

Original Research Article

HIV-AIDS patients with respiratory manifestation: study at tertiary care center

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ABSTRACT

Background: HIV affects virtually all organ systems in the body. Pulmonary disease is one of the most frequent complications of HIV infection. It is found in mostly married, young and middle aged, urban poor with male preponderance and heterosexual and blood transfusion being the commonest source of infection. Prompt diagnosis and early management may hasten the clinical recovery and reduce the risk and severity of toxic drug effects. Moreover knowledge regarding the incidence and early manifestations may help in developing strategies regarding prophylactic therapy of various infections of respiratory system. Aim of this study was to find the Incidence, occurrence and pattern of respiratory infections in HIV infected patients, use of various drugs used and response of therapy in respiratory infections and to study impact of HAART in PLHA with respiratory infection.

Methods: Fifty HIV infected patients showing clinical evidence of respiratory system involvement and admitted in our hospital from May 2014 to November 2015 were studied in present study. Clinical history was noted and detailed physical examination, laboratory evaluation and specialized tests were carried out in all patients looking especially for presence of associated opportunistic infections in other systems.

Results: Cough and dyspnea were the prominent respiratory symptoms and commonest sign was consolidation (42%) and effusion (24%) or no respiratory signs (26%). Tuberculosis (66%) followed by bacterial pneumonia (24%) including recurrent bacterial pneumonia (6%), PCP (8%) and fungal infection (2%), were the commonest respiratory manifestations. Commonest organisms isolated in bacterial pneumonia were *Streptococcus Pneumonia*, *Staph aureus* and *Klebsiella*. Incidence of pulmonary TB was 66%. PCP was found in 8% of cases. HAART combination of lamivudine, stavudine and nevirapine were found efficacious, safe and well tolerated when combined with other antibiotics and/or AKT.

Conclusions: Heterosexual exposure (70%) and blood borne infection (18%) were commonest route of infection. Fever and weight loss was commonest presenting constitutional symptoms and all patients either belonged to B or C category.

Keywords: HIV-AIDS, Respiratory manifestation in PLHA, Tuberculosis in HIV

INTRODUCTION

AIDS is a multi-system disorder affecting different organs of body at some stage of the disease. It has been noted that pulmonary disorders are found in all stages of

HIV infection. It has been reported that 70% of HIV infected persons will have at least one episode of respiratory illness during the course of their disease. It was common in all age groups and both sex.¹ HIV affects virtually all organ systems in the body. Pulmonary

disease is one of the most frequent complications of HIV infection. It is found in mostly married, young and middle aged, urban poor with male preponderance and heterosexual and blood transfusion being the commonest source of infection. Amongst them the protozoal, viral, bacterial infections and tumors such as Kaposi's sarcoma and lymphoma involving lung often require indoor treatment in hospital. Prompt diagnosis and early management may hasten the clinical recovery and reduce the risk and severity of toxic drug effects. Moreover knowledge regarding the incidence and early manifestations may help in developing strategies regarding prophylactic therapy of various infections of respiratory system.

Among the various respiratory diseases in HIV infected patients pulmonary tuberculosis is a very important complication in India. There is resurgence in the incidence of tuberculosis after HIV epidemic. Spread of multidrug resistant tuberculosis is a great threat to society and particularly to medical and paramedical persons. 70% of patients with HIV disease in India are suffering from tuberculosis. Use of routine antimicrobial agents along with AKT is an important area to be studied. After the reduction in cost of HAART, it has a major impact in the treatment of HIV infected patients. Effects and side effects of various antimicrobial agents along with their cost effectiveness and emergence of drug resistant strains of organisms pose a greater challenge to the physician and require an in-depth evaluation. *Staph. Aureus*, *Klebsiella*, *Pneumocystis Carini* and *Cryptococcus Neoformans*. Bacterial pneumonia and PCP are being treated with penicillin group of antibiotics and TMP/SMX respectively.

Considering all these facts we have decided to study the clinical profile of respiratory manifestations of HIV infected persons.

The aim of the study was to study the occurrence and pattern of respiratory infections in HIV infected patients, to study various drugs used and response of therapy in respiratory infections and to study impact of HAART and to find out the incidence of pulmonary tuberculosis in HIV infected patients and to see the response of AKT in persons with HIV infection having pulmonary tuberculosis.

METHODS

Fifty HIV infected patients showing clinical evidence of respiratory system involvement and admitted in our hospital from May 2014 to November 2015 were studied in present study.

Detailed clinical history was noted in each patient with special emphasis on past history of major surgery, blood transfusion, genital ulcer, multiple sexual partners, occupational exposure, drug abuse, history of tuberculosis and AKT whether taken or not, history of

antiretroviral drugs taken or not and past history of pneumonia. Detailed physical examination was carried out in all patients looking especially for presence of associated opportunistic infections in other systems.

