

A study of CD4 count and cervical epithelial abnormality in HIV positive women

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Abstract

Introduction: Cervical epithelial cell abnormalities (ECA) can result in cervical cancer which is the most common cause of cancer related death especially in developing countries. The aim of the present study is to find the association of CD4 count and Cervical epithelial abnormality in HIV positive women. **Materials and Methods:** A study of association between cervical epithelial abnormality and CD4 count in HIV positive women was taken up in a Care and Support Hospital in collaboration with the Department of Pathology, Government Medical College, Ananthapuramu. Based on the observations, periodic cervical screening in HIV positive women is emphasized. **Results:** 3.03% of women showed presence of cervical epithelial abnormality among HIV positive women. More number of HSIL (50%) followed by LSIL (28.2%), ASCUS (20.16%) and Carcinoma Cervix (1.6%). **Conclusion:** Present study also emphasizes that patients with low CD4 count are at high risk of developing precancerous lesions of cervix. Hence periodic biannual cervical screening is required for HIV positive women whose CD4 count is below 200, to bring down the incidence of cervical malignancy and premalignant conditions.

Key words: Cervical screening, HSIL, LSIL, ASCUS, CD4 T-cell Count

Introduction

The Human Immunodeficiency Virus (HIV) is a retrovirus that infects cells of the immune system, destroying or impairing their function. As the infection progresses, the immune system becomes weaker, and the person becomes more susceptible to infections. The Most advanced stage of HIV infection is Acquired Immunodeficiency Syndrome (AIDS).

HIV positive status is associated with several infections. People are more prone for all types of infections including HPV. Decreased CD4 count is associated with weakened immune system and women may progress to premalignant to malignant status. ART should start to HIV patients infected with TB irrespective of CD4 count as per World Health Organization (WHO). If CD4 count is less than 50

cells/mm³ in HIV associated TB patients then ART should start within 2 weeks of onset of ATT. If CD4 count more than 50 cells/mm³ then ART should initiate within 8 weeks of onset of ATT. As per WHO different treatment strategies has given to HIV-TB dual infection based on many surveys [1].

Cervical epithelial cell abnormalities (ECA) can result in cervical cancer which is the most common cause of cancer related death especially in developing countries [2]. Cervical ECA can be detected by Pap smear. HIV and HPV infections increase the risk of cervical cancer.

Almost more than 99.7% of cervical cancers are caused by HPV infection, High risk HPV most commonly type 16 and 18. HPV results in various types of benign papillomatous lesions of the skin and mucosal basal epithelium [3, 4]. Low risk HPV types (6 & 11) are responsible for benign genital warts.

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Risk factors for ECA which are also predictors includes CD 4+ T-cell count < 350 cells/ μ l, HIV infection, Multiple sexual partnership, early age at first sexual contact, parity greater than three, long term OCP use. Pap smear is most useful method for the accurate diagnosis of cervical epithelial cell abnormalities [5]. Regular gynecological screening among women with risk factors, also helps to decrease the incidence of HPV infection [6, 7]. Current study was taken up as there is limited research were done, specially examining the association between cervical epithelial abnormality and CD4 count. The aim of the present study is to find the association of CD4 count and Cervical epithelial abnormality in HIV positive women.

Materials and Methods

Present study done for a period of two years at Department of Pathology, Government Medical College, Ananthapuram. Informed consent has taken from all the patients. Age of the patient was also

Results

A total of 4086 women were screened for a period of two years, 2014 and 2015.

Out of 4086 women screened, 124 smears were showing epithelial abnormality, was approximately 3.03%

Epithelial abnormalities:

- ASCUS: 25 (20.16%),
- LSIL: 35 (28.2%),
- HSIL: 62 (50%)
- SCC: 01 (<1%),
- Adeno carcinoma: 01 (<1%)

Table-1: Spectrum of cervical epithelial lesions = % of occurrence.

Lesion	Number of cases	% of Occurrence
ASCUS	25	20.16%
LSIL	35	28.2%
HSIL	62	50%
SCC	01	<1%
Adeno carcinoma	01	<1%

Table-2: Age wise occurrence of epithelial abnormalities.

