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# Editorial Board



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*SAARC Journal of Tuberculosis, Lung Diseases and HIV/AIDS* is the official journal of SAARC TB and HIV/AIDS Center (STAC) which is published every six-month. It publishes original articles, review articles, short reports and other communications related to TB, Lung diseases and HIV/AIDS. The journal welcomes articles submitted in all aspects of Tuberculosis, lung health and HIV/AIDS including public health related issues such as cost benefit analysis, health systems research, epidemiological and interventions studies.

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Title page should contain (a) concise title, (b) a short summary, (c) first name, middle name and last name of each author, (d) name of department(s) and institution(s) to which the work is done (e) name, e-mail and postal address of author responsible for correspondence about the article.

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Should not be of more than 200 words and should state the purpose of the study or investigations, basic procedure, main findings (give specific data and statistical significance if possible) and the conclusion (emphasize new or important aspects of the study).

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## Text:

It should be divided into sections with headings as Introduction, Methods, Results, Discussion, Conclusion and References.

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## Methods:

Describe the criteria for selection of cases; identify the methods, apparatus (manufacturer's name) and procedures in detail.

Results:

Present the results in sequence in the text, tables and figures. Do not repeat all the data in the tables and/or figures in the text. Summarize the important points only. Mention the methods used for statistical analysis.

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Comment on the observations of the study and the conclusions derived from it. Do not repeat the data in detail that already given in the results. Give implications of the findings, their limitations and observations to other relevant studies. Avoid unqualified statements and conclusions, which are not completely supported by the data. Avoid claiming priority. New hypothesis may be labeled as recommendations.

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Number references consecutively, as they appear in the text; tables and figures. List all authors. Avoid using abstracts, unpublished data, and personal communications as references. Include references, which have been accepted for publication but not published by denoting “in press”.

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# Editorial

It is my pleasure to inform all about the successful conclusion of second SAARC conference on TB, HIV/AIDS and Respiratory Diseases in the month of December 2008 in Kathmandu, Nepal.

“Working together to fight against TB, HIV/AIDS and Respiratory Diseases” was the theme of the conference which attracted over 700 participants not only from the eight member states of SAARC but also from other countries including Germany. The very first SAARC conference was held in Kathmandu, Nepal in the year 2004. The participation in the second conference was more than that of the first conference.

The abstract book published and distributed during the second SAARC conference contained scientific articles on important aspects of TB, HIV/AIDS, TB/HIV co-infection and other respiratory tract diseases prevailing in the SAARC member states.

Apart from others, one of the very interesting events of the second SAARC conference was the presentation on “Laboratory demonstration on molecular technique for rapid results in TB diagnostics” by a renowned Microbiologist from Gauting Laboratory, Germany and his colleagues. The participants in large numbers were attracted to attend the demonstration and acquired knowledge on practical aspects also.

The improvement of prevention and control of TB, HIV/AIDS and other respiratory diseases needs well controlled scientific research studies using innovative and cost-effective approaches. Successfully completed research studies need scientific fora to publicize the findings and share their experiences with the experts from different countries in the region and with the developed world. Naïve researchers need scientific platform to present their findings in order to build up their confidence and enthusiasm. Hence, we, the members of the SAARC TB and HIV/AIDS Centre believe and emphasize that the future conferences on TB and HIV/AIDS will definitely provide a very good platform to enthusiastic scientific groups of the SAARC region to present and share their findings for the betterment of the beneficiaries, the infected and affected people in the world.

# PHARMACOKINETICS OF RIFAMPICIN DURING ANTIRETROVIRAL TREATMENT WITH NON-NUCLEOSIDE REVERSE TRANSCRIPTASE INHIBITORS

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## Abstract

Introduction: Co-management of tuberculosis (TB) and HIV is complicated by pharmacologic drug interactions between rifampicin (RMP) and certain classes of antiretroviral agents. The NNRTIs Nevirapine (NVP) or Efavirenz (EFV), used to HIV infection, are known to induce the CYP 450 enzyme system. Thus when RMP is co-administered along with NVP or EFV, the bioavailability of RMP could be lowered leading to drug resistance and treatment failure.

Objectives: To study the steady state pharmacokinetics of RMP in HIV and HIV-TB patients receiving antiretroviral regimens containing NVP or EFV respectively.

Methods: The study population comprised of HIV and HIV-TB patients undergoing antiretroviral treatment with NVP and EFV containing regimens respectively. These patients were also receiving concomitant RMP. Rifampicin was estimated by HPLC in blood collected at different time points after drug administration. The pharmacokinetic variables of RMP were calculated using WinNonlin software.

Results & Conclusions: Co-administration of NVP or EFV did not alter the pharmacokinetics of RMP in HIV and HIV-TB patients, suggesting that the dose of RMP need not be altered during antiretroviral treatment with NVP or EFV.

Key words: Rifampicin; nevirapine; efavirenz; drug-drug interactions; HIV-TB

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## Introduction

Tuberculosis (TB) is of particular concern in HIV-infected patients, and is the most common opportunistic infection observed in HIV-infected individuals. HIV-TB co-infected patients merit special considerations because co-management of both diseases is complicated by potential pharmacologic drug interactions between the rifamycins and non-nucleoside reverse transcriptase inhibitors (NNRTIs). [1, 2]

Rifampicin (RMP) is an important first line anti-TB drug and is usually administered for 6-8 months along with other drugs for treatment of TB. This drug is reported to undergo metabolism through the hepatic microsomal cytochrome P-450 (CYP 450) enzyme system.[3]

The standard therapy of HIV infection consists of 2 NRTIs and 1 NNRTI. The NNRTI could be Nevirapine (NVP) or Efavirenz (EFV). Both these drugs are known to induce the CYP 450 enzyme system.[4,5] Thus when RMP is co-administered along with NVP or EFV, the bioavailability of RMP could be lowered leading to drug resistance and treatment failure. The best regimens and appropriate schedule for the administration of both treatments is still not clear.

Lopez et al observed that the pharmacokinetics of RMP did not change substantially in presence of EFV, even when it is administered at elevated doses.[6] Ribera et al reported that serum RMP levels in patients receiving this drug in combination with NVP were similar to levels found in patients without NVP.[7] Their results were consistent with that of Robinson *et al*.[8] Similar information, to the best of our knowledge, is lacking in HIV and HIV-TB patients in India, who are racially/ethnically different. We report the effect of NVP on RMP pharmacokinetics in HIV-infected patients and that of EFV in HIV-TB patients.

## Methods

Patients: HIV and HIV-TB patients attending the outpatient clinic of the Government Hospital of Thoracic Medicine, Chennai, India, took part in the study. They were required to meet the following inclusion criteria: (i) aged 18 – 50 years, (ii) body weight not less than 30 kg, (iii) no severe hepatic or renal dysfunction (iv) non – diabetic, (v) willingness to participate in the study and give informed written consent. These studies were undertaken after obtaining clearance from the Institutional Ethics Committee. Informed written consent was obtained from all the patients.

HIV-infected patients were undergoing treatment with the fixed-dose combination containing NVP (200 mg), lamivudine (150mg), and stavudine (30/40 mg). HIV-TB patients were receiving ART regularly with EFV (600 mg) along with lamivudine (150 mg ) and stavudine (30/40 mg ) / zidovudine 300 mg ) bi-daily. All patients were on ART for atleast two weeks prior to the study. Their anti-TB treatment consisted of RMP (450/600 mg), Isoniazid (600 mg), Pyrazinamide (1500 mg) and Ethambutol (1200 mg) thrice weekly for the first 2 months followed by RMP and INH thrice weekly according to Revised National Tuberculosis Control Program regimen (RNTCP).

## Conduct of the Study

NVP-RMP study: Eligible patients were instructed to take RMP once daily (450 mg

for patients weighing less than 60 kg and 600 mg for those weighing more than 60 kg) for a period of 6 days along with their antiretroviral regimens, and they were instructed to report to the hospital on day 6 for admission into the ward. The pharmacokinetic study was conducted on day 7. On the study day, blood samples were drawn in heparinised containers predosing and at 1,2,4,6,8 and 12 hours after administration of antiretroviral drugs and RMP, under supervision.

EFV-RMP study: This study was conducted after admitting the patients to the hospital. A sample of blood was collected on the study day and the EFV and RMP were administered under supervision. Blood samples were collected at different time points after dosing, similar to the NVP-RMP study.

The blood samples were centrifuged and plasma stored at -20$^{o}$C until assay.

## Estimation of Plasma RMP

Plasma RMP concentrations were estimated by high performance liquid chromatography (Shimadzu Corpn., Kyoto, Japan) according to a validated method.[9] The intra- and inter-assay variations observed in the plasma rifampicin estimations were less than 3.5 % and 6.4% respectively.

## Pharmacokinetic analysis

Based on the plasma concentrations of RMP at different time points, maximum concentration ($C_{max}$), and time to attain $C_{max}$ ($T_{max}$) were determined by visual inspection of data. Other pharmacokinetic parameters like t ½, $AUC_{0-12}$ and Clearance were calculated by a non-compartmental model using WinNonlin Software, version 5.1 (Pharsight Corporation., Mountain View, CA).

The pharmacokinetic variables obtained for NVP and EFV groups were compared with that of the historical controls[10] by independent t-test (SPSS version 13).

## Results and Discussion

The demographic details of all the patients who took part in the study are given in table 1. The steady state pharmacokinetic parameters of RMP when co-administered with NVP or EFV are given in table 2. Data reported from one of our earlier studies on the pharmacokinetics of RMP when administered alone in HIV uninfected TB patients is also given in this table for comparison.[10] The pharmacokinetic parameters of RMP of patients receiving this drug in combination with NVP or EFV were similar to that found in HIV uninfected patients. A test of significance between the present study data and that obtained from a recently concluded study[10] showed that none of the pharmacokinetic variables was significantly different between the TB patients and that of NVP and EFV groups

Our results are consistent with earlier reports in which co-administration of RMP along with NVP or EFV did not affect RMP plasma levels.[6-8] This suggests that the pharmacokinetics of RMP remains unaltered when given along with NVP or EFV despite induction of CYP 3A4 by these antiretroviral drugs, and that the dose of RMP need not be altered during ART. Thus anti-TB treatment containing RMP in standard dosages can be safely used in combination with ARV regimen containing NVP or EFV. The present guidelines recommend the use of EFV when the patient is receiving RMP-containing anti-TB treatment. Ongoing studies are evaluating the safety and efficacy of NVP when used along with anti-TB treatment.

