS patients developed at least one episode of herpes zoster, in our study around 14% of all cases of HIV infection presented with herpes zoster.

Thoracic segments are most commonly involved in herpes zoster in HIV-negatives [12-14]. In the studies conducted in the Armed Forces in 1991, Talwar et al [12] found involvement of trigeminal nerve in 12.18% of cases of herpes zoster, while Desylva et al in 1998 found this to be 10.75% in HIV-negative and only 7.41%

**Table 5**  
Constitutional illness and detection of HIV infection

Constitutional illness	Number (%)
PUO	25 (4.08)
Diarrhea + weight loss	10 (1.63)
Diarrhea	9 (1.47)
Weight loss	6 (0.98)
PUO + weight loss	6 (0.98)
PUO + weight loss + diarrhea	2 (0.32)
Diarrhea + PUO	1 (0.16)
<b>Total</b>	<b>59 (9.64)</b>

in HIV-positive patients [15]. In the present study ophthalmic zoster was the presenting illness in as many as 24.6% of Herpes zoster cases, possibly indicating the future trends in its presentation as the HIV epidemic is progressing.

Although initial HIV infection may be asymptomatic, as many as 50% of the patients have symptoms of flu-like or infectious mononucleosis-like illness. Cooper et al [16] found it in as many as 11 out of 12 high-risk homosexuals on follow-up, who had recently seroconverted. None of our patients was diagnosed during acute retroviral syndrome, understandably, due to lack of suspicion as well as of diagnostic facilities during this stage of the disease, hence the need to create awareness amongst clinicians and introduce diagnostic facilities for diagnosis during this early stage of infection. Likewise just 0.82% of our HIV-positive patients presented themselves for investigation of lymphadenopathy, the most common finding among those with early asymptomatic disease [17].

Detection of HIV during screening for blood donation, sexually transmitted diseases, HbsAg positive cases, individuals going abroad, spouses and parents of HIV-positive children is well understood as is investigation of dermatoses occurring during early HIV disease like seborrhoeic dermatitis and papular urticaria in adults, recurrent HSV infection and unexplained bacterial infections [18]. However, a cautious approach has to be followed in selecting cases to prevent unnecessary HIV testing. In 15 i.e. 26.79% of cases of STD, HIV infection was picked up only during surveillance and not during active disease, possibly due to the window period in picking up HIV antibodies by ELISA method. In symptomatic STD cases the seropositivity for HIV was only 1.2% in one of the studies [19]. While in another study, it was found that the cases of HIV infection were 3 times more likely to have a history of having another STD than the controls [20]. This highlights the importance of STD surveillance, which is routinely being carried out in the Armed Forces and it is recommended that repeat blood testing for HIV infection be carried

out after 3 and 6 months of onset of disease in all cases of STD.

A large number (3.27%) of cases were diagnosed during screening for surgery, an issue, which again remains controversial [21]. What prompted the clinician to order HIV testing in some cases of hypertension, dyspepsia, thyrotoxicosis, dog bite, COPD, DVT, subdural haematoma, etc., is a question difficult to answer.

Only one (0.16%) of the cases of high-risk group who reported voluntarily was found to be HIV-positive. Ideal situation will be when more and more persons amongst this group report voluntarily and are detected early, thus preventing further transmission and decreasing the morbidity of this dreaded disease.

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