Age in Years	Epithelial abnormality
20-30	20
31-40	58
41-50	32
51-60	07
61-70	03
> 70	---

Table-3: CD4 count and Epithelial cell abnormalities.

Epithelial abnormality	CD4 count below 200	% of occurrence
LSIL	20	57%
HSIL	25	40%

considered in data analysis. HIV positive women, in the age group of 20 to 60 years, attending the Care and Support Center run by Rural Development Trust (RDT) were the subjects of the study.

PAP smears were collected using wooden Ayer's spatula. Thorough general physical examination and pelvic examination were done prior to the PAP smear collection. Serological status was also confirmed prior to PAP smear collection. PAP smears thus collected are fixed with cytofix and submitted for Papinicolou staining. PAP smears were reported using Bethesda method. On the same day of PAP smear collection, blood sample was collected for CD4 estimation.

For ASCUS and LSIL repeat PAP was advised after 6 months. For HSIL and others confirmation by cervical biopsy was done. All the data were entered into excel sheet and statistical analysis was done as percentages.

CD4 Count

Out of 124 cases

- 20 were with less than 200, has LSIL
- 25 were with less than 200 has HSIL
- SCC and adeno carcinoma also had CD4 less than 200

Discussion

Cervical ECA can present as mild to severe dysplasia and also as cervical cancer [2]. Cancer screening is now an important component of health maintenance in HIV clinical practice. HIV infected patients are at enhanced risk for several cancers compared to general population. Cancer screening is more relevant in aging HIV infected patients. Persistence of HR-HPV infection among women leads to development of cervical intraepithelial neoplasia. Incidence of HPV infection is more among women in late teens and early twenties following sexual exposure [8].

Incidence of cervical cancer in general population is 7 per 100,000 and it is 5-6 times more in HIV infected persons. Few studies documented that risk of HPV related cervical ECA increases with HIV [9-11].

20-60% of HIV positive women show signs of pre-cervical cancer. One of the major causes of pre cervical cancer is sexually transmitted HPV. 75-80% women with HIV also have HPV [12]. Women with HIV have weakened immune system, which allows HPV to survive in cervix and cause precancerous lesions.

India has third largest number of people living with HIV/ AIDS, and accounts for nearly 1/4th of global cervical cancer deaths. Of the 2.09 million people living with HIV/AIDS in India, 39% are women [13].

Hospital based studies in eastern part of India and northern India showed prevalence of HPV as 46.2% and 20% respectively [14,15]

In the studies presented previously it is found that having lower CD4 count and weakened immune system are the risk factors for precervical or cervical cancers [16]. In a recent study from Mumbai, cervical abnormalities were observed in 19% of HIV positive women [17].

Melkamu Getinet et al [2] documented that significant higher percentage of ECA 17.8% was observed among HIV positive women when compared to HIV women (10.3%).

Present study focuses on relationship between CD4 count and cervical abnormality in HIV positive women. 3.03% of women showed presence of cervical epithelial abnormality. More number of cases is found in the age group of 31- 40 years followed by around 50 years. This may be due to prolonged exposure and persistent HPV infection [18].

Compared to other study [19] ASCUS (1.6%); LSIL (17.11%); HSIL (5.35%) and Carcinoma Cervix (1.6%), present study shows more number of HSIL (50%) followed by LSIL (28.2%), ASCUS (20.16%) and Carcinoma Cervix (1.6%). Melkamu Getinet et al [2] reported that ASCUS -5.1% Low grade SIL-3.8%, High grade SIL- 4.1%, Squamous cell Carcinoma - 1%, ASC -0.0%.

With reference to CD4 count 57% of the study group with LSL and 40% with HSIL are observed. Increased risk of cervical cytologic abnormalities in patients with low CD4 count has been observed in other studies as well [20, 21].

Conclusion

For the two year period with the sample size of 4065, 124 women were detected to have abnormal cervical cytology. CD4 count was less than 200 in 45 cases.

Present study also emphasizes that patients with low CD4 count are at high risk of developing precancerous lesions of cervix. Hence periodic biannual cervical screening is required for HIV positive women whose CD4 count is below 200, to bring down the incidence of cervical malignancy and premalignant conditions.

Limitation of the study: Two year period and lack of demonstration of HPV in the abnormal epithelial cells.

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