Table 1 Demographic detail of patients

| Characteristics | | HIV n=13 | HIV-TB n=9 |
|---|---|---|---|
| Sex (No.) | Male<br>Females | 9<br>4 | 7<br>2 |
| Age (Year) | Mean<br>Range | 34<br>28-48 | 34<br>27-42 |
| Body weight (kg) | Mean<br>Range | 58<br>38-91 | 47<br>34-61 |
| Height (cm) | Mean<br>Range | 161<br>145-173 | 160<br>150-167 |
| Body Mass Index (BMI) | Mean<br>Range | 22.2<br>17.8-33.0 | 18.6<br>14.3-22.4 |
| Duration of ATT (Months) | Mean<br>Range | - | 3.8<br>0.3-6.0 |
| Duration of ART (Months) | Mean<br>Range | 4.5<br>1-8 | 3.9<br>0.3-14.0 |
| CD4 counts (cells/mm3) | Mean<br>Range | 315<br>60-684 | 114<br>70-199 |

Table 2 Steady State Pharmacokinetics of Rifampicin (450/600 mg)

| | Mean (range) | | | | |
|---|---|---|---|---|---|
| | $C_{max}$ (μg/ml) | $T_{max}$ (hours) | T ½ (hours) | $AUC_{(0-12)}$ (μg/ml-hrs) | Cl (litres/min) |
| RMP[10] (n = 13) | 7.2 (5.5-8.9) | 2.4 (1.7-3.1) | 3.0 (2.1-3.9) | 33.0* (26.7-39.4) | 15.0 (11.8-18.2) |
| With NVP (n=13) | 8.7 (5.6-13.5) | 2.6 (2.0-4.0) | 2.1 (1.4-3.0) | 43.7 (28.0-66.1) | 12.4 (8.6-20.9) |
| With EFV (n=9) | 7.7 (4.8-11.1) | 2.3 (1.0-4.0) | 2.3 (1.9-5.1) | 37.8 (15.0-53.2) | 12.8 (8.0-29.1) |

* denotes $AUC_{0\ to\ 8}$ (μg/ml-hrs)
$C_{max}$- peak concentration; $T_{max}$- time to attain C-$_{max}$; AUC-area under the plasma concentration vs. time curve; Cl – clearance


## Acknowledgements

The authors acknowledge Ms. A. Komathi for blood collections and the Department of Clinical Biochemistry and HIV/AIDS Division for investigations. WinNonlin software was a kind gift provided during the training to Hemanth Kumar under the ICER programme, at the University of Alabama at Birmingham, USA. The authors thank the Superintendent and staff of the Government Hospital of Thoracic Medicine, Tambaram, Chennai, India for their co-operation.


## References


1. *Burman WJ, Jones BE. Treatment of HIV-related Tuberculosis in the Era of Effective Antiretroviral Therapy. Am J Respir Crit Care Med 2001; 164: 7-12.*
2. *American Thoracic Society Documents. American Thoracic Society/ Centers of Disease Control and Prevention/Infection Diseases Society of America. Treatment of tuberculosis. Am J Respir Crit Care Med 2003; 167: 603-662.*
3. *Acocella G. Clinical pharmacokinetics of rifampicin. Clin Pharmacokinet 1979; 3: 108-127.*
4. *DuPont Pharmaceuticals Company. Sustiva™ (efavirenz capsules), Prescribing information: 1998 Sep 17: http:// www.sustiva.com. Accessed on 24 April 2007.*
5. *Montaner JSG, Lange JMA. Nevirapine. AIDS Therapy Chapter 7; 87-96.*
6. *Lopez-Cortes LF, Ruiz-Valderas R, Viciana P, et al. Pharmacokinetic interactions between efavirenz and rifampicin in HIV-infected patients with tuberculosis. Clin Pharmacokinet 2002; 41: 681-690.*
7. *Ribera E, Pou L, Lopez RM, et al. Pharmacokinetic interaction between nevirapine and rifampicin in HIV-infected patients with tuberculosis. J Acquir Immun Dis Syndr 2001; 28:450-453.*
8. *Robinson P, Lamson M, Gigliotti M, et al. Pharmacokinetic interaction between nevirapine and rifampicin (abstract 60623).*

*In Program abstracts of the XII World Conference on AIDS, Geneva, Switzerland, June 28 – July 3, 1998.*

9. *Hemanth Kumar AK, Chandra I, Geetha R, Silambu Chelvi K, Lalitha V, Prema G. A validated high-performance liquid chromatography method for the determination of rifampicin and desacetyl rifampicin in plasma and urine. Ind J Pharmacol 2004; 36(4): 231-233.*
10. *Gurumurthy P, Ramachandran G, Hemanth Kumar AK, et al. Decreased bioavailability of rifampin and other antituberculosis drugs in patients with advanced human immunodeficiency virus disease. Antimicrob Agents Chemother 2004; 48: 4473-4475.*

# SINGLE DOSE PHARMACOKINETICS OF LAMIVUDINE IN HEALTHY VOLUNTEERS: COMPARISON OF BLOOD AND URINE KINETICS

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Aims: To study single dose pharmacokinetics of lamivudine (3TC) in healthy subjects.
Methods: Twelve healthy subjects were administered 3TC (150 mg) followed by timed blood and urine collections up to 24 hours. Pharmacokinetic variables and percent dose of 3TC in urine were calculated.
Results: Plasma exposure and percent dose of 3TC in urine were highly correlated ($p < 0.001$; $r = 0.96$). 3TC concentration at 24 hours was undetectable in all study subjects.
Conclusions: Timed urine measurements could be used to study bioavailabilty of 3TC. Plasma 3TC measurements could be used to monitor adherence among HIV-infected patients on antiretroviral treatment.

Key words: lamivudine; plasma; urine; compliance to treatment

## Introduction

Lamivudine (3TC) forms an important component of highly active antiretroviral therapy (HAART) that is used to treat HIV-infected individuals in India. It is well tolerated and can be administered as either 150mg bi-daily or 300 mg once-daily along with other antiretroviral drugs. Lamivudine is present in all fixed dose combination (FDC) pills, has a short elimination half-life, and hence estimation of the drug in spot urine could be useful in monitoring patient adherence to antiretroviral treatment (1). Earlier studies have shown that 3TC exhibits similar pharmacokinetic profiles in healthy volunteers, asymptomatic HIV-infected individuals and patients with AIDS (2, 3). The primary pharmacokinetic parameters of 3TC in Indian subjects have been shown to be comparable to those previously reported in other populations (4). We undertook a single dose pharmacokinetic study of 150 mg 3TC in healthy subjects with the aim of correlating plasma exposure of 3TC with that of percent dose of 3TC excreted in urine over a particular period of time, and also to assess the feasibility of monitoring patient adherence to antiretroviral treatment using a trough plasma concentration of 3TC.

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## Methods

Subjects: Healthy adult males meeting the following inclusion criteria were recruited to the study. (i) aged 20 to 60 years (ii) body weight > 45 kg (iii) not suffering from any illness [blood chemistry (random blood glucose, creatinine, transaminases) and hematology (hemoglobin,

total & differential counts) parameters within normal limits] (iv) not taking concurrent medications at the time of the study and (v) willing to give informed written consent. Smokers and chronic alcoholics were not included into the study.

Conduct of study: The study was carried out at the Pharmacology Ward in Madras Medical College, Chennai, India, and commenced after obtaining clearance from the Institutional Ethics Committees of Tuberculosis Research Centre, Chennai and Madras Medical College, Chennai. Eligible study participants were admitted to the ward a day prior to the study. Informed written consent was obtained from all the volunteers before start of the study.

On the day of the study, they were instructed to empty their bladder. A sample of blood (3ml) was collected in a heparinised vacutainer (0 hour), after a 12-hour fast. They were administered 3TC (150mg) under supervision with 200ml water. Blood samples were collected at 1, 2, 4, 6, 8, 12 and 24 hours after drug administration. They were instructed to make complete urine collections excreted up to 24 hours after drug administration. Breakfast, lunch and dinner were provided uniformly to all the study participants.

The blood samples were centrifuged immediately and plasma stored at -20ºC until estimation of 3TC was undertaken. The total volume of urine was measured and aliquots stored at -20° C until analysis of 3TC.

Estimation of plasma and urine lamivudine: Lamivudine concentrations in plasma and urine were estimated by HPLC (Shimadzu Corporation, Kyoto, Japan) according to validated methods described earlier (5, 1).

Pharmacokinetic analysis: Certain pharmacokinetic variables such as peak concentration, time to attain peak concentration, exposure (0 to 24 hours & 0 to infinity), clearance and half-life were calculated employing a non - compartmental model following first-order kinetics using WinNonlin software (Version 5.1) (Pharsight Corporation, Mountain View, CA, USA).

The percent dose of 3TC excreted in urine collected between 0 to 24 hours was calculated

Statistical Evaluation: Analysis of data was performed using SPSS (version 13) package. Pearson's correlation test was used to evaluate correlation between plasma exposure of 3TC with that of percent dose of 3TC excreted in urine over a 24-hour period.

## Results

The pharmacokinetic study of 3TC was conducted in 12 healthy adult Indian men whose age, body weight and height ranged from 19-25 years, 54-71 kg and 162-175.5 cm respectively. The peak concentration of 3TC was achieved at about one hour, suggesting rapid and almost complete absorption. Lamivudine was undetectable in plasma at 24 hours in all the 12 study subjects. The major pharmacokinetic variables and percent dose of 3TC in urine are given in Table 1. The correlation between plasma exposure (0 to infinity) and percent dose of 3TC excreted in urine between 0 to 24 hours was highly significant ($p < 0.001$; $r = 0.96$).

Table 1 Plasma & urine estimates of lamivudine in 12 healthy subjects

| Parameters | Mean ± SD |
|---|---|
| Peak concentration (μg/ml) | 1.56 ± 0.51 |
| Time to attain peak concentration (h) | 1.25 ± 0.45 |
| Exposure (0-24h) (μg/ml.h) | 6.56 ± 2.52 |
| Exposure (0-infinity) (μg/ml.h) | 6.98 ± 2.63 |
| Clearance (L/h) | 25.48 ± 12.66 |
| Half-life (h) | 2.38 ± 0.69 |
| % dose in urine (0-24 h) | 77.05 ± 14.22 |

## Discussion

A high degree of correlation usually exists between plasma and urine estimates of those drugs whose primary route of elimination is through the kidneys. Although the route of elimination of 3TC is mainly renal, knowledge about urinary excretion of 3TC and its correlation with plasma concentrations is not available in the literature. This single dose pharmacokinetic study in healthy volunteers has demonstrated that urine 3TC excreted over a period of 24 hours was highly correlated with plasma exposure, which suggests that urine 3TC estimations can be used to infer bioavailability of the drug. This finding is particularly important and could be useful in situations where bioequivalence studies of 3TC are performed. Thus invasive blood collections can be replaced by simple, non-invasive urine collections. The study has also demonstrated the usefulness of plasma 3TC in predicting antiretroviral treatment adherence. At a dose of 150mg, 3TC was measurable in blood collected at 12 hours, but could not be detected at 24 hours. This suggests that if 3TC is not measured in blood collected at a particular time point, the patient has not taken the drug in the last 12 hours or longer. Thus, information on one or more missed doses can be obtained. Since 3TC is present in all FDC pills manufactured in India and other countries, trough plasma 3TC estimation can be used as a marker for predicting antiretroviral treatment adherence of patients. A similar approach has been reported by Liechty et al (6), who reported that abnormally low, untimed antiretroviral drug levels in blood could identify individuals with very low adherence at high risk of HIV disease progression and death. Measurement of 3TC in urine and indinavir in saliva has been reported to be useful in monitoring patient compliance to treatment (1, 7). Plasma 3TC estimation could serve as yet another means to monitor antiretroviral treatment adherence.

The pharmacokinetic profile of 3TC obtained in healthy Indian subjects is similar to that reported by Narang et al. (4). However, the elimination half-life was lower than that reported in White and Hispanic subjects (2, 3). Since plasma 3TC concentrations are of limited value in evaluating efficacy or toxicity, it may be of interest to establish the pharmacokinetic profile of the parent drug and its intracellular metabolite in different populations.

