

# Clinical & epidemiological profile of malignancy in HIV: a retrospective study

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## Abstract

**Background:** HIV is the etiologic agent of AIDS. HIV infection is associated with various types of opportunistic infections and malignancies. The incidence of malignancies among Human Immunodeficiency Virus (HIV) infected patients is known to be higher than in the general population. The study was aimed to know the profile of malignancy in HIV infected individuals. **Methodology:** Study was a Retrospective study & data was collected from medical records department using semi structured proforma. 40 HIV subjects diagnosed with malignancy was obtained. Stastical analysis of data was done using Chi square test and Fisher's exact test. **Results:** Out of 40 HIV subjects diagnosed with malignancy in our study 62%, were males and 38% were females, 95% were receiving ART, Predominantly the patients were in STAGE 4 and NHL was the most common malignancy in our study. CD4 count has no correlation with the incidence of malignancy. **Conclusion:** Age and Gender distribution does not affect the type of malignancy. Non AIDS defining malignancies are more prevalent than AIDS defining malignancies. NHL is the commonest type of AIDS defining malignancy. CD4 count and HIV stage does not predict the type of malignancy, immunodeficiency can be a trigger for development of malignancy.

**Keywords:** Malignancy in HIV, AIDS defingn malignancy, Opprtunistic infection, ART therapy

## Introduction

Cancer is a significant cause of mortality and morbidity in people infected with HIV [1]. In-fact 30% to 40% will develop a malignancy during their lifetime [2]. The majority of cancers affecting HIV- positive people are those established as AIDS defining: Kaposi's sarcoma, Non-Hodgkin's lymphoma and Invasive cervical cancer [3,4]. However, other types of cancer also appear to be more common among those infected with HIV. While not classified as AIDS defining these malignancies are affecting the HIV/AIDS community greatly and has been referred as "AIDS associated malignancies" [1,5] or "opportunistic "cancers [2]. Analysis have revealed a 2-3 fold increase in overall risk of developing these cancers [3,5,6]. As patients live longer with HIV, morbidity and mortality from cancers are increasing. We must be able to quantify and characterize cancers in HIV, as it may vary in different populations around the

world [3].

Prevention strategies for virus associated malignancies need to be investigated. Effective and feasible treatments are under development and need to be tested worldwide [2,6].

India has the second largest number of HIV/AIDS patients in the world. However, studies performed in the area of HIV related malignancies are few [7]. With the availability of ART and prevention of opportunistic infections, there is an increase in life expectancy of HIV infected individuals and there by an increase in HIV related malignancies and other chronic diseases is expected.

Real incidence of AIDS associated cancers in Indians is not known. There are only few reports in Indian literature [8,9]. It may be roughly 3 -4 percent in Indians while in developed countries, it may be 10 -34 % [10] and hence the need for this study was to

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evaluate epidemiological variations in prevalence of cancer.

## Materials and Methods

Present study was a retrospective study conducted between January 2012 to July 2013. Data was collected after taking approval from the Institutional Ethics Committee of KMC ( Kasturba medical college) , Mangalore and written consent from the head of Medical Records Department KMC hospital Attavar and Government Wenlock Hospital Mangalore . All HIV positive (VCTC positive) patients case files who

had malignancy ( Biopsy proven) from January 2001 and also those detected with malignancy having HIV up to December 2011 were collected. Data was collected using a semi structured proforma which includes basic information of the subjects like Name, Age Sex and residence and specific information like ART status, Type of malignancy, Stage of malignancy.

## Statistical method

Data was analyzed using chi-square test and fishers exact test.

## Results

A total of 40 case files of HIV patients with malignancy were obtained & studied from January 2001 to December 2011, registered in Medical Records Department (MRD) of Government Wenlock hospital, Mangalore and Kasturba Medical College (KMC) Hospital Attavar, Mangalore. In our study out of 40 HIV subjects with malignancy, 35% were in the age group of 40 yrs and below, 47.5% were in 41 to 50 yrs and 17.5% were in 51 to 60 yrs. Mean age of the study subjects is 44 years as shown below. In our study out of 40 subjects with malignancy 62% were males and 38% were females.

**Table 1: Age and Sex distribution**

Age distribution			Sex distribution		
Age	Frequency	Percent	Sex	Frequency	Percent
40 and below	14	35.0	Male	25	62
41 – 50	19	47.5	Female	15	38
51 – 60	7	17.5	Total	40	100
<b>Total</b>	<b>40</b>	<b>100.0</b>			

**Table 2: ART status**

ART status	Frequency	Percent
N	2	5.0
Y	38	95.0
<b>Total</b>	<b>40</b>	<b>100.0</b>

In our study out of 40 patients with Malignancy 95% were receiving ART and only 5% were not receiving ART.

**Table 3: Stage of HIV (WHO staging)**

HIV STAGE	Frequency	Percent
2	6	15.0
3	13	32.5
4	21	52.5
Total	40	100.0

In our study out of 40 patients with malignancy 53% were in Stage 4, 32% were in Stage 3 and 15% were in Stage 2. It is observed that predominantly patients were in Stage 4.

