



PULMONARY OPPORTUNISTIC INFECTIONS IN HIV/AIDS, AND ASSOCIATION TO CD4+ T CELL COUNT

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ABSTRACT HIV infection is the increasing global burden in the world. Opportunistic infections and malignancies are major causes of morbidities and mortalities in AIDS patients. The level of immunity determines the occurrence and type of opportunistic infections. Present study elaborates various pulmonary opportunistic infections in HIV/AIDS in association with CD4+ T cell count and also clinical profile of opportunistic infections with regard to CD4+ T cell count.

KEYWORDS :

INTRODUCTION

AIDS, the Acquired Immuno Deficiency Syndrome, is a fatal illness caused by a retrovirus, HIV virus. First case of HIV/AIDS detected in U.S. in 1981 in GAY population. First case in INDIA detected in 1986 in commercial sex workers, since then billion dollars has been spent to get the therapy and vaccine which is not possible till today. By adopting the preventive measures and treatment in developed countries the disease is stabilized but, still it is a problem in developing countries due to limited resources.

Once individual infected by this disease, over a course of 5-7 years immune status declined to a critical level and various O.I's to various organs are likely to occur and they die due to Infections. Regarding Pulmonary O.I's are concerned acute bronchitis, pneumonias, pulmonary T.B likely during all stages of disease process.

Most severe infections occur at advanced level of disease with low CD4+ T cell count.

- Most common causes of pneumonia are bacterial pneumonia, pulmonary T.B, PCP pneumonia, other causes are fungal infections, non specific interstitial pneumonitis, malignancies like kaposi sarcoma and lymphoma.
- Patients with untreated HIV infection have a six fold increase in the incidence of pneumococcal pneumonia and 100 fold increase in the pneumococcal bacteremia, hence Immunization of pneumococcal vaccine is recommended.
- TB is one of the commonest opportunistic infection and is a leading cause of death amongst HIV infected people.

In early stage a typical progression, in late stages of disease atypical manifestations and extra pulmonary T.B are likely to occur.

- MAC infection common in advanced stage of disease so, prompt evaluation, early recognition is necessary
- Fungal infections like Aspergillosis, Histoplasmosis, Coccidioidomycosis to be Identified and treated to reduce mortality.
- Idiopathic Interstitial pneumonias are of two types : 1. Lymphoid interstitial pneumonia 2. Non specific Interstitial pneumonia these are to be identified and treated.
- To avoid all these complications preventive measures like pneumococcal vaccine, prophylaxis to the PCP and HAART to be given.

AIMS AND OBJECTIVES

AIMS:

- TO STUDY THE VARIOUS PULMONARY OPPORTUNISTIC INFECTIONS IN HIV/AIDS, AND ASSOCIATION WITH CD4+ T CELL COUNT.

OBJECTIVES:

CLINICAL PROFILE OF OPPORTUNISTIC INFECTIONS.
ASSOCIATION WITH CD4+ T CELL COUNT.

MATERIALS AND METHODS

- PLACE OF STUDY: KAMINENI INSTITUTE OF MEDICAL SCIENCES HOSPITAL, NARKETPALLY
- DURATION OF STUDY: OCT-2013 to SEP-2015
- TYPE OF STUDY: CROSS-SECTIONAL STUDY
- SAMPLE SIZE: 100

INCLUSION CRITERIA:

- Age more than 15 years
- Male and Female are included
- HIV positive patients with respiratory manifestations like cough, cough with expectoration, dyspnea, pleuritic chest pain, fever, haemoptysis.

EXCLUSION CRITERIA:

- known hiv patients on anti-retroviral therapy.
- patients harboring pulmonary opportunistic infections, who are immunosuppressed because of causes other than hiv like chemotherapy, malignancy, organ transplantations.
- patients with acute retroviral syndrome

INVESTIGATIONS:

- CONFIRMATION OF HIV STATUS IN ICTC KIMS NARKETPALLY.
- CBP, ESR, CUE, RFT, S. ELECTROLYTES
- SERUM LDH
- CHEST X-RAY
- ECG
- MANTOUX TEST
- SPUTUM FOR GRAM STAIN, ZN STAIN, GIEMSA, SILVER METHANAMINE STAINS
- SPUTUM FOR CULTURE AND SENSITIVITY
- CD4+ T CELL COUNT
- HRCT CHEST IF REQUIRED

OBSERVATIONS & ANALYSIS:

Table 1 DISTRIBUTION of hiv/aids cases according to age in years

AGE GROUP	NO OF PATIENTS (N=105)	PERCENTAGE %
15-30yrs	17	16
31-40yrs	55	53
41-50yrs	25	24
>51	8	7

Out of 105 patients, most of the patients 55 (53%) were in between 31-40 years age group.

Table 2 DISTRIBUTION of hiv/aids cases according to sex

SEX OF PATIENT	NUMBER (N=105)	PERCENTAGE (%)
MALES	79	76.6
FEMALES	26	23.4

Out of 105 patients, majority 79 (76.6%) were males

Table 3 DISTRIBUTION of cases ACCORDING TO CLINICAL PRESENTATION

PRESENTATION	NO OF PATIENTS	PERCENTAGE (%)
FEVER	90	85.7%
WEIGHT LOSS	85	80.9%
COUGH	70	66.6%
COUGH WITH EXPECTORATION	65	61.9%
SHORTNESS OF BREATH	50	47.6%
PLEURITIC CHEST PAIN	20	19%
HEMOPTYSIS	15	14.2%

Most common symptom observed was fever (90 cases,85.7%) followed by weightloss (85 cases,80.9%).