A notable limitation of this study was that it was a single dose pharmacokinetic study done in healthy subjects. It is important to study the pharmacokinetics of 3TC in HIV-infected persons who have been receiving the drug for a long period of time. In summary, the study has shown a good correlation between plasma and urine concentrations of 3TC, suggesting that timed urine measurements could be used to study the bioavailabilty of 3TC. Plasma 3TC measurements could serve as a useful tool to predict adherence to antiretroviral treatment.

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## References

1. *Hemanth Kumar AK, Geetha Ramachandran, Kumar P, Kumaraswami V, Soumya Swaminathan. Can urine lamivudine predict antiretroviral adherence? Medscape General Medicine. 2006 8(4) 53 December 13, Available at: http://www.medscape.com/viewarticle/546807*

2. *Moore KH, Shaw S, Laurent AL, Lloyd P, Duncan B, Morris DM, O'Mara MJ, Pakes GE. Lamivudine/zidovudine as a combined formulation tablet: Bioequivalence compared with lamivudine and zidovudine administered concurrently and the effect of food on absorption. J Clin Pharmacol 1999; 39: 593-605.*
3. *Yuen GJ, Lou Y, Thompson NF, Otto VR, Allsup TL, Mahony WB, Hutman HW. Abacavir/lamivudine/zidovudine as a combined formulation tablet: Bioequivalence compared with each component administered concurrently and the effect of food on absorption. J Clin Pharmacol 2001; 41: 277-88.*
4. *Narang VS, Lulla A, Malhotra G, Purandare S. Pharmacokinetic profiling and bioequivalence evaluation of two lamivudine tablet formulations after single oral administration in healthy human Indian volunteers. J Acquir Immune Defic Syndr 2005; 38: 566-9.*
5. *Moyer TP, Temesgen Z, Enger R, Estes L, Charlson J, Oliver L, Wright A. Drug monitoring of antiretroviral therapy for HIV-1 infection: Method validation and results of a pilot study. Clin Chem 1999; 45(9): 1465-1476.*
6. *Liechty CA, Alexander CS, Harrigan PR, Guzman JD, Charlebois ED, Moss AR, Bangsberg DR. Are untimed antiretroviral drug levels useful predictors of adherence behavoiur? AIDS 2004; 18: 127-9.*
7. *Hugen PW, Burger DM, de Graff M, ter Hofstede HJ, Hoetelmans RM, Brinkman K, Meenhorst PL, Mulder JW, Koopmans PP, Hekster YA. Saliva as a specimen for monitoring compliance but not for predicting plasma concentrations in patients with HIV treated with indinavir. Ther Drug Monit 2000; 22(4): 437-45.*

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# Socio-demographic Profile and Outcomes of the Admitted AIDS Patients in BPKIHS

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Abstract: In world More than 40 million people are living with HIV/AIDS, 2.3 million are under 15 yrs , 14000 new infections each day , 1.7 million human infected with HIV/AIDS, 3.1 million deaths from AIDS , Million new HIV cases (13425) per day. In south East Asia 6.3 million PLWHA in 2005 (Source: WHO, UNAIDS).

It was retrospective descriptive study design conducted at B. P. Koirala Institute of Health Sciences (BPKIHS) among the admitted AIDS cases using their case notes during the period of 1-9-2003 to 30- 8-2006 using developed Performa. It was found that Majority of the subjects (83.4%) were of age group 20-40 years, Male (89.6%), and from Sunsari district (47.9%). Half of the subjects were improved after treatment and then discharged.

As the number of AIDS cases are increasing rapidly in eastern Nepal and BPKIHS is a centre for treatment of AIDS cases, it is essential to conduct awareness activates regarding prevention of disease and advocacy about available facilities of BPKIHS.

Key words: AIDS, Socio-demographic profile, BPKIHS

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## Introduction

In Nepal the estimated number of PLWHA at end 2005 is 61,000, HIV prevalence in 2005 was 0.5, estimated number of AIDS cases are 7,800, number of child (0-18) orphaned by HIV/AIDS is 18000, receiving Ant Retroviral Treatment (ART) till December 2005 was 210. HIV infection has taken root in South Asia and poses a threat to development and poverty alleviation efforts in the region. HIV infection is fueled by risk behavior, extensive commercial sex, low condom use and access, injecting drug use, population movements (cross-border/rural-urban migration), and trafficking.[1]

Social and economic vulnerabilities, including poverty and illiteracy, highlight the need to act effectively and aggressively to reduce it's spread. South Asia has about 4.2 million of the world's 36 million people living with HIV/AIDS. While overall prevalence rates remain relatively low, the region's large populations mean that a rise of a mere 0.1percent in the prevalence rate in India, for example, would increase the national total of adults living with HIV by about half a million persons.[2]

The current situation of HIV in Nepal is different from when the first case was diagnosed in 1988. There are gaps and challenges to be addressed in the fight against HIV and AIDS. Nepal is low prevalence country for HIV and AIDS. However, some of the groups show evidence of a concentrated HIV epidemic e.g. sex workers (19.5%), migrant population (4-10 %), and intravenous drug users (IVDU's) both in rural and urban areas (68 %). Since 1988 when the first case was diagnosed MoHP/DoHS and different stakeholders came forward to address HIV and AIDS issues.[1]

A significant percentage (60%), of HIV positive patients belongs to lower socio-economic class and many of them were mobile workers and contracted their illness while working in Indian metropolis in the past reported by Aich[5] in their study.

Study conducted by Agrwal[6] reported that there was a significant difference in the domain concerning social relationship between the HIV positive individuals with the controls.

Study conducted by Parakh[7] at BPKIHS among the health professionals showed that health professionals had a hesitation in treating patients with HIV/AIDS, tempered by concerns regarding provision of such care.

Study conducted by Asrath[10], among migrant workers in eastern Nepal found that, majority of migrant workers (94.9%) had heard of HIV/AIDS, but only few know the symptoms of HIDS. Most of them aware that use of condom prevent spread of HIV/AIDS but 25% of them do not use, while having pre/extra marital sex. About 11.9 % workers were going to sex workers at a regular intervals and no one using condoms.

HIV/AIDS is emerging as a major threat in the socio-economic and health sectors of Nepal. Their multiple effects have so far been minimal in the country, but their potential impact is immense.

## Objectives

To find out the socio-demographic profile and outcomes of the admitted AIDS patients in B. P. Koirala Institute of Health Sciences.

## Methods

It was retrospective descriptive study design, conducted at BPKIHS among the admitted AIDS clients. The available Case-sheets of the diagnosed AIDS cases admitted between 1st September 2003 to 30th August 20006 constituted the population of the study. All the case notes of diagnosed discharged AIDS cases are samples and total 48 available case notes were included in the study. Using total enumerative sampling technique all the case notes were collected from the medical record section using coded numbers (B 24, ICD–10) of files after taking written permission from the hospital director. The files not available and incomplete were excluded. Using standard semi structured Performa the data was collected.

A list of diagnosed AIDS cases were prepared using coded index (ICD-10, Code-B

24) files and than case notes were collected from record section and information were collected in the prepared format. All the case notes from September 1, 2003 to August 30, 2006 i.e. Bhadra 15, 2060 to Bhadra 14, 2063 were studded. Anonymity of the subjects was maintained. The information obtained was kept confidential and used only for this study. The collected data was entered in SPSS-10.5 software package and analyzed. The findings are presented in tables and graphs. Using Percentage, Mean and SD the demographic findings and outcomes were described.

## Results

The number of AIDS cases admitted in BPKIHS is increasing day by day i.e. 10, 12 & 16 in the years 2061, 2062, and 2063 respectively as per the record but actual number is much more because the files are coded on the basis of written diagnosis on the admission discharge sheet, which was usually accurately filled and only the admitted diagnosis is mentioned. Now, BPKIHS is a centre for treatment of AIDS cases of Eastern Nepal, where the facilities of HIV testing, ART, PMTCT, VCT, and regular OPD services are available. Among all the 48 subjects, majority of them (83.3%) were of age group 20-40 years Male (89.6%), Mangolian (50%), from Sunsari district (47.9%) and among those 50% were improved and discharged from the hospital.

The details of the findings are depicted in Table-I.

Table I Socio-Demographic Profile and Outcomes of the Admitted AIDS Patients in BPKIHS (N= 48)

| SN | Item/Particular | Percentage (%) |
|---|---|---|
| 1 | Age group of the subjects: | |
| | < 20 years | 8.3 |
| | 20-30 years | 48.0 |
| | 30-40 years | 35.4 |
| | >40 years | 8.3 |
| | Mean | 29.26 |
| | SD | 9.4 |
| | Range | 2-50 Years |
| 2 | Gender: | |
| | Male | 89.6 |
| | Female | 10.4 |
| 3 | Caste of the subjects: | |
| | Brahmin/ Chetri | 29.2 |
| | Mangolian | 50.0 |
| | Newar | 2.1 |
| | Teri Origin | 18.8 |
| 4 | District Wise distribution of the subjects: | |
| | Sunsari | 47.9 |
| | Morang | 18.8 |
| | Jhapa | 14.6 |
| | Sirha | 4.2 |
| | Others: ( Mahotari, Dhankuta, Dhanusa, Ilam, Taplagunj, Udapur) | 10 |
| 5 | Duration of hospitalization: | |
| | < 5 days | 41.7 |
| | 5-10 days | 29.1 |
| | 10-15 days | 20.9 |
| | > 15 days | 8.3 |
| | Mean | 7.98 |
| | SD | 5.32 |
| | Range | 1-28 days |
| 6 | Department wise distribution of the subjects: | |
| | Medicine | 89.6 |
| | Pediatric | 6.3 |
| | Surgical | 4.2 |
| 7 | Outcome of the clients: | |
| | Improved & discharged | 50.0 |
| | Unchanged & discharged | 22.9 |
| | Expired | 14.6 |
| | LAMA | 8.3 |
| | Discharge on Request | 2.0 |
| | Absconded | 2.0 |

## Discussion

The report on the pattern of demographic and clinical profiles of HIV positive persons in Nepal are scarce.[5] HIV/AIDS is rapidly spreading in countries of Asia including Nepal. It could cause major socio-economic impact in the country. It obviously has many health implications.[9] HIV/AIDS is a growing public health problem with complex social and behavioral issues related to protection, prevention of transmission and care for nursing and midwifery personnel caring for people living with HIV/AIDS.[8]

## Demographic Profile of the subjects

Majority of the clients were of age group of 20-40 years i.e. 83.4%, which is similar pattern with national as well as international trends. Majority of clients were male (89.6%) though the disease has equal prevalence. This low reporting may be due to social stigma and ignorance of diseases among female. Majority of the clients were Mangolian (50%), as the hospital is situated in Dharan, where IVDUs are endemic, major occupation of these groups of people are lahure, and majority of people residing in Dharan are Mangolian. Similar demographic data were reported by Agrwal.[6]

Most of the clients were from Sunsari (47.9%), Morang (18.8%), and Jhapa (14.6%), as BPKIHS is situated in Dharan which is easily arrival by the population of these three districts and there are three municipalities are in Sunsari, one is Morang, and two in Jhapa. Most of the clients are admitted under medicine department (89.6%) as the disease is cared by doctors of medicine departments being adult patients.

