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ORIGINAL ARTICLE

Conventional Pap Smear Screening in HIV Seropositive Women in South India

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Abstract
Objectives To assess the prevalence of Pap smear abnormalities and to characterize the associated risk factors in HIV seropositive women.
Material and methods We conducted a cross-sectional study on 252 HIV seropositive women in and around Krishna district, Andhra Pradesh, India by screening them for cervical cytological abnormalities by means of conventional Pap smear screening and the abnormalities reported as per modified Bethesda system.
Results The prevalence of Pap smear abnormalities in HIV seropositive women was found to be 7.17 % which was a twofold increased risk as compared to the general population. On analysis of the risk factors like younger age for abnormal pap smears, mean CD4 count, duration of disease, and ART/HAART therapy the difference between the two groups of HIV seropositive women with normal pap smears and seropositive women with abnormal pap smears was found to be not statistically significant.
Conclusion HIV/AIDS is associated with a twofold increased risk for cervical cytological abnormalities, and hence the need for periodic pap smear screening in this high risk group to reduce the global burden of cervical cancer.

Keywords HIV · Pap smear screening · Anti Retro Viral Therapy (ART) · Highly Activated Anti Retro Viral Therapy (HAART) · Cervical cytological abnormalities

Introduction

HIV/AIDS is a global pandemic with cases reported from virtually every country. A total of 33 million people now live with HIV/AIDS [1]. Worldwide women constitute half of all people living with HIV/AIDS. For women in their reproductive years (15–44), HIV/AIDS is the leading cause of death and disease worldwide. All over the globe more young women than ever before are now living with HIV.

Cervical cancer is the fifth most deadly cancer in women worldwide [2]. The estimated number of new cervical cancer cases per year is 5,00,000, of which 79 % occur in developing countries. WHO estimated that each year over 1.3 lakh women are diagnosed with cervical cancer and over 74,000 die of cervical cancer in India. The cervical cancer burden in India alone is estimated to be 1,00,000 in 2001. The most important risk factor in the development of cervical cancer is infection with a high risk strain of HPV.

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According to the American Cancer Society, HIV infection is a well-recognized co-risk factor for Carcinoma Cervix. Carcinoma cervix is now recognized as preventable by cervical screening and curable if detected at an early stage; and herein comes the role of Pap smear. The growing risk of cervical cancer in women in India (aged 20–64 years) is 24 % compared to 1.3 % for the world.

Pap smear test is the most successful cancer screening technique in history. A Pap test can detect about 98 % of cancer of cervix and 70 % endometrial cancers.

The background of selecting this study is due to the high prevalence of HIV in Krishna District of Andhra Pradesh from South India (percentage of Seropositivity from Krishna District for the year 2009 was 14.9 %; percentage of Seropositivity from female population of the same was 16.6 %) [3].

The aim of the study is to know the prevalence of Pap smear abnormalities and to characterize the risk factors associated with them in HIV seropositive women in and around Krishna District, Andhra Pradesh, India.

Methods

This is a cross-sectional study done on 252 HIV seropositive women attending the Gynecology OPD and ART(Anti Retro Viral Therapy) Centre, Government General Hospital, Vijayawada from June 2008 to March 2010 after the Ethical Committee's approval. HIV seropositivity was confirmed from recognized ICTC centres by 3 HIV Rapid antibody tests (Comb-AIDS, TRIDOT test, and EIA-Comb test). After the women were counseled about the procedure and after obtaining informed consent, socio demographic data and other relevant clinical details were collected in the form of structured questionnaires, and Pap Smears were collected as per conventional method and sent to the Pathology laboratory at Government General Hospital, Vijayawada where the slides were stained with Papanicolaou stains and cytological abnormalities reported as per Modified Bethesda Classification, 2001.

The demographic and clinical data of 252 patients were analyzed by univariate analysis, and the statistical significance of risk factors and abnormal Pap smears tested by Chi-square test and p value <0.05 was considered statistically significant.

Results

Of the 252 women studied, 18 had Pap smear abnormalities, constituting 7.17 % of cases as shown in Table 1.