**Table 4: Type of Malignancy**

	Frequency	Percent
Breast carcinoma	2	5.0
Colon cancer	1	2.5
Invasive cervical Carcinoma	2	5.0
Carcinoma pancreas	1	2.5
Post pharyngeal wall carcinoma	1	2.5
Ewing's sarcoma	1	2.5
Hodgkin's lymphoma	6	15.0
Leomyoma	1	2.5
Multiple myeloma	1	2.5
Non Hodgkin's lymphoma	16	40.0
Post cricoid squamous cell carcinoma	1	2.5
Squamous cell carcinoma of lung	2	5.0
Squamous cell carcinoma of maxillary sinus	1	2.5
Squamous cell carcinoma of pyriform fossa	1	2.5
Squamous cell carcinoma of stomach	1	2.5
Seminoma of testis	1	2.5
Tonsillar squamous cell carcinoma	1	2.5
<b>Total</b>	<b>40</b>	<b>100.0</b>

In our study, among patients with HIV infection 40% (16 patients) had Non Hodgkin's lymphoma (NHL), 15% (6 patients) had Hodgkin's Lymphoma and 5% (2 patients) had Invasive Cervical cancer (Squamous cell type) Breast and lung carcinoma. From the above observation Non Hodgkin's lymphoma is the most common malignancy in our study.

**Table 5: Chart showing CD4 count and type of Malignancy**

CD4 count	Frequency	Percent	Type of Malignancy	Frequency	Percent
< 200	32	80.0	AIDS defining malignancy	18	45.0
200 – 349	5	12.5	Non AIDS defining malignancy	22	55.0
350 and above	3	7.5	<b>Total</b>	<b>40</b>	<b>100.0</b>
<b>Total</b>	<b>40</b>	<b>100.0</b>			

We found in our study that out of 40 patients 80% had CD4 count <200, 12% had CD4 count in between 200-349 and only 8% had CD4 count 350 and above. In our study out of 40 malignancy patients 45% had AIDS defining malignancy and 55% had Non AIDS defining malignancy

**Table 6: Comparison of CD count with type of malignancy**

		Type of Malignancy		Total
		AIDS Defin Malignancy	Non AIDS Defin Malignancy	
CD4 count	<200	16 88.9%	16 72.77%	32 80.0%
	200-349	2 11.1%	3 13.6%	5 12.5%
	350 and above	0 .0%	3 13.6%	3 7.5%
Total		18 100.0%	22 100.0%	40 100.0%

Fishers exact test  $p=0.358$ , NS (not significant)

In our study, among the patients with AIDS defining malignancy 89% (16patients) had CD4 count $<200$ . Among patients with Non AIDS defining malignancy, around 73% (16patients) had CD4 count $<200$ . The association of type of malignancy with CD4 count is statistically not significant ( $p=0.358$ ).

In our study we found that 55.6% (10) of patients with AIDS defining malignancies were in the age group of 41 to 50yrs. 41% (9) of patients with NON AIDS defining malignancies were also in the same age group. The association between age distribution and type of malignancy was not significant ( $p=0.621$ ).  $X^2=0.954$ , NS

It was also noticed from our study that both AIDS and NON AIDS defining malignancies were common in male gender, with around 72% (13) of patients with AIDS defining malignancies were male. The association of gender with type of malignancy was not significant ( $p=0.251$ ),  $X^2=1.320$ . All of our patients with NON AIDS defining malignancy were on ART (22 patients, 100%). Among the patients with AIDS defining malignancy around 89% (16 patients) were on ART. The p value for the above association is 0.109 implying that it is statistically not significant. Out of 40 patients 21 were in HIV stage 4. Among the patients with stage 4 HIV, around 86% (18) had CD4 count $<200$ . Comparison of CD4 count with HIV stage is statistically not significant ( $p=0.487$ ).

## Discussion

In our study majority of our patients were males (62%) and mean age group of the patients was 44yrs. Our results are in accordance with similar study done by Venkatesh KK et al [11]. In our study majority of AIDS Defining malignancies were seen in male patients (72%), this is in accordance with study done by Ravindra joshi et al [12]

Majority (53%) of patients in our study were in WHO stage 4, indicating that malignancies are more common in the advanced stages of HIV, this is in agreement with the study done by Venkatesh KK et al [11].

Non Hodgkin's lymphoma was the commonest malignancy in our study and is also the most commonest AIDS Defining malignancy. A similar study done by Uday Ravindra Joshi et al also showed

NHL as the most common malignancy in their study [12].

Kaposi's sarcoma was the commonest cancer followed by NHL in a study by M. C. F. Prospero et al [13]. No case of Kaposi's sarcoma was seen in our study. Study done by Uday Ravindra et al [12] and by Venkatesh KK et al [11] did not show a single case of Kaposi's sarcoma.

In our study it was observed that Hodgkin's lymphoma was the most common, Non AIDS Defining malignancy and lung carcinoma was the next most common, Non AIDS Defining malignancy. Which goes in accordance with the data published by Shiel MS, Pfeiffer RM et al [14].

In our study it was observed that 80% of the patients had CD4 count less than 200 indicating that immunodeficiency can be a trigger for development of malignancy. Similar results were observed by M.C. F. Prospero et al [13].

In our study it was observed that Non – AIDS Defining malignancy (55%) were most prevalent than AIDS Defining malignancies (45%) this shows the increase trend of Non AIDS defining malignancies post ART era. This is in accordance with the study Silverberg et al [15] and also in agreement with data published by Shiel ms et al [14].

## Conclusion

Age and Sex distribution has no correlation with the Type of Malignancy in HIV. CD4 count levels and HIV staging are not predictors of the Type of Malignancy in HIV patients, Non Aids defining Malignancies are increasing than AIDS defining Malignancies in HIV patients and NHL still remains the commonest type of AIDS defining malignancy in Indian setting.

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