## Outcomes of the clients

Half of the clients were improved with the symptoms and discharged, where as 22.9% were unchanged. The disease is not curable but treatable; hence life long treatment is required along with management of opportunistic infections if occurred. The symptoms persist and client will die if the disease is not diagnosed in early stage and treatment (ART) started on time.

## Conclusions

HIV/AIDS is no longer only a health issue; it is also a development issue. Tackling the epidemic will require not only prevention and control of HIV infection among vulnerable and risk groups, but a multi-sectoral approach addressing the lack of access by risk groups to health care and education and recognition of the populations at risk. People living with HIV and AIDS should be brought to the forefront in the fight against HIV/AIDS. Family members, local communities, civil society organizations, donors, and government all have their own important role to play. Increasing trend of the disease certainly has given pressure to focus on the use of comprehensive targeted intervention programs in risk groups sub-populations.

AIDS is a treatable disease, which is common among age groups of 20-40 years of their productive life. If proper treatment and care is provided the life of the clients can be prolonged with comfort. Keeping the emerging trends in mind it's mandatory to provide pubic awareness regarding the nature of disease, prevention of further spread and advocacy about availability of services and their utilization among the public like: HIV testing, screening OPD, VCT, PMTCT, ART, Management of opportunistic infection, CD-4 count services and other services of HIV/AIDS available at

BPKIHS along with elimination of social stigma so that clients can approach easily at hospital and will be benefited with available facilities.

## References


1. *AIDS News letter: Quarterly (2061; Asoj). Women, Girls, HIV & AIDS, 53:13-17.*
2. *Bhardwaj, A., Biswas, R., & Shetty, K.J. (2001) HIV in Nepal: Is it rarer or the tip of an iceberg? Trop Doct, 31: 211-213.*
3. *WHO, SERO (1992). Carrying out HIV Sentinel Surveillance.*
4. *Vithayachockitikhum, N. (2006) Family caregiving of persons living with HIV/AIDS in Thailand. Caregiver burden, an outcome measure. International Journal of Nursing Practice; 12(3): 12*
5. *Aich TK, Dhungana M, Kumar A, Pawha VK. Demographic and clinical Profiles of HIV positive cases: A Two-year study report from a tertiary teaching Hospital. JNMA, 2004, 43(153).*
6. *Agrwal H, Mourya R, Shrestha RK, Agrwal S, Singh GK. Assessment of quality of life of HIV positive individuals at Dharan Municipality, 13th annual celebrations scientific programme abstract book, 2006, Dharn, Nepal.*
7. *Parakh P, Gupta G, Rizal S. HIV/AIDS related knowkedge, attitudes and risk perception amongst health professionals in BPKIHS. 13th annual celebrations scientific programme abstract book, 2006, Dharn, Nepal.*
8. *Impact of HIV/AIDS on Nursing /Mideifery personnel. ICN Positin( www.ich.ch).*
9. *Acharya RP, Bhattari MD. HIV/AIDS prevention and control. J. Nep. Med. Asso. 1999: 38: 106-108.*
10. *Asrath U, Sah S, Jha N etal. Awareness and high risk behaviours among migrant workers in relation to HIV/AIDS- a study from eastern Nepal. SAARC Journals of tuberculosis, lung diseases and HIV/AIDS. 2006; III(1): 5-12.*
11. *Joshi AB, Banjara MR, Karki YB, Subedi BK, Sharmam M. Status and trends of HIV/AIDS epidemic in Nepal. JNMA 2004; 43(152).*

# INFLUENCE OF STIGMA AND SHAME IN HIV SCREENING AMONG WOMEN IN PROSTITUTION

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## ABSTRACT

Background: Shame and stigma brings about undesirable attribute and significantly contributes to the HIV screening and STI treatment seeking, particularly among sex workers. Societal compulsion and feelings of perceived stigma and shame make the sex workers more vulnerable and likely to destabilize their community and the community at large, if no attention is paid. Hence this study was necessitated to document the experiences of stigma and shame and its influence in HIV screening.

Methods: This descriptive research was conducted among commercial sex workers (CSW) enlisted by a NGO. Using simple random sampling procedure research team has interviewed 58 respondents. Semi structured interview schedule was used to explore the knowledge, sexuality, experience of shame and stigma. Michigan Alcohol Screening Test brief scale was used to assess alcohol dependence. Written informed consent was obtained from participants prior to data collection.

Results: Rates of shame and stigma were high among the study participants. Income, knowledge of HIV, alcohol dependence, and number of partners, access to pornographic films, history of sexually transmitted infections (STI) and shame was independently associated with HIV screening. However, marital status of the respondents was inversely related to HIV screening.

Conclusions: Experience of shame associated with the profession was so intense among CSW. This experience of shame acts as a barrier in getting screened for HIV while stigma may not be a powerful barrier.

Key words: Sex worker, Stigma and Shame, HIV screening

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## Background

Sex trade is one of the oldest professions in the society, which involves exchange of sexual services for money or goods, whether regularly, or occasionally for the purpose of generating income. With the advent of globalization, cross border sex trade has become a global phenomenon. According to Pamela shiffman[1] about 50,000 women and children are trafficked into the US every year and majority of them are from South East Asia. Back home in India, established brothel homes at Mumbai have 40,000 girls[2] in the age group of 10 to 15 years. Although south India does not have recognized brothel homes, it does have its own share of women in prostitution. Women in prostitution operate at different levels. Irrespective of the style of practice, women involved in the trade, often face multitude of social and health problems viz, discrimination, STI and HIV. This twin problem often threatens lives of commercial sex workers (CSW), because biologically women are more vulnerable to HIV infection than men. Womanhood and habit of multi-partner sex accelerates HIV infection and sexually transmitted infections (STI) among commercial sex workers. Third dimension to the problem is emotional disturbances (shame and stigma) that make their condition worse. An emotional disturbance particularly shame is a matter of concern as disclosure of sexual behaviors and care seeking is greatly influenced absence or presence of shame.

Stigma[3] is defined as an undesirable attribute in a person that is viewed as setting that person apart from rest of the society, while shame[4] is the consciousness or awareness of dishonor, disgrace, or condemnation. It is also an intense negative emotion that results from a person experiencing failure in relation to personal or other people's standards, feeling responsible for that failure and believing that the failure reflects on inadequate self and stress.

Stigma is particularly complex as it operates at many different levels and has both social and psychological aspects. Though stigma has been talked about since the beginning of the HIV/AIDS epidemic, it has not been adequately investigated in programmes or policies. HIV-related stigma is particularly severe as AIDS is both a life-threatening illness and also firmly linked in people's minds to sexual behavior. Previous studies have documented that patients who had experienced feelings of rejection or inadequacy earlier express greater hostility.[5]

People who experience shame and stigma are less likely to adopt preventive strategies; seek early care for TB and other opportunistic infections; seek treatment for sexually transmitted infections[6]; seek counseling / testing or return for results; access health care professionals for treatment[7] ; disclose their sexual orientation[8] and HIV status to anyone[9]; and adhere to treatment. Stigma was also identified as an important factor that could trigger hidden epidemic of STD. Previous studies have noted that stressors could directly relate to alcohol use[10]. Alcohol abuse is a strong negative coping mechanism and associated with multiple risks for HIV transmission among both men and women. Use of Alcohol has been associated with high-risk sexual behaviour. It reduces inhibitions and self-control, which makes it easier for individuals to engage in risky behaviour, such as multiple sex partners and unprotected sex.

Thus, in order to prevent new infections especially among women in prostitution and improve their health seeking behavior it becomes essential to study, in particular, influence of stigma and shame and alcohol use. Hence, this study was conducted with the objective to document the experiences of shame and stigma and determine the influence of stigma and shame in HIV screening among women in prostitutions in Madurai city, Tamilnadu, India.

## Methods

### Setting:

This descriptive research was conducted among commercial sex workers attending STI clinic run by a non-governmental organization (NGO), at Madurai. Study site is significant because this has been listed as one of 49 high-risk districts of

India and ranks first in the state of Tamilnadu. This city also acts as a major hub for women trafficking. The eligibility criteria for participants were being self identified as women in prostitution (WIP) and given informed consent. Using simple random sampling procedure a sample of 58 respondents was included for the study.

## Data collection

A woman researcher met the respondents in privacy and collected data after getting informed consent. The interviewer visited the study site on every alternate day and collected information from the individuals available at the time of her visit. A semi structured questionnaire-contained details about socio economic profile, sexuality, knowledge about HIV, alcohol dependence, stigma and shame, health seeking for STI, and HIV screening.

## Demographic

Participants reported their age, education, marital status, other occupation, type of family they live and income per encounter.

## HIV knowledge

We used the following dichotomous items to assess general knowledge of HIV. (1) Is it possible to get the HIV virus from mosquito bites? (2) Is it possible to get the HIV virus by sitting on a public toilet? (3) AIDS is a problem only for homosexuals and drug addicts? (4) Is it possible to know by appearance if a person has the HIV virus? and (5) Is there a treatment for HIV?

## Alcohol dependence

Alcohol dependence was assessed using The Michigan alcoholism screening test.[11]. A shortened ten-item scale developed by Selzer ML is a validated scale for assessing alcohol dependence. Scoring for the scale is < 3-non-alcoholic, 4 points or more suggestive of alcoholism and 5 or more indicates alcoholism.

## Sexual behavior

Participants reported number of male partners they had during the last 12 months. Respondents stated type of sex practiced; age at first sexual contact and with whom, access to pornography and educational film on HIV/AIDS.

## STI

Participants stated their STI complications and whether they were tested or not. VDRL (Venereal Disease Research Laboratory) test; a blood test for syphilis that detects an antibody that is present in the bloodstream when a patient has syphilis. Participants also gave information pertaining to time gap between onset of STI symptoms, diagnosis and treatment.

## Shame

Following dichotomous items were used to assess experience of shame i e 1. Prefer to keep from knowing your profession, 2. Not discussed about profession to close one, and 3. Think less of one self due to profession. Every “yes” response was given two points. Score less than 3 were considered little or no shame. Scores more than 4 was considered evidence of shame.

## Stigma

To assess the experience of stigma researcher used the following dichotomous items.1. Were you made to feel ashamed? 2. Colleagues or community have less respect, 3. Others have avoided you? 4. People refuse to visit home, 5. Might make it difficult for others in the family to get married, 6. Asked to stay away from home? and 7. Decided to stay away from social groups? Every “yes” response was given two points. Score less than 3 were considered little or no stigma. Scores more than 4 was considered evidence of stigma.

## Data Analysis

Thus obtained data was analyzed using “epi info” statistical software. Frequency distribution,

percentage calculation and univariate analysis was performed. Logistic regression was performed to see association between being screened for HIV by Education, Income per encounter, Alcohol dependence, Number of partner, access to porno, exposure to HIV films, Shame, stigma and STI, type of family (WEIGHTVAR = Age P VALUE=95%).

## Results

Socio demographic variables including age, education, religion, marital status, family size are entered as a single block and given in table-1. Seventy five percent of respondents were living in nuclear families. Three fourth of the respondents were illiterate, which is in agreement with previous studies.[12] Only 43.1% of the respondent underwent HIV screening despite being at risk of acquiring HIV infection.

