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INCIDENTAL DETECTION OF HIV AMONG THE HOSPITAL INPATIENTS AT R. L. JALAPPA HOSPITAL AND RESEARCH CENTRE

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ABSTRACT: OBJECTIVES: The incidence of HIV in the world is on the rise and in many developing countries the exact figures are still lacking. This study was undertaken to determine the prevalence of HIV among the Hospital Inpatients at R. L. Jalappa Hospital and Research Centre, Tamaka, Kolar, India. **METHODS:** The study was conducted over a period of two years wherein all the inpatients admitted to medical wards in the hospital were screened after taking their consent for study. **RESULTS:** Of the 13, 140 patients admitted to medical wards, 12, 980 patients were screened for HIV among which 388 patients tested positive with a prevalence rate of 2.99%. 90.98% of patients belonged to the age group 18-49 years with higher prevalence rates among male inpatients (1.94%) than female inpatients (1.05%). Respiratory system and Central Nervous system involvement was the most common mode of presentation to the hospital among the patients who tested positive for HIV. **CONCLUSION:** The prevalence of HIV among the hospital inpatients was high enough to warrant routine screening of inpatients for HIV.

KEYWORDS: HIV.

INTRODUCTION: In 1985, when HIV testing first became available, the main goal of such testing was to protect the blood supply.¹ Alternative test sites were established to deter persons from using blood bank testing to learn their HIV status.¹ At that time, professional opinion was divided regarding the value of HIV testing and whether HIV testing should be encouraged because no consensus existed regarding whether a positive test predicted transmission to sex partners or from mother to infant.²

In 1993, CDC recommendations for voluntary HIV counseling and testing were extended to include hospitalized patients and persons obtaining health care as outpatients in acute-care hospital settings, including emergency departments (EDs).³ Hospitals with HIV seroprevalence rates of >1% or AIDS diagnosis rates of >1 per 1, 000 discharges were encouraged to adopt a policy of offering voluntary HIV counseling and testing routinely to all patients aged 15--54 years.¹

In 2001, CDC modified the recommendations for pregnant women to emphasize HIV screening as a routine part of prenatal care.¹ In addition, HIV testing in health-care settings was extended to include multiple additional clinical venues in private and public health-care sectors, encouraging providers to make HIV counseling and testing more accessible and acknowledging their need for flexibility.⁴

In 2003, CDC introduced the initiative Advancing HIV Prevention: New Strategies for a Changing Epidemic.⁵ Two key strategies of this initiative were;

- 1) To make HIV testing a routine part of medical care on the same voluntary basis as other diagnostic and screening tests⁵ and
- 2) To reduce perinatal transmission of HIV further by universal testing of all pregnant women and by using rapid tests during labour and delivery or postpartum if the mother was not screened prenatally.⁵

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In 2006, the CDC guidelines for screening for HIV were revised. It stated that screening to be performed routinely in all patients aged 13-64 years in healthcare settings unless the prevalence of undiagnosed HIV infection in their patients has been documented to be $<0.1\%$.¹ In the absence of any such prevalence data, healthcare providers can initiate voluntary HIV screening if the diagnostic yield is >1 per 1000 patients screened.^{1,6}

Persons Infected with HIV often remain asymptomatic and thus can infect others.⁷ For every person diagnosed with AIDS, there are many others who have HIV infection without knowing it.⁷ Early identification of HIV infection through screening substantially lengthens the life of the person identified and provides an important public health benefit to the society from reduced HIV transmission.^{6,8} Every missed case thus becomes a potential source for spread to other healthy close associates of the case.

This study was undertaken to identify the prevalence of HIV infection among the patients admitted in the medical wards for various other medical conditions.

METHODS:

SOURCE: The study was conducted at SRI. R. L. Jalappa Hospital and Research Centre, Tamaka. It is a teaching Hospital located in Kolar, India. This hospital has a Voluntary Counseling and Testing Centre (VCTC) for HIV testing and counseling of individuals regarding precautionary steps, treatment options available and providing social and community support. Also, the hospital has a well-equipped Microbiology laboratory to conduct the screening and confirmatory tests for HIV.