Table 1 Pap smear results

Pap smear report	No. of cases	Percentage
Normal	47	18.65
Inflammatory	187	74.21
ASCUS	2	0.8
LSIL	11	4.37
HSIL	3	1.2
AGUS	2	0.8

Table 2 Analysis of risk factors for abnormal Pap smears

Risk factor	No. of abnormal Pap smears	No. of normal Pap smears	p value
Age <30 years	8 cases	142 cases	0.1
Age >30 years	10 cases	92 cases	
Mean age (years)	32.8	30.55	
Disease duration			
<5 years	14 cases	178 cases	0.5
>5 years	4 cases	56 cases	
Cd4 count			
<350 cells/mm^3	9 cases	118 cases	0.1
>350 cells/mm^3	9 cases	116 cases	
Mean cd4 count	413.44	453.03	
ART usage			
Yes	11 cases	96 cases	0.1
No	7 cases	138 cases	

Table 3 Age distribution of cases

Age	No. of cases	Percentage
20–25	42	16.66
26–30	105	41.66
31–35	70	27.77
36–40	21	8.33
41–45	12	4.76
46–50	1	0.4
>50	1	0.4

We analyzed the data of 18 women with Pap smear abnormalities for the risk factors like younger age, lower CD4 count, longer duration of disease, and usage of ART by Chi-square test and taking p value < 0.05 as statistically significant. The following results were obtained (Table 2).

Age: Age distribution of cases showed that majority were in the 26-30 year age group as shown in Table 3.

Mean age of the abnormal Pap smear group was 32.8 years, while the mean age of the group with normal

Pap smears was 30.55 years, and the difference was not significant ($p = 0.1$).

Duration of disease: In the abnormal pap smear group, 14 cases had disease longer than 5 years, while 4 had disease of <5 years, but the difference was not significant ($p = 0.5$).

CD_4 count analysis: of the 252 women, 49.6 % had counts <350 cells/mm^3, while 50.4 % had counts >350 cells/mm^3. Mean CD_4 count of abnormal pap smear group and normal pap smear group was 413.44 and 435.03, respectively, and the difference was not significant ($p = 0.1$).

Anti Retro Viral Therapy (ART) usage: Majority of them (57.5 %) were not on ART, while 42.4 % were on some form of ART use.

In the group with abnormal Pap smears, 11 of them were on ART, while 7 had not used ART, and on further analysis this difference was not significant ($p = 0.1$).

Discussion

With HIV/AIDS, becoming a modern global pandemic, and its association with cervical cancer and its precursor lesions, the present study of estimating the prevalence of Pap smear abnormalities in HIV seropositive women in India gains significance.

The prevalence of abnormal Pap smears from our study was found to be 7.17 %, which is a twofold increased risk as compared to the general population [4]. Studies from South Africa [5], Argentina [6], and Thailand [7] have reported a threefold to sevenfold increased risk of cervical cytological abnormalities in this group of women. Our prevalence rate of 7.17 % is comparable to a study done by Joshi et al. [8] from Pune who studied 287 seropositive women and observed a prevalence rate of 6.3 % of abnormal pap smears in them.

Analysis of abnormal Pap smears showed that inflammatory smears accounted for the majority, i.e., 74 %, of cases, which is similar to other studies [8]. LSIL lesions accounted for 4.37 % which is significantly higher than the 1.6–2.4 % reported in the literature from population based surveys [4]. HSIL reported from our study is 1.2 % which is comparable to other studies [5, 6]. Gaym et al. [5] reported to have observed these lesions in women younger than 30 years, but in our study these lesions occurred at the usual age distribution for high grade lesions (around 35–40 years of age). The prevalence of ASCUS in our study was 0.8 % (2 cases).

AGUS is identified in 2 cases (0.8 %) from our study. No case of invasive cervical cancer has been reported from our study, though studies [6, 7] have reported it at a rate of 0.2–0.4 %.

In our study we found that the relationship between Pap smear abnormalities and mean age, duration of disease, CD_4 count, and ART use was not statistically significant.

Worth noting is an important quality limiting factor when Pap smears are collected using the Ayre's spatula viz. a limited number of endocervical cells are collected. It is therefore possible that what we have identified in this study is an underestimate of the true prevalence of abnormal cervical lesions in this population.

Conclusion

With the dual epidemic of HIV and cervical cancer gaining a foothold and reaching pandemic proportions, our present study of estimating the prevalence of Pap smear abnormalities in HIV seropositive women and the risk factors associated with them has shown a twofold increased risk of cervical cytological abnormalities, while the risk factors for abnormal cervical smears like younger age, lower CD_4 counts, longer duration of disease, and ART/HAART therapy were found to be of no statistical significance.

This study represents a relationship between HIV seropositivity and abnormal Pap smears and stresses the need for periodic Pap smear screening in this high risk population to decrease the global burden of cervical cancer.

Worth noting is an underestimate of the true prevalence of precancerous lesions as we have studied with conventional Pap smear screening wherein the superiority of liquid based cytology has been proved.

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