Knowledge on transmission of HIV infection was high among respondents. Three fourth of respondents had watched film/programme on reproductive health/HIV/AIDS. This had positive impact on the knowledge of the respondents. At the same, 29.3% of the respondents had access to films on act of sex or pornographic films. First sexual contact for 17% of them was reported at the age of 14 years or below. Experience of coercion was reported by 5.2% of respondents. Almost all the respondents perceived condom usage as a safe sex. One fifth (20.7%) of respondents experienced some sort of sexual difficulties but rarely did they discuss. Oral and anal sex was practiced by 20% of the respondents from whom chances of acquiring HIV infection increases manifold. Number of partners ranged form 2 to 1000 with mean partner rate of 204.67. Earning of the respondents varied from Rs. 50 to 600 with a mean of Rs. 232 per client. Alcohol dependence assessment revealed that 6 respondents were alcoholic. (*Table –2*).

As many as, 81% of respondents had symptoms indicative of STI, probably due to high rate of partner change. Treatments for STIs were not included for the analysis, as all the respondents were screened for presence or absence of sexually transmitted disease by VDRL (Venereal Disease Research Laboratory) test soon after getting registered at the NGO.

Feeling of shame was relatively high among the respondents. Three fourth of (77.6%) respondents didn't want to disclose their occupation to anybody. More respondents (86.2%) thought less of themselves due to their profession. Basic idea of keeping their identity secret definitely produces considerable strain on the lives of the respondents. This idea of not disclosing also rose out of feelings, such as husband refusal to have sex (77.6%), marital dispute (84.5%) and imminent separation (98.3%) from their spouses. Ninety one percent of respondents reported that they and their family were less respected because of their profession. People's refusal to visit their home was reported by 58.6% of the respondents. On learning their occupation 72.4% were asked to stay away from home.

Table 1 Socio-demographic details (n=58)

| Variables | No | % |
|---|---|---|
| Age | | |
| <31.10 | 28 | 48.3 |
| >31.10 | 30 | 51.7 |
| Education | | |
| Illiterate | 13 | 22.4 |
| Literate | 45 | 77.6 |
| Marital status | | |
| Married | 21 | 36.2 |
| Unmarried | 2 | 3.4 |
| Separated | 15 | 25.9 |
| Divorced | 14 | 24.1 |
| Partner | 6 | 10.3 |
| Family type | | |
| Nuclear | 44 | 75.9 |
| Joint | 14 | 24.1 |
| Occupation | | |
| Unemployed | 22 | 37.9 |
| Sales | 8 | 13.79 |
| Casual labour | 21 | 36.21 |
| Skilled | 7 | 12.01 |

Table –2 :

| Items | No=58 | % |
|---|---|---|
| Access to films | | |
| Watched film on porno | 17 | 29.3 |
| Watched film on HIV/AIDS | 45 | 77.6 |
| Mean of age at 1st contact | 16.97(mean) | SD 2.60 |
| <16yrs | 30 | 51.72 |
| >16yrs | 28 | 48.28 |
| First sexual contact | | |
| Spouse | 56 | 96.6 |
| HIV awareness | | |
| Some to lot (3 or more) | 54 | 93.10 |
| None (0-2) | 4 | 6.90 |
| Sexual coercion | 3 | 5.2 |
| STI history | | |
| More than two complaints | 47 | 81.03 |
| 1 or less | 11 | 18.97 |
| Gap between symptoms and RX seeking | | |
| Immediately | 48 | 82.76 |
| One week | 3 | 5.17 |
| > one month | 7 | 12.67 |
| Partners | | |
| <204.67 | 38 | 65.5 |
| >204.67 | 20 | 34.5 |
| Alcohol dependence | | |
| No (>3) | 52 | Non alcoholic |
| Yes (<3) | 6 | Alcoholic |
| Income per encounter | | |
| <INR 232 | 34 | 58.6 |
| >INR 232 | 24 | 41.4 |
| HIV Screened | | |
| Yes | 25 | 43.1 |
| No | 33 | 56.9 |

Table 3 Regression table comparison of being screened for HIV by Education, Income per encounter, Alcohol dependence, No. Of partner, Access to Porno, Exposure to HIV films, Shame, stigma and STI, Type of family (WEIGHTVAR = Age P VALUE=95%)

| Term | Odds Ratio | 95% | C.I. | P-Value |
|---|---|---|---|---|
| Education<br>Illiterate<br>Literate | 1.013 | 0.9169 | 1.1193 | 0.7994 |
| Income per encounter<br>< INR236<br>>INR 236 | 1.0037 | 1.0027 | 1.0047 | 0.0000 |
| HIV awareness | 3.2507 | 2.5289 | 4.1784 | 0.0000 |
| Alcohol dependence<br>Yes<br>No | 1.0626 | 1.0325 | 1.0934 | 0.0000 |
| Marital status | 0.8412 | 0.7844 | 0.9021 | -0.0000 |
| No_of_partner<br><204.67<br>>204.67 | 1.0021 | 1.0016 | 1.0025 | 0.0000 |
| Exposure to HIV films<br>Yes<br>No | 3.7922 | 2.6609 | 5.4046 | 0.0000 |
| Exposure to Porno<br>Yes<br>No | 1.6269 | 1.2674 | 2.0883 | 0.0001 |
| STI<br>Yes<br>No | 0.9379 | 0.8799 | 0.9998 | 0.0492 |
| Shame<br>Little or none <3<br>Some to lot 4-6 | 2.6947 | 2.3439 | 3.098 | 0.0000 |
| Stigma<br>Little or none<2<br>Some to lot 3-7 | 1.0284 | 0.9695 | 1.0909 | 0.3519 |
| Type of family<br>Joint<br>Nuclear | 1.3135 | 1.0325 | 1.6711 | 0.0264 |

## Multivariate analysis

Table III present the results of logistic regression analyses (Epi Info™ Version 3.4 April 30, 2007) comparing respondents chances of getting screened for HIV. Respondents who had better income are more likely to get screened for HIV. Respondents who were aware of HIV are 3.25 times more likely to undergo HIV screening than participants with little or no knowledge. Respondents who reported alcohol use are more likely to get screened for HIV than those who do not use alcohol. Marital status of the respondents was inversely related to getting screened for HIV. Increase in number of partners, increases the chances of getting screened for HIV. Respondents who were exposed to HIV educational movies are three times more likely to get screened for HIV. Access to pornographic films also had its impact in HIV screening among the respondents. Participants who had been diagnosed with a STI were less likely to go for HIV screening, probably due to fear. Experience of shame did not alter the HIV screening among the respondents. Respondents living in nuclear families were more likely to get screened than those who live in joint families. Even though experience of stigmatized reaction was quite high, that did not really affect the HIV screening of the respondents.

## Discussion

This study is noteworthy as it covered the respondents whose identity is always subtle. Further this study extends the existing literature by using relevant variables significantly and independently associated with ensuring early HIV screening. Study has found that experience of shame, related to the profession is so intense as a result many suffer in silent. Experiences of stigmatized treatment to the respondents were also very high.

Presence of extreme risky behavior, other than the "vaginal penal contact", orientation necessitates AIDS prevention workers to find and suggest an alternative prevention method. Repeated motivation sessions are more important in order to improve their safe sex practices.

Knowledge on HIV transmission is very high among the study participants. Yet, more than half of the respondents did not undergo HIV screening. This study demonstrates that information alone does not always lead to behavior change.

In order to address the issue of stigmatized experience, community should be made aware of the sad plight of sex workers and adopt community sponsored rehabilitation programmes to provide alternative means of income generation. Such measures are more likely to produce favorable results, because, majority of the respondents were taken to sex trade due to absence of support from their spouses.

The findings suggest several points for HIV prevention efforts for this population. Firstly, effective shame reduction strategies should be planned to help this population to get over emotional disturbances. Emotional disturbances, inevitably leads to non-compliance and develop resistance to undergo HIV screening.

Secondly, issue of rights need to be addressed by those organization working among women in prostitution. Because, even though the study population makes livelihood out of this profession, peaceful living in the family and in the community is not guaranteed.

To conclude, it is essential to sensitize the community to understand the psycho social issues confronting women in prostitution. In order to help the study participants overcome emotional disturbances stigma reduction skills sessions could be organized. Provisions of HIV screening facilities at the servicing centre i.e., NGOs could also be explored.

## Reference


1. *Pamela shiffman, Traffic stopper, News you can use HIV/AIDS-Jan 2002 P.3*
2. *G.K Verma , Sex work and the spread of AIDS News you can use HIV/AIDS-Jan 2002 P.6*

3. *Nadine France ,Sandra Anderson, Joanne Manchester, Scoria Ksola Nabagala*
*Website; www.ndnet.org accessed on 13.6.2006*
4. *Website: http://en.wikipedia.org/wiki/Shame. Accessed on 31/7/2007*
5. *Lewis HB-*
*Psychic war in Men and women*
*New York - University Press 1979*
6. *Fortenberry JD ,McFarlan M, Bleakley A*
*Relationship of stigma and shame to gonorrhea and human immno deficiency virus screening,*
*American Journal of Public health 2002 p.13-14*
7. *Liebe E.,Li. L, Wu Z, Rotheam-borus MJ, Guan J:*
*HIV /STD stigmatization fears as health seeking barriers in China, AIDS and Behavior 2006, Sep;10(5): p.463-71.*
8. *Smith LB Adler NE, Tschann JM*
*Underreporting sensitive behavior: the case of young women willingness to report abortion Health psychology 1999 P. 18-37*
9. *S.D. Cunningham, J. Tschann, J.E. Gurvey ,J.D.Foetenberry , J.M. Ellen*
*Attitudes about sexual disclosure and perceptions of stigma and shame*
*Sex transmission inf 2002 78: 334-338*
10. *Sandra A.Brown, Peter.W.Vik, John R.Mcquaid, Thomas L.Patterson, Michael R.Irwin,*
*Igor Grant, Severity of psychosocial stress and outcome of alcoholism Treatment*
*Journal of Abnormal Psychology, November 1990 Vol.99.No.4*
11. *Selzer ML Pokornuy AD , MillerBA,Kaplan HB*
*The Brief MAST*
*American journal of psychiatry 27(12) : 1658, 1971.*
12. *APAC - VHS,*
*Prevention of STD HIV/AIDS among women in Prostitution-Changing Trends, Chennai - P.13*
*VHS Chennai-1998*

# TB/HIV CO-INFECTION STATUS AMONG THE NEWLY DIAGNOSED TB PATIENTS
## A Study from Eastern Nepal

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## Abstract

Tuberculosis (TB) is a leading public health problem worldwide particularly in the developing countries. The HIV epidemic has increased the global tuberculosis burden. Estimating the proportion of HIV infection among TB cases can act as early warning system for the spread of TB due to HIV in the country. The objective of the study was to know status of TB/HIV co-infection cases among the TB patients at DOTS clinic in BPKIHS, Dharan, Nepal. Three Hundred newly diagnosed TB cases attended to BPKIHS DOTS clinic were tested for HIV. Among 300 newly TB patients, 14 (4.7%) patients were HIV positive. All were males. The study has shown very high (4.7%) TB/HIV co-infection. This is an alarming situation. Similar operational research can be conducted in different parts of Nepal to know the exact scenario of TB/HIV co-infection, which is necessary for formulating national policy & guidelines for TB/HIV control in the country.