Table4 DISTRIBUTION OF OPPORTUNISTIC INFECTIONS ACCORDING TO CHEST XRAY FINDINGS

OI	RADIOLOGICAL FINDINGS ON CHEST X RAY						TOTAL
	FOCAL INFILTRATES	DIFFUSE INFILTRATES	PERIPHERAL INFILTRATES	FIBROCALCARY LESIONS	PLEURAL EFFUSION	INTERSTITIAL INFILTRATES	
PTB	12	17	0	10	5	0	44
PCP			3			29	32
BACTERIAL PNEUMONIAS	15	8	0	0	6	0	29
FUNGAL PNEUMONIAS	5	0	0	2	0	0	7

Most common cxr finding in ptb is diffuse infiltrates, most common cxr finding in PCP is interstitial infiltrates,most common cxr finding in bacterial and fungal pneumonias is focal infiltrations.

Table 5 Distribution of BACTERIAL PNEUMONIA cases according to individual organisms

BACTERIA	NO. OF CASES (n=29)	%
STREPTOCOCCUS PNEUMONIA	15	51.7
Haemophilus influenza	8	27.5
KLEBSIELLA PNEUMONIAE	4	13.7
PSEUDOMONAS AERUG	2	6.8

MOST COMMON BACTERIA ISOLATED WAS STREPTOCOCCI (15cases,51.7%) FOLLOWED BY Haemophilus influenza(8 cases,27.5%).

Table 6 Distribution of FUNGAL PNEUMONIAS according to individual organisms

FUNGI	NO OF CASES (n=7)	%
CANDIDA ALBICANS	5	71.4
ASPERGILLUS FUMIGATUS	2	28.6

MOST COMMON FUNGUS ISOLATED WAS CANDIDA ALBICANS(5 CASES,71.4%).

Table 7 DISTRIBUTION OF CASES ACCORDING TO CD4+ T cell COUNTS

CD 4 COUNT CELLS/µl	NO OF PATIENTS (n=105)	PERCENTAGE (%)
>500	4	3.8
500-400	8	7.6
400-300	20	19
300-200	30	28.5
200-100	38	36.1
<100	5	4.7
TOTAL	105	100%

Out of 105 patients,38 patients(36.1%) have CD4 count between 100-

200followed by 30 patients(28.5%) have CD4 count between 200-300

Table 8 DISTRIBUTION OF OPPORTUNISTIC INFECTIONS ACCORDING TO CD4+ T cell COUNT

OI	>500 n=1	500-400 n=5	400-300 n=16	300-200 n=25	200-100 n=51	<100 n=15	TOTAL
PTB	0	2	7	11	20	4	44
PCP	0	0	3	5	19	5	32
BACTERIAL PNEUMONIAS	1	3	6	9	10	1	29
FUNGAL PNEUMONIAS	0	0	0	0	2	5	7

Most case of PTB and PCP occur between cd4 counts of 100-200 ,and most cases of fungal pneumonias occur between cd4 counts of 1-100, most cases of bacterial pneumonias occur between cd4 counts of 100-400.

ANALYSIS WITH OTHER STUDIES

Table 9 Comparison of AGE distribution with other studies

SERIES	MOST COMMON AGE GROUP INVOLVED
PRESENT SERIES	31-40
MANIPAL SERIES	31-40
MOORE et..al SERIES2	31-40

Most common age group involed in all series is same (31-40)

Table 10 Comparison of SEX DISTRIBUTION with other studies

SERIES	MALES	FEMALES
PRESENT	76.6	23.6
MANIPAL	80	20
MOORE..etal2	82	18

MALES ARE MORE COMMONLY INVOLVED THAN FEMALES IN ALL STUDIES.

Table 11 Comparison of SYMPTOMATIC presentation with other studies

SERIES	MOST COMMON SYMPTOM
PRESENT	FEVER (85.7 %)
MANIPAL	FEVER (90%)
MOORE..etal 2	FEVER (82 %)

MOST COMMON SYMPTOM IN ALL SERIES IS FEVER

Table 12 COMPARISON OF OCCURANCE OF VARIOUS OPPORTUNISTIC INFECTIONS IN MOST COMMON CD4 COUNT RANGE WITH OTHER STUDIES

SERIES	CD4 RANGE
PRESENT	100-200
MANIPAL	100-200
MOORE.. Etal 2	1-100

IN WESTREN POPULATION MOST INFECTIONS OCCUR IN THE CD4 COUNT BETWEEN 1-100, IN INDIAN POPULATION MOST INFECTIONS OCCUR IN THE CD4 COUNT BETWEEN 100-200

Table 13 Comparison of MEAN CD4 COUNT for various opportunistic infections with other studies

SERIES	PTB	PCP	BACTERIAL PNEUMONIAS	FUNGAL PNEUMONIAS
PRESENT	148	110	168	84.5
MANIPAL	125	79.4	139	79
MOORE.. etal2	36	59	84	36.5

MEAN CD4 COUNT IN WESTREN STUDIES IS BELOW 100,BUT IN INDIAN STUDIES IS BETWEEN 100-200, BUT BACTERIAL INFECTIONS EQUALLY DISTRIBUTED IN CD4 COUNTS RANGE BETWEEN 100-400

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