Over 6,000 patients are admitted for various medical conditions in the medical wards in this hospital every year. The study spanned two years starting January 2007 to December 2008. During these two years 13,140 patients were admitted and 12,980 patients gave consent for screening for HIV.

BLOOD SAMPLE COLLECTION: Blood sample were obtained from the inpatients who were over 18 years of age.

BLOOD SAMPLE TESTING: The collected specimens were sent to either the VCTC and tested as per their guidelines or the Department of Microbiology and analyzed using Combaids, Tridot, Capilus and ELISA kits as per manufacturer's instruction guide. Samples tested positive for HIV at either the VCTC or the Microbiology laboratory were finally confirmed by Western Blot Analysis at VCTC.

DATA COLLECTION: The samples collected during this study were assigned an independent numbering system for identification. Additional data obtained like age, sex, and chief complaints for which the patient was admitted in the hospital were assigned corresponding numbers for study analysis.

DATA ANALYSIS: The obtained data was tabulated and analyzed using standard statistical techniques. Prevalence was calculated by dividing the total samples that tested positive for HIV by the total samples that were screened.

Additionally, age distribution and sex distribution of HIV tested positive samples were also obtained. Using the clinical data for which the patients visited the hospital, a clinical profile was made to determine the most common system involvement in these patients.

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RESULTS: A total of 13, 140 patients were admitted to the medical wards during the study period of which 12, 980 inpatients gave consent for the study (Table 1). 388 patients tested positive for HIV (Table 1). 251 inpatients tested positive at initial screening at VCTC and 137 inpatients tested positive for HIV during initial screening at Microbiology Laboratory (Table 1). The final confirmation of tested positive patients was done at VCTC by using Western Blot analysis technique.

The HIV positivity was higher among male inpatients than female inpatients, 252 male inpatients as against 136 female inpatients (Table 1). The prevalence rate among the inpatients admitted in the medical wards was found to be 2.99% and the male and female prevalence rates were 3.11% and 2.79% respectively (Table 1).

Total Patients admitted	13,140
Total Patients screened	12,980
Total Male Inpatients	8109
Total female Inpatients	4871
Total patients screened positive for HIV	388
% of patients screened positive for HIV	2.99
Total patients screened positive for HIV-Male	252
Prevalence among Male inpatients	3.11
Total patients screened positive for HIV-Female	136
Prevalence among Female inpatients	2.79

Table 1: Prevalence of HIV among the Hospital Inpatients admitted in the medical wards

Note: Total male and female inpatients include the patients who were actually screened during the study.

Blood samples were collected from those 12, 980 inpatients and sent for screening for HIV either at VCTC or Microbiology laboratory. 5020 samples were tested at VCTC and 7960 samples were analyzed at the Microbiology laboratory (Table 2).

Screening Technique	Total Screened	Total Number of Positive cases	Male	Female
VCTC	5020	251	165	85
Microbiology Laboratory	7960	137	87	50
Total	12980	388	252	136

Table 2: Inpatients screened by Various Techniques available at the Hospital

Note: 1) Other Laboratory techniques included the Kits used at the Department of Microbiology for initial screening like Combaids, Tridot, Capilus, and ELISA.

2) Samples which tested positive for HIV by initial screening at either the VCTC or Microbiology Laboratory were subjected to confirmatory test at VCTC by Western Blot Analysis.

Over 90% of patients who tested positive for HIV belonged to the age group 18-49 years (Table 3). No past data or records was available pertaining to the inpatients HIV status.

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Age wise Distribution Of Screened Positive Cases	Total Number(n)	% of Inpatients
18-29 years	136	35.05
30-39 years	155	39.95
40-49 years	62	15.98
50-59 years	27	6.96
60 and above	8	2.06

Table 3: Age wise distribution of Inpatients Tested positive for HIV

Majority of patients who were tested positive for HIV came with symptoms pertaining to respiratory system and central nervous system together amounting to 62.89% of cases (Table 4). Respiratory system involvement was highest among these patients with 151 patients (i.e. 38.92%) presenting with symptoms pertaining to Respiratory system at the time of admission (Table 4). Pulmonary and extra-pulmonary tuberculosis was the most commonly made final diagnosis amongst these patients at the time of discharge.