Keywords: TB & HIV Co-infection, TB, HIV, Nepal

## Introduction

Tuberculosis (TB) is a leading public health problem worldwide particularly in the developing countries. In view of the seriousness of the problem, WHO in 1993 declared it to be a global emergency, of the 1.7 billion people estimated to be infected with the TB bacillus, 1.3 billion live in developing countries.[1]

In South - East Asia Region, nearly 3 million cases and 700,000 deaths occur every year. This morbidity and mortality occurs mainly in the economically productive age between 15-60 years, directly affecting the nation's economics. The situations in likely to be further complicated by the rapidly expanding HIV/AIDS epidemic and the emergence of resistant strains of TB.[1]

There were 32,678 TB patients have been registered under National TB Program (NTP)

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in Nepal during 2004/2005. DOTS have been successfully implemented throughout the country since April 2001. The treatment success rate in DOTS is 88%.[2]

The total numbers of HIV Positive cases in Nepal were 3909 in 2004/2005. Using mathematical models it has been estimated that there are more than 60,000 people living with HIV/AIDS in Nepal at the end of 2003.[2]

HIV and TB have been described as the "Diabolical Duet". The reason is that the two go together. When someone is infected with HIV, the virus weakness their immune system usually helps to fight off diseases, so they are now more susceptible to infections. The prevalence of HIV is rapidly rising in Nepal. The effective control measures – for AIDS as well as for TB are more important now than ever before. [2]

As of one survey of 2002, 2.4% of TB patients also had HIV infection. This could rise rapidly if HIV increases for which a consolidated effort is needed.[2] In another study 10.8% cases were diagnosed as TB/HIV co-infected.[3] In view of this alarming situation, this study is under taken.

Compare to an individual without HIV infection, HIV infected patients are upto 10 times as likely to develop TB [4]. As HIV prevalence in the population increases HIV related TB cases rise rapidly. Countries with a high HIV prevalence rate have been found to report significant number of HIV attributed TB cases. Though SAARC Region is in low HIV prevalence (less than 1%) among adults, but all the member states are reporting increasing number of HIV/AIDS cases and the epidemic is spreading rapidly [4]. Some countries have already started HIV surveillance survey especially among high risk groups but TB patients have not been included in all the surveys. Therefore, now is the time to take this initiative to do HIV surveillance among TB patients. The findings of the surveillance is expected to help assess the impact of HIV on tuberculosis epidemic, which will help on channeling the resources and the planning of health care services for people who are co-infected with HIV and TB. Estimating the proportion of HIV infection among TB cases can act as early warning system for the spread of TB due to HIV in the country.

## Objectives

The objective of the study was to know status of TB/HIV co-infection cases among the newly diagnosed TB patients at DOTS clinic in BPKIHS, Dharan, Nepal.

## Methodology

This cross-sectional study was conducted in BPKIHS, Dharan from March to July 2006. The sample size was 300 newly diagnosed TB cases attended to DOTS clinic.
Three Hundred newly diagnosed TB cases attended to BPKIHS DOTS clinic were tested for HIV. The test was done for anti HIV – 1 and 2 antibodies by using rapid HIV TRI-DOT test in the Department of Microbiology, BPKIHS. The pre and post test counseling was done to all TB patients. The confidentiality was maintained as per national guidelines.

## Results

Among 300 newly TB patients, 14 (4.7%) patients were HIV positive. There were 196 (65.3%) males and 104 (34.7%) females. The maximum number (57, 29.1%) of males and (37, 36.5%) females were in 21-30 years of age group (Table1). All 14 TB & HIV co-infected patients were males. Among these, 8 (57.2%) were in 31-40 years and rest 6 (42.8%) in 21-39 years age group. These

age groups are sexually very active. Maximum number 236 (78.7%) patients were from Sunsari, followed by Jhapa (16, 5.4%) and Morang districts (Table 2). Among 14 TB and HIV co-infected patients, 12 were from Sunsari and one each from Morang and Jhapa districts.

Out of 196 males patients, 145 (74%) were diagnosed pulmonary and rest 51 (26.0%) extra pulmonary TB (Fig. 1). Similarly among 104 female patients, 73 (70.2%) were diagnosed as pulmonary TB and rest 31 (29.8%) were extra pulmonary TB.

Among 300 TB cases, 100 (33.3%) males and 63 (21.0%) females were sputum positive and rest negatives. There was previous history of TB present in 34 (11.3%) patients. Out of these 34 patients with previous history of TB, 22 were males and 12 females (Fig 2.).

There were 6 (42.8%) sputum positive pulmonary TB cases, 4 (28.6%) sputum negative pulmonary TB cases and rest 4 (28.6%) extra pulmonary TB cases among 14 TB/HIV co-infected patients.

## Discussion

This study shows high (4.7%) HIV infection rate among TB patients in comparison to the other studies conducted by National TB Center (NTC) [5] in 2001/2002 (2.44%) and by SAARC TB & HIV/AIDS Center (STC)[4] in 2005 (1.5%). The possible reasons are these studies were multi-centric & covering larger sample size than the present study. But study done in Tansen Hospital [3] of Nepal showed very high (10.76%) prevalence of TB/HIV co-infection. Another study in Kathmandu [6] also showed high prevalence (6.7%). Similar study from Netherlands [7] has reported higher prevalence (4.1%) of HIV infection among TB patients, which is near to this study result.

The TB-HIV problem is currently seems small but has been growing at an alarming rate. As there is increasing trend in HIV infection, there could be a substantial increase of TB-HIV co-infected cases in future. Hence, the TB and AIDS programs need to address issue of joint planning and protocols to deal with the existing co-infected patients. Surveillance of HIV infection in TB/HIV co-infection in the country and in this connection extensive further study is needed among MDR-TB patients.

All TB/HIV co-infected found in this study were males. They were in reproductive age group of 20-40 years. Similar with other studies [3,4,6,7,8,9]. The present study showed that 71.4 % of the TB/HIV co-infected cases were suffering more commonly with pulmonary TB than with extra-pulmonary TB (28.6 %). The pulmonary TB (85.7%) was more common than extra-pulmonary TB (14.3%) was also reported by the study done in Western Nepal [3].

Among 14 TB/HIV co-infections, 6 (42.8%) were sputum positive pulmonary TB, 4 (28.6%) sputum negative pulmonary TB and 4 (28.6%) extra-pulmonary TB. This is similar to study reported from Western Nepal.

The study has shown high (4.7%) TB/HIV co-infection in comparison to above mentioned studies.[4, 5] This is an alarming situation. Similar operational research can be conducted in different parts of Nepal to know the exact scenario of TB/HIV co-infection, which is necessary for formulating national policy & guidelines for TB/HIV control in the country.

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## References

1. *WHO, Regional Office for South-East Asia, New Delhi. TB in South-East – The time to act is now 2000.*

2. *Dept. of Health Services, Nepal. Annual Report 2004/2005.*

3. *Ghimire P, Dhungana JR, Bam DS and Rijal B. TB and HIV Co-infection status in United Mission Hospital Tansen-Western Nepal. SAARC Journal of TB, Lung, Diseases & HIV/AIDS 2004;1(1):32-38.*

4. *Jha KK, Shrestha L, Karki KB, Piryani RM and Rahman MM. HIV prevalence among diagnosed TB patients – A cross-sectional study in Nepal-2005. SAARC Journal of TB, Lung Diseases & HIV/AIDS 2006;3(1):60-64.*

5. *National Tuberculosis Center, Nepal. Surveillance of HIV infection in patients with TB in Nepal. Annual Report 2001/2002.*

6. *Sherchand JB, Bam DS and Sherchand S. Human Immunodeficiency Virus (HIV) information in Tuberculosis patients of Nepal. Journal of Nepal Association for Medical Laboratories Sciences 2001;4(4):1-5.*

7. *Haar HC et al. HIV Prevalence among TB patients in Netherlands, 1993-2001:Trends & Risk factors. The International Journal of TB and Lung Diseases 2006;10(7).*

8. *Ti T, Tun A, K Yaw O, Myint H. Study of HIV Seropositivity among TB Patients in five zonal TB Centers Myanmar (1995-1997). International Journal of TB and Lung Diseases 1998;2(11), Supplement 2. S 203*

9. *Berhane K, Eyas H, Atakilt G et al. HIV testing among TB patients in Tigray region, Ethopia, implications TB treatment policy. International journal of TB and lung Diseases 1999.*

# SMOKING ASSOCIATED WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE, ACCELERATED HYPERTENSION, SPONTANEOUS PNEUMOTHORAX, MEDIASTINAL EMPHYSEMA LARGE AORTIC ANEURYSM AND PULMONARY TUBERCULOSIS - A CASE REPORT

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## Abstract:

Chronic smoking is often associated with chronic obstructive pulmonary disease, coronary artery disease, hypertension & aortic aneurysm in elderly people. However its life threatening complications in the form of tension pneumothorax, mediastinal emphysema, and enlarging aortic aneurysm coexisting with pulmonary tuberculosis at times poses diagnostic and therapeutic challenge. We report here with an 86 – year – old male who had mediastinal emphysema, large aortic aneurysm, accelerated hypertension and evidence of active pulmonary tuberculosis aggravated by chronic smoking. He made remarkable recovery following intercostal drainage, anti tuberculous and supportive intensive therapy.

Keywords: Chronic obstructive pulmonary disease, Pneumothorax, Mediastinal emphysema, Aortic aneurysm, Hypertension, Pulmonary tuberculosis

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## Introduction

Chronic smoking is associated with chronic obstructive pulmonary disease (COPD), coronary artery disease (CAD), hypertension (HTN) & aortic aneurysm (AA) & several types of cancer. There is always a potential danger of rupture of large aortic aneurysm. Besides this the other complication of bullous lesion associated with COPD is spontaneous pneumothorax. We recently had a male octogenerian who presented to us with the spontaneous pneumothorax, extensive subcutaneous emphysema associated with mediastinal emphysema, accelerated hypertension & active pulmonary tuberculosis. The diagnostic & therapeutic challenge associated with such unusual complications of chronic smoking prompted us to report this case.

Case Report: A, 86 – year – old man, presented to medical emergency with acute onset breathlessness which was progressive in nature since 1 month and off and on cough with occasional expectoration since 15 days. Urgent chest skiagram revealed left sided pneumothorax with features of COPD, dilated and tortuous, ascending, arch and descending aorta and aortic calcification. Blood pressure was 220/110 mmHg. An intercostal tube was inserted with underwater seal. He accidentally removed the intercostal tube and developed extensive subcutaneous emphysema involving lower half of both sides of chest wall, arms, neck, face and periorbital area. (Fig.1). Patient became acutely dyspneic at this stage.