Routine hematological and biochemical, bacteriological and radiological tests (x-ray Chest, USG thorax) along with HIV ELISA were carried out in all patients. Special investigation like CD4, CD8 cell count, CT (Thorax), S.LDH, body fluid examination were performed in patients depending on indication and affordability of patient. Hepatitis B surface antigen and VDRL tests were also done in all patients. All the patients were treated accordingly in the form of antibiotics, AKT, Antiretroviral and supportive therapy. Prophylaxis for various opportunistic infections was given where indicated.

RESULTS

50 HIV infected patients with respiratory manifestations were studied. Male to female ratio was 4.5:1. 2/3rd patients were belonging to urban, lower socioeconomic class with literacy rate of 72%. Heterosexual exposure (70%) and blood borne infection (18%) were commonest route of infection. Fever and weight loss was commonest presenting constitutional symptoms and all patients either belonged to B or C category. Cough and dyspnea were the prominent respiratory symptoms and commonest sign was consolidation (42%) and effusion (24%) or no respiratory signs (26%). Tuberculosis (66%) followed by bacterial pneumonia (24%) including recurrent bacterial pneumonia (6%), PCP (8%) and fungal infection (2%), were the commonest respiratory manifestations. Commonest organisms isolated in bacterial pneumonia were *Streptococcus Pneumonia*, *Staph aureus* and *Klebsiella*.

Table 1: Age distribution.

Age	% in present study (n = 50)	GACS data ⁽⁵⁾ (n = 648)
0-14	0	3.01%
15-29	34%	28.3%
30-39	42%	38.3%
40-49	20%	21.2%
>50	4%	9%

Incidence of pulmonary TB was 66%. Patients had usual constitutional symptoms with common presentation as consolidation (66%) and effusion (30%). X-ray chest shows mid and lower zone predominance with increased incidence of atypical radiological findings i.e. adenopathy, miliary and non-apical involvement. Skin test was negative in 88%. MDR TB was found in 27%. PCP was found in 8% of cases. All patients had predominant respiratory symptoms, serum LDH elevations, X-ray findings of ground glass opacities and low peripheral O₂ and increased arterial alveolar O₂ gradient (>35 mm). TMP/SMX along with steroid was

given to all patients and response was good. One case of pulmonary cryptococcosis was noted and patient succumbed to the disease. Pulmonary infection due to other fungi and atypical mycobacterium was not found. PCP patients were given secondary prophylaxis with TMP/SMX with good success. Cheapest HAART combination of lamivudine, stavudine and nevirapine were found efficacious, safe and well tolerated.

Table 2: Sex distribution.

Sex	% in present study (n = 50)	GACS ⁽⁵⁾ (n = 648)
Male	82%	71%
Female	18%	29%

Table 3: Sources of infection of HIV infection.

Sources	No.	% present study (n=50)	GACS (n=648) data ⁽⁵⁾	CDC (USA) Data ⁽⁸⁾ (n=724656)
Sexual Route	35	70%	60.81%	58%
Homo	-	-	NA	47%
Hetero	35	70%	NA	11%
Blood and blood products	9	18%	16.11%	3%
IV drug use	0	0		32%
Perinatal transmission	1	2%	1.89%	15%
Others (nonspecified)	5	10%	20.76%	8%

Table 4: Various presenting manifestations of HIV infection.

Symptoms	% in present study (n=50)	GACS data ⁽¹³⁾ (n=648)
Weight loss	72%	28%
Fever	88%	18%
Lymphadenopathy	22%	03%
Chronic diarrhea	16%	17%
Oral candidiasis	50%	43.7%

Table 5: Spectrum of respiratory illness.

Diagnosis	% in (n=50) present study	Daley CL et al ⁽³⁾ Tanzania (n=127)	Wallace JM et al ⁽⁷⁾ USA (n=1116)
Tuberculosis	66%	75%	5%
Bacterial pneumonia	24%	14%	42%
PCP	8%	0.7%	45%
Cryptococcosis	2%	-	3%
Non tuberculous mycobacteria	-	-	4%
Non specific pneumonitis	-	-	0.05%
Kaposi's Sarcoma	-	-	0.15%

Table 6: Bacterial pneumonia.

Organism	% in present study (n=24)	Hirschtick RE et al ⁽⁴⁾ (n=143)
Strept. Pneumonia	50%	40%
Staph Aureus	25%	14%
Klebsiella	16%	11%
P.Aeruginosa	8.3%	6%

Table 7: Mycobacteria incidence of pulmonary and extra pulmonary TB in present study.

No. of patients with TB in present study (n=50)	GACS Data ⁽⁵⁾ (n=648)
66%	47%

Table 8: Radiological findings in cases of pulmonary tuberculosis.