Disease spectrum amongst HIV positive patients	Total Number of Patients	Male	Female	% of patients with Predominant system involvement
Respiratory system	151	92	59	38.92
Central Nervous system	93	64	29	23.97
Gastrointestinal system	78	47	31	20.10
ENT	47	23	24	12.11
Skin and Veneral Disease	16	9	7	4.12
Miscellaneous	3	1	2	0.77

Table 4: Disease Spectrum amongst Inpatients tested positive for HIV based on predominant system Involvement at the time of admission and the final diagnosis made at discharge

Note: Miscellaneous group includes patients admitted following snake bite, OP compound poisoning, unexplained weight loss, non-healing ulcers and other conditions.

DISCUSSION: The prevalence of HIV in healthcare settings is important as it is a key determinant for measuring the usefulness of screening program. There were several important findings in this study. Firstly, the prevalence of HIV positive patients admitted in the medical wards was nearly 3% which is significant enough to warrant routine screening of hospitalized patients. The result is similar to the one conducted by other researchers like Owens et.al and published in American Journal of Public health, December 2007, which showed that 3.7% of inpatients tested positive for HIV.⁸ Since the past data concerned with HIV testing in this facility is not available, this report will help establish a baseline for HIV testing in clinical settings and to assess the efficacy of screening program at the hospital. This study was conducted based on the CDC guidelines 2006 to study the implications for screening program for HIV.

The pandemic of HIV is on a constant rise. According to CDC surveillance data approximately 40% of patients diagnosed to have HIV develop AIDS within a year.⁹ Hence, it becomes very much

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essential to detect and treat such cases to reduce morbidity, mortality and further spread. In close to half of patients who have had HIV infection for many years before their diagnosis and in addition, risk-based screening, in which risk assessment precedes a decision to test for HIV, screening program fails to identify a large proportion of people with HIV.^{8, 10, 11} This led to the CDC to develop new guidelines that recommended a one-time screening in all healthcare settings unless the prevalence of undiagnosed HIV has been documented to be less than 0.1%.⁸ This study showed a prevalence of approximately 3.7% among hospital inpatients which is definitely higher than the recommended guidelines.

Pulmonary and extra-pulmonary tuberculosis was the most common final diagnosis made at the time of discharge. This shows that tuberculosis is the most common cause for morbidity and mortality in patients with HIV in this region. HIV infection, by progressively impairing cell-mediated immunity, appears to be the highest risk factor for reactivation of tuberculosis into active disease.¹² The clinical features of HIV-associated pulmonary tuberculosis in adults are often atypical occurring late in the course of HIV, resembling those of primary tuberculosis and consisting of interstitial or miliary infiltrates, hilar lymphadenopathy, and pleural effusion.¹² Extra-pulmonary tuberculosis manifestations in HIV infected patients in the developing countries has been a common finding.¹² Studies have shown that HIV seroprevalence is higher in patients with extra-pulmonary disease than in those with pulmonary disease alone.¹³ The extra-pulmonary manifestations include lymphadenopathy (both intra- and extra- thoracic), disseminated miliary forms and involvement of other extra-pulmonary sites like gastrointestinal tract, liver, meninges, genito-urinary tract, peritoneum and bones.^{12, 13}

Finally, the prevalence was higher in the age group 18-49 years and more so among the male inpatients. Studies have shown that there is lower proportion of testing for females (24%) compared to males (31%).⁶ As the HIV epidemic becomes increasingly equally distributed between men and women⁶, this can further help in identifying the behavioral risk factors involved in HIV transmission. For instance, many Asian countries are now experiencing higher incidence of HIV among injecting drug users and female sex workers with marked contrast in patterns of HIV transmission both within and between countries.^{14, 15}

It also stresses on the point that expanded screening program can be undertaken to identify the positive cases and counsel them for Anti-Retro Viral therapy. This would also help in reducing the morbidity associated with the disease

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