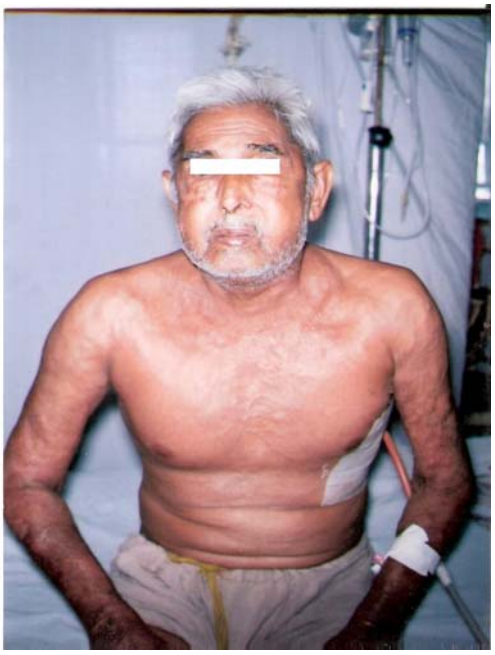

Fig. 1
Showing extensive subcutaneous emphysema extending to face, arms and chest

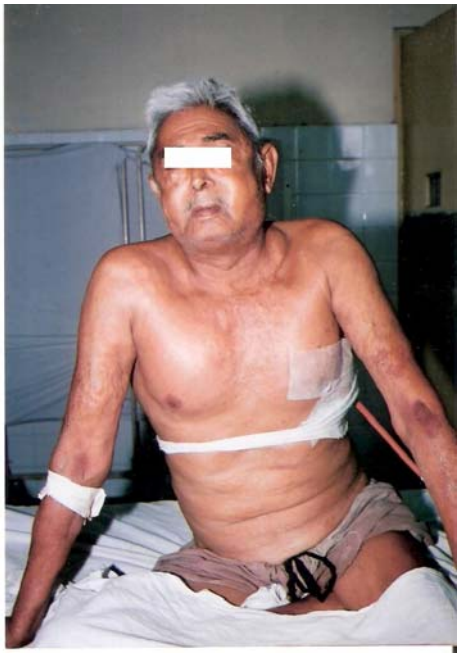

Fig. 2
After regression of subcutaneous emphysema

In past he was diagnosed to have pulmonary tuberculosis twice once in 2003 and then again in 2005 for which he received anti tubercular treatment albeit for 2 months only

both times in the form of RHZE. Beside this he had difficulty in micturition for 10 years and was diagnosed to have benign prostatic hyperplasia for which surgery was planned a year back. As pre-anesthetic check up x-ray chest revealed aortic aneurysm, the prostatic surgery was deferred. His family history- was unremarkable. He was a chronic smoker (10 bidis per day for last 50 years), has been smoking till the episode of acute chest pain, he occasionally took alcohol also.

At the time of admission he was conscious, blood pressure-170/110 mmHg and pulse 84/min. All peripheral pulses were palpable except left dorsalis pedis. There was mild pallor. Trachea was shifted to right side; Movement was diminished on left side. Supraclavicular fosses were full. Hyperresonant tympanic note was heard on left side. Crepitus was felt all over neck, anterior chest wall, back and upper part of abdomen. Breath sounds and vocal resonance were diminished on left side. Based on clinical and radiological finding a presumptive clinical diagnosis of COPD, accelerated hypertension, left pneumothorax, extensive subcutaneous & mediastinal emphysema, large aortic aneurysm and pulmonary tuberculosis was made. Investigations revealed low HDL (36mg/dl), low voltage ECG complexes and a negative VDRL. Due to all pervasive gas and poor echogenic window Echo and carotid intima media thickness could not be performed.

In view of increasing dyspnea and extensive subcutaneous emphysema and large aortic aneurysm contrast C.T scanning of the chest was done. This revealed extensive subcutaneous emphysema along with mediastinal and retroperitoneal emphysema involving chest and abdominal wall, multiple bilateral bullae, right fibrocavitory lesions at apex, left sided pneumothorax, Fig. 3 & 4.

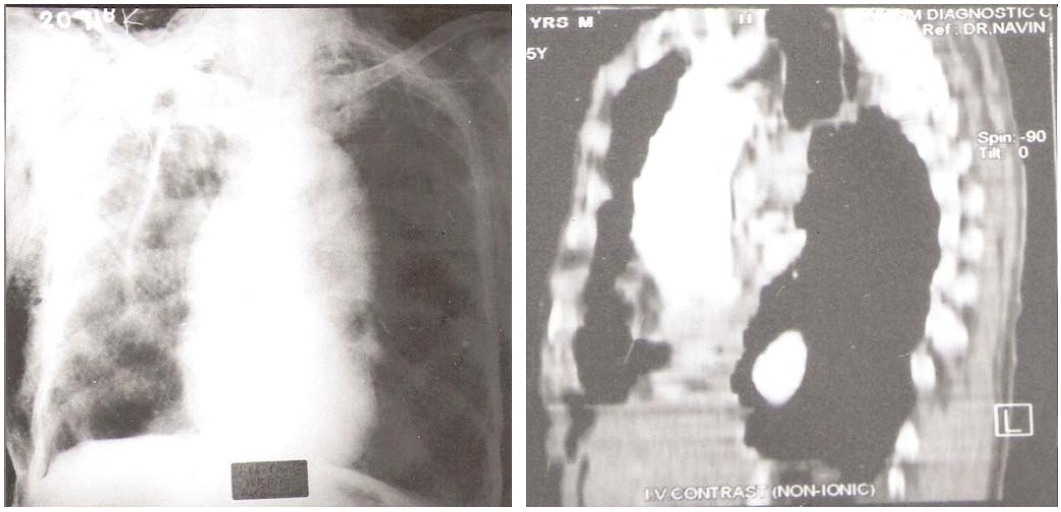


Fig. 3

Chest skiagram (PA View) and CT chest show large AA, left pneumothorax and right extensive fibrocavitatory disease

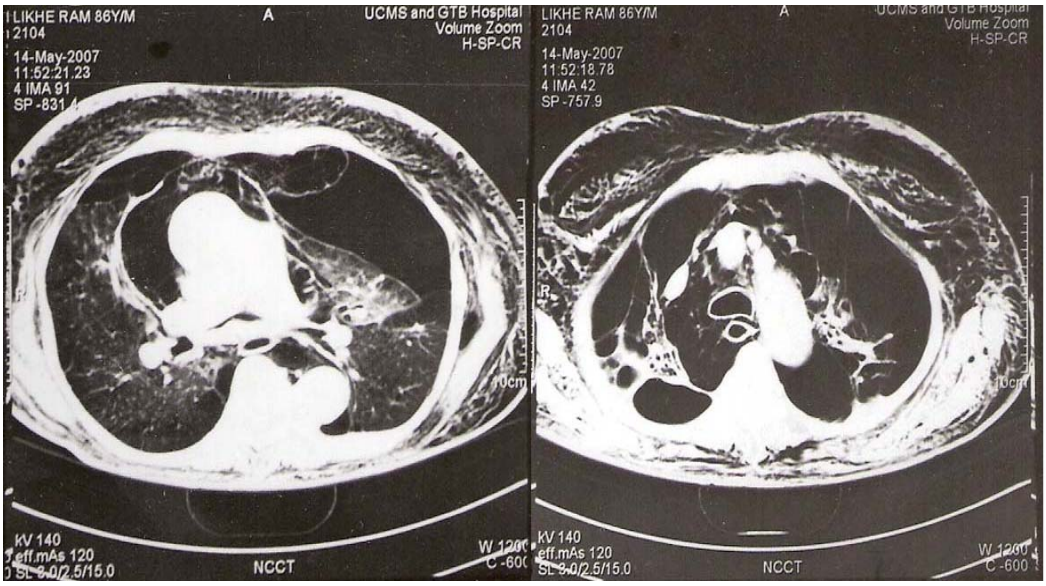


Fig. 4

Contrast enhanced CT chest showing subcutaneous & mediastinal emphysema, multiple bilateral bullae, right fibrocavitatory lesion, collapse left lung, centrilobular and paraseptal emphysema, aneurismal aortic dilatation in ascending, arch and descending aorta and bilateral renal cortical cysts.

In view of extensive mediastinal emphysema, intercostal drainage tube was repositioned in left thoracic cavity and connected to the under water seal. Four drug ATT regime (rifampicin, isoniazid, pyrazinamide & ethambutol) along with tazobactum and piperacillin, ramipril (ACE Inhibitor) was started.Symptomatic and supportive treatment was also instituted. Patient improved on above treatment. Subcutaneous emphysema regressed considerably within a fortnight. There onwards patient showed remarkable improvement. (Fig. 2)

## Discussion

Our patient was a chronic smoker with a smoking index of 500. He obviously was a candidate for COPD[3], hypertension, aortic aneurysm & CAD.[1-4] Interestingly he had asymptomatic large aortic aneurysm. This was no solace for us in view of inherent danger of its dissection and rupture. The reason behind smokers developing aortic aneurysm as smoking induces 5-lipoxygenase expression activates 5-lipoxygenase in aortic tissue which is a Key enzyme in leukotriene biosynthesis[5]. Further smoking promotes the formation of aneurysm through plasma macrophage inflammatory protein-1α & 2 chemokine dependent inflammatory circuits involving both myeloid and endothelial cells. With advancing age atherosclerotic inflammation of aortic wall leads to increased propensity for penetrating aortic ulcer/dissection[1]. Interestingly there is significantly higher incidence of renal cysts in patients with aortic arch aneurysm (AAA) compared to patients without AAA[4] as was the case in our patient.

As regards management of such cases with aortic aneurysm and hypertension it has been found that institution of ACE inhibitors decrease risk of aortic rupture by 18%.[2] Patients at high risk for rupture including those over age 75 years & those with

hypertension seem to benefit with ACE inhibitors. What helps to these persons who have large aortic aneurysm is to stop smoking at once.[2]

Besides silent large AA, our patient had spontaneous left pneumothorax which subsequently complicated into mediastinal emphysema causing great concern. Fortunately it responded to conservative therapy. Over and above our case also had active pulmonary tuberculosis which responded to four drug ATT regimen. Presence of active tuberculosis added another twist to the etiological diagnosis for large AA. In a previous report from this country multiple saccular aneurysm of the aorta has been reported to be associated with tuberculosis[6].however in our case the advanced age of patient, chronic heavy smoking, accelerated hypertension and atherosclerotic calcification in aorta favoured accelerated atherosclerosis to be the cause of large aortic aneurysm. Here again smoking was the main culprit. This case amply highlights the role of chronic smoking in the etiopathogenesis of aortic aneurysm, hypertension, renal cyst, tuberculosis and tell tale lesion of chronic obstructive pulmonary disease.