Presentation	% in present study(n=33)	Lessnau et al ⁽⁶⁾ (n=NA)	Bhatia RS et al ⁽²⁾ (n=NA)
Cavitary	21%	16%	6%
Upper lobe infiltrate	21%	31%	25%
Middle and lower lobe infiltrate	45%	37%	41%
Adenopathy	33%	41%	42%
Pleural Effusion	30%	18%	29%
Miliary pattern	12%	4%	13%

DISCUSSION

AIDS is a multi-system disorder affecting different organs of body at some stage of the disease. It has been noted that pulmonary disorders are found in all stages of HIV infection. It has been reported that 70% of HIV infected persons will have at least one episode of respiratory illness during the course of their disease. It was common in all age groups and both sex.¹

Maximum patients belonged to the 30-39 years of age groups comparable to the state health statistics data. Out of 50 patients 38 (76%) belonged to 15 - 39 age group the most productive young generation. Sex ratio is also comparable to the state health statistics.

Sexual route is the commonest (70%) in present study compared to GACS (60.81%) and CDC (58%) data. However further analysis reveals that all our patients had heterosexual mode of transmission whereas USA data shows 47% homosexual transmission amongst 58%, while states health data do not bifurcate homo and heterosexual transmission.

Western data also suggest higher incidence (32%) of IV Drug abuse, while present study and GACS data do not have any such case.

Blood borne transmission is found in 18% in present study and 17% in GACS data, while USA data shows only 3% cases. This probably is an indicator of more stringent surveillance criteria in USA regarding blood products.

In our study incidence of patients with fever and weight loss is more it could be because we have selected patients with symptoms of respiratory infection hence patients would be in advanced AIDS category i.e. B and C while GACS data spans all categories of HIV patients.

Among the wide variety of respiratory involvement in HIV infected patients, respiratory infection by various opportunistic and non-opportunistic organisms tops the list.

In present study pulmonary tuberculosis is in 66% of patients with the problem of MDR-TB and non-compliant patients & bacterial pneumonia is in 24% of patients with a good therapeutic outcome. PCP was found in 8% while fungal infection was found in 2% of patients.

The data are comparable to the study done in Tanzania where as in majority of studies done in developed countries, this spectrum remains the same but there are more incidences of complications and relatively high mortality in bacterial pneumonia group and increased incidence of opportunistic infection with atypical mycobacteria, fungus and parasites. This is probably related to the nosocomial pneumonia due to gram -ve organism with complications i.e. cavitations, abscess or empyema with a risk factor of IVD abuse and homosexuality which was not observed in present study. Opportunistic infection of the lung which occurs at extreme immunosuppression (MAC, fungal infection, toxoplasmosis) requires expensive, aggressive and invasive diagnostic procedures which due to various reasons were not feasible in our setup.

In present study incidence of bacterial pneumonia was 24%. All were community acquired, presented early in the course of HIV infection. Gram positive organisms particularly *Streptococcus Pneumonia* predominated the sputum results. A small number of patients had gram-negative organisms on sputum analysis. The prognosis was good. The prognosis was good without any complications and residual damage to the lung. 25% of patients had recurrent bacterial pneumonia.

These observations are identical with studies carried out in developed countries in which it has been reported that *S. Pneumonia* is the commonest organism isolated in HIV infected patient, presenting with respiratory infection.

The incidence of pulmonary tuberculosis was 66% in present study, symptoms of TB in HIV seropositive patients were non-specific. All patients (100%) were diagnosed by positive. X-ray findings with 24% had positive sputum for AFB and 12% had positive skin test (≥ 5 mm). Atypical radiological findings reported commonly in patients of AIDS were also observed, with preponderance of middle and lower zone tuberculosis in present study.

The same findings have been reported in various other studies and they have also compared the incidences of non-apical tuberculosis in HIV and non HIV patients and the findings confirmed that non-apical tuberculosis is a common occurrence in HIV seropositive patients.

In our study outcome in response to AKT among drug sensitive was good. 16 out of 33 patients appeared for regular follow up and were improving with clinical and radiological signs of improvement. 15% of patients developed hepatotoxicity to HERZ in the form of nausea, abdominal pain and icterus. In our study total 33 patients had Pulmonary TB; out of this 4 patients had MDR TB. These 4 MDR TB patients were non-compliant, irregular in follow up; hence their outcome is not reported. In present study we didn't come across any atypical mycobacterial infection.

In present study incidence was 8% of Patients presented with fever, cough, progressively increasing dyspnea for 2 weeks (mean) and all had elevated S.LDH value, typical interstitial ground glass opacities in chest X ray and low peripheral O₂ saturation. All the patients responded well to TMP/SMX and steroids with minimal and tolerable adverse reaction to TMP/SMX. Outcome in all patients was good. The incidence of pulmonary fungal infection was 2% in present study. One case of cryptococcal pneumonia was noted. The clinical presentation and prognosis remains the same in both present study and developed countries Overall mortality is high in pulmonary fungal infection.

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