## References


1. *Daniel R. Wong, Walter C. Willett and Eric B. Rimm. Smoking, hypertension, alcohol consumption, and risk of abdominal aortic aneurysm in men,American journal of epidemiology 2007; 165: 838-845.*
2. *Diehm N, Baumgartner I. ACE inhibitor use may help prevent aortic aneurysm rupture. Lancet 2006; 368: 622-623, 659-665.*
3. *Spencer C, Jamrozik K, Kelly S, Bremner P, Norman P. Is there an association between chronic lung disease and abdominal aortic aneurysm expansion? ANZ J Surg 2003; 73: 787-9.*
4. *Arezou Y,Christian de V,Rodney A W,Grant sarkisyan Increased Incidence of renal cysts in patients with abdominal aortic aneurysms: A common pathogenesis? Eur Respir J 2001; 18:748-752.*
5. *Hisato T, Takuya U. Smoking promotes pathogenesis of aortic aneurysm through the 5-lipoxygenase pathway. Med Hypotheses 2005; 64: 1117-1119.*
6. *Mally A., D'souza C, Dwivedi S, Shatapati P, Pulmonary tuberculosis associated with multiple saccular aneurysms of the aorta. Angiology 1990; 41: 333-336*

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# TUBERCULAR LYMPHADENITIS IN PAEDIATRIC PATIENT IN E.N.T. PRACTICE

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## INTRODUCTION

Tuberculosis is one of the biggest health challenge, the world is facing. Cervical lymphadenitis is a common manifestation of mycobacterial infections encountered in otorhinolaryngologic practices. It may be the manifestation of a systemic tuberculous disease or a unique clinical entity localized to neck. It remains a diagnostic and therapeutic challenge because it minimizes other pathological processes and eyelids in consistent physical and lab findings. A high index of suspicion is needed for the diagnosis of mycobact cervical lymphadenitis and should be considered in the differential diagnosis of a cervical mass especially in endemic areas.

Keywords: *Cervicofacial masses, lymphadenopathy FNAB, HPE, developmental malformations, cystic lesions.*

## MATERIALS & METHODS

The present study was conducted in 175 patients with cervicofascial masses who attended the Department of Otorhinolaryngology, Head & Neck Surgery, SMHS Hospital, Government Medical College Srinagar. Both male and female patients below and upto the age of 12 years with cervicofascial mass were taken up for the study. The patients were followed up for a period of six months to one year.

A detailed history regarding presenting symptoms and duration of illness was taken and recorded on a proforma. History included the mode of onset, progression of disease, associated symptoms like pain,

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fewer, discharge, weakness, sore throat, weight loss, any interference with normal functions. Any significant past history was noted. Family, personal and drug history were also noted.

A complete general physical examination and systemic examination was done to exclude any concomitant disease and contraindication for surgical intervention if needed.

A thorough otorhinolaryngological examination was done in each case. A detailed local examination of the mass was performed in a systematic order. Preliminary laboratory investigations, blood chemistry, x-ray chest was done.

FNAB was carried out in all cases of the series. Treatment included wait and watch, antibiotic therapy, ATT and surgical intervention. HPE was done in all cases where excision was performed. Postoperative patients were follow up for a period of 6 months and 1 year.

## RESULTS

The present study was carried out on 175 patients below and upto the age of 12 years who presented with cervicofascial masses in the Department of Otorhinolaryngology and Head & Neck Surgery of Government Medical College Srinagar.

It was found that there were 23 patients (11.5%) of tubercular lymphadenitis, out of which 7 were males and 16 females in the ratio of 1:2.3

Out of these 23 cases 11 cases (48.5%) presented with right sided lesion, 4 patients (17%) left sided lesion, 6 patients (26%) with bilateral lesions and 2 patients (8.5%) with submental lesion.

The various sites for tubercular lymphadenitis were submandibular (13 out of 23), submental (2 out of 23), post-triangular of neck (5 out of 23 and as multiple neck swelling (2 out of 23).

Constitutional symptoms were not presented in most of the patients. The patients were investigated with routine baseline investigations. ESR was found elevated in 13% of patients having tubercular lymphadenitis. FNAB yielded a positive diagnosis in 21 out of 23 of the 200 cases of the series. But FNAB was false positive in 12.6% of patients. Sensitivity of FNAB was found to be 87.4%, two patients diagnosed on FNAB as reactive hyperplasia of lymphnode proved to be tubercular lymphadenitis on HPE.

All patients were put on anti tubercular drug for a period of 9 months. No relapse occurred and no further surgery was required.

## DISCUSSION

Cervical lymphadenopathy is the most common head and neck manifestation of TB and can occur in any age group. The incidence of cervical lymphadenitis has increased in parallel with the increase in the incidence of mycobacterial infection world wide.

Mycobacterial cervical lymphadenitis is caused either by tuberculous or non-tuberculous mycobacteria.

Most series suggest only 10-20% to have associated pulse disease or to have had a history of contact with TB. Upto one half of these patients will have systemic symptoms. It has been suggested that the bacillus enter via the tonsils as tonsillectomy specimens will often show evidence of TB infection in these patients.

It may present as single or multiple painless lump, mostly located in post cervical or supraclavicular region. The fistula formation may be seen in almost 10% of the mycobacterium cervical lymphadenitis.

It is important to distinguish between tuberculous and non-tuberculous mycobacterial cervical lymphadenitis because their treatment protocols are different.

The diagnostic needs are high index of suspicion and application of a variety of diagnostic modalities. It should be strongly considered in patients living in endemic areas and immunocompromized people. It is not feasible and practical to apply all the diagnostic procedures to all patients. This would be time counseling and expensive. The test battery should be individualized.

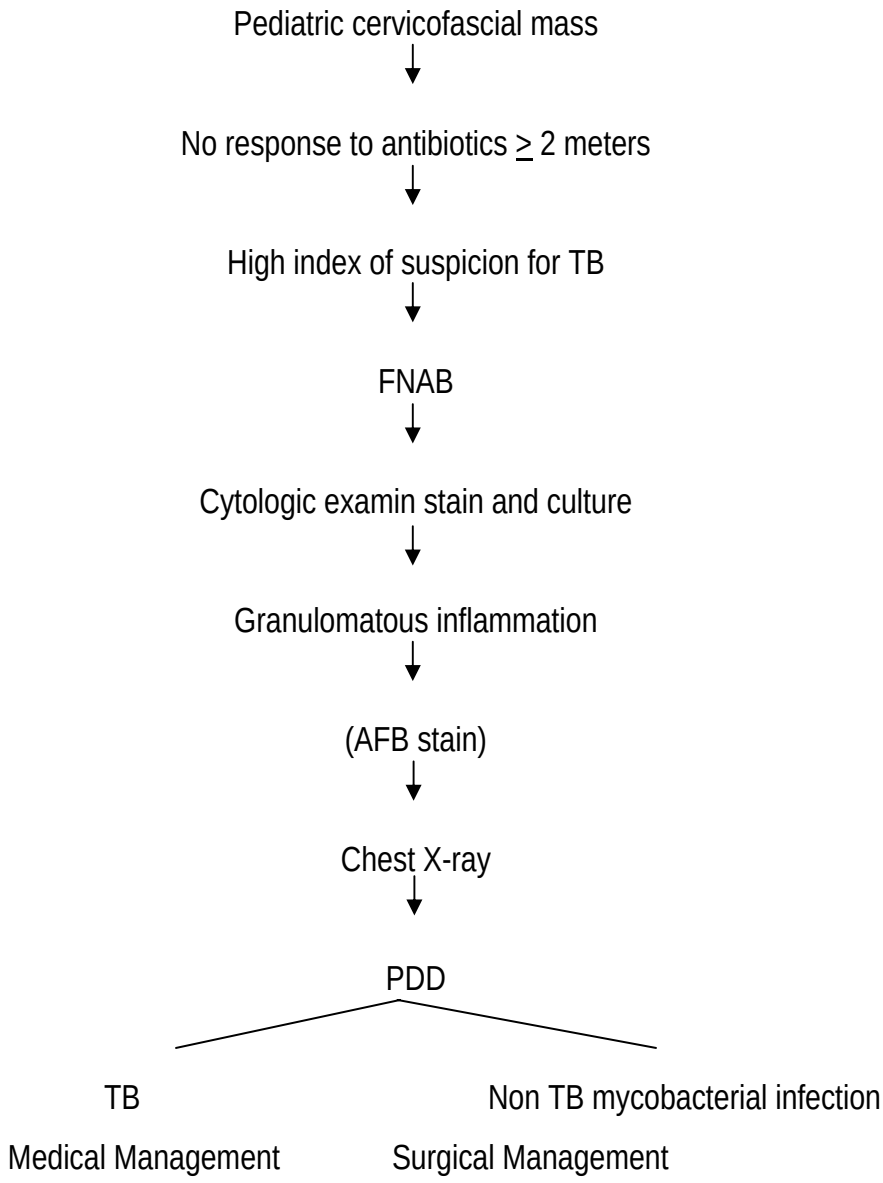
A thorough history and physical examination, tuberculin test, staining for AFB, radiological examination and FNAC with the help to arrive at an early diagnosis of mycobacterial cervical lymphadenitis will allow early institution of treatment before a final diagnosis can be made by biopsy and culture.

The sensitivity and specificity of FNA cytology in the diagnosis of tubercular lymphadenitis are 88 to 96% respectively. Combination of FNAB and montoux test increases the diagnostic yield in mycobacterial cervical lymphadenitis.

TB lymphadenitis responds well to ATT and surgery has a limited role in treatment. A surgical intervention in tubercular adenitis should include FNA, drainage and incisional and excisional biopsy.

Anti tubercular drugs include two groups of drugs. First line drug are INH, RMB, ENB, PZA and streptomycin. Second line drug which are less efficacious and more toxic than the first line drugs are caprecomycin, ethionamide, thiacetazone, PAS and cyclosein.

In non-tubercular adenitis, surgery is the treatment of choice. Surgical techniques include aspiration, excision and drainage, cartilage, complete surgical examination of affected lymphnode and overlying skin and selective nodal and functional neck dissection when required.




REFERENCES

1. Munck K, Mandpe AH. Mycobacterial infections of the head and neck. Otolaryngol Clin North Am 2003; 36: 569-576.

2. Kanlikama M, Mumbuc S, Bayazit Y, Sirikci A. Management strategy of mycobactrial cervical lymphadenitis. J Laryngol Otol 2000; 114: 274-278.

3. Alleva M, Guida RA, Tomo T 3rd, Kimmelman CP. Mycobacterial cervical lymphadenitis: A persistent diagnostic problem. Laryngoscope 1988; 98: 855-857.

4. Penfold DN, Revington PJ. A review of 23 patients with tuberculosis of head and neck. Br J Oral Maxillofac Surg 1996; 34: 508-510.

5. Ibekwe AO, al Shareef Z, al Kindy S. Diagnostic problems of tuberculous cervical adenitis (scrofula). Am J Otolaryngol 1997; 18: 202-205.

6. Chao SS, Loh KS, Tan KK, Chong SM. Tuberculous and nontuberculous cervical lymphadenitis: A clinical rev iew. Otolaryngol Head Neck Surg 2002; 126: 176-179.

7. Tunkel DE. Surgery for cervicofacial nontuberculous mycobactrial adenitis in children: An update. Arch Otolaryngol Head Neck Surg 1999; 125: 1109-1113.

8. Weiler Z, Nelly P, Baruchin AM, Oren S. Diagnosis and treatment of cervical tuberculous lymphadenitis. J Oral Maxillofac Surg 2000; 58: 477-481.

9. Gupta SK, Chugh TD, Sheikh ZA, al-Rubah NA. Cytodiagnosis of tuberculous lympyhadenitis. A correlative study with microbiologic examination. Acta Cytol 1993; 37: 329-332.

10. Lau SK, Wei WI, Hsu C, Engzell UC. Fine needle aspiration biopsy of tuberculous cervical lymphadenopathy. Aust N Z J Surg 1988; 58: 947-950.

11. Russel J. Ord & Gregory J Matz. Tuberculous cervical lymphadenitis. Arch Otolaryngol May 1974; 99: 327-329.