STUDY OF CERVICAL CYTOLOGICAL CHANGES IN HIV PATIENTS

Mirza Asif Baig*, Anil K. Sirasgi

*Former Assistant Professor BLDUs shri B.M. Patil Medical college, hospital and research centre Bijapur, Karnataka, INDIA
Associate professor Govt medical college Gulbarga, Karnataka INDIA

ABSTRACT

Objective: The objective of this study was to isolate, identify and determine the antibiotic susceptibility pattern of aerobic causative infectious agents of wound infection from pus specimen. Determination of prevalence of methicillin-resistance among S. aureus (MRSA) and their Minimum Inhibitory Concentration (MIC) to vancomycin was the other objective. Methods: The study was carried out in KIST Medical College and Teaching Hospital, Lalitpur, Nepal from November 2012 to June 2013. Pus sample collected aseptically were processed in the microbiology laboratory. The culture of the specimen, identification of the isolates and their antibiotic susceptibility testing were done as per the standard guidelines. Results: In a total of 149 culture positive specimens, 83(55.7%) were S. aureus, a leading cause of wound infection followed by (23.4%) belonging to the members of Enterobacteriaceae family. Coagulase Negative Staphylococci accounts for 14(9.4%), 10(5.4%); Acinetobacter spp., 5(3.4%); Pseudomonas aeruginosa and 4(2.7%); Enterococcus spp. In vitro susceptibility testing of all of these isolates showed that Imipenem was the most efficient drug for the Gram-negative isolates. Vancomycin was reported to be the most sensitive drug for Gram-positive isolates with 100% susceptibility rate. Among 83 S. aureus, the prevalence of MRSA was 27(32.5%). Detection of inducible clindamycin resistance in S. aureus showed that 10(12%) isolates with 100% susceptibility rate. MIC determination is more sensitive than disc diffusion. Conclusion: S. aureus is one of the major pathogens that causes wound infections. Prevalence of drug resistant superbugs like MRSA is increasing which is a major concern and thus, antibiotic susceptibility testing is crucial in empirical drug therapy. MIC determination is more sensitive than disc diffusion.

Keywords:
β-lactamase
Inducible Clindamycin Resistance
MRSA
S. aureus
Wound Infection

Introduction

HIV is one of the most dreaded infections today. The disease that was first recognized in the 1980s had spread throughout the world within a relatively short span of time. India has a population of over one billion people. In a country which is still developing, where resources are limited and cannot be obtained by everybody, where there is illiteracy, poor healthcare facilities, lack of proper health education and general ignorance along with social taboos, the management of HIV cases and the prevention of spread of the dreaded disease poses a daunting challenge.

Ever since the first HIV case in India was detected in sex workers in Chennai, Tamil Nadu; in 1986, the number of people living with HIV has risen to 2.31 million people.2 The alarming rate at which this virus has spread and the large number of lives affected by it makes research in this field --regarding the cause, pathogenicity, spread, effects and prevention of HIV infections–of grave importance.

In Karnataka, a state with a population of around 53 million, HIV prevalence among ante-natal clinic attendees exceeded 1% from 2003 to 2006 and dropped to 0.5% in 2007.3 The average HIV prevalence among female sex workers in Karnataka was just over 5% in 20074 In fact, as was apparent from the course of this research, HIV infection is not only limited to the sex workers but affects people from all social strata, young married, illiterate women included.

As is well known, HIV affects the immune system of an individual, gradually weakening it. The affected individuals are therefore more susceptible to various infections caused by certain Bacteria, Fungi and Viruses. In women one of the important viropathic effects is cervical lesions. It has been reported that cervical intraepithelial lesions have a more aggressive course in HIV-seropositive women than in HIV-seronegative women.5 Women with HIV are at a higher risk of Human Papilloma Virus (HPV) infections, which can cause cervical cell changes (Dysplasia or neoplasia) leading to cervical cancer.6

Pap smear cytology screening is done for the detection of cervical cell changes. This involves the collection of sample cells from the cervix and examining them for changes under the microscope. Since the advent of this technique in the 1950s, it has reduced the number of deaths due to cervical cancers by early detection of the pre-cancerous lesions. The Pap smear procedure is an effective and reliable way to screen for cervical cytologic changes.
REVIEW OF LITERATURE

HIV is now a global Pandemic with more than 33.4 million people affected by it. Out of this 15.7 million are women. An estimated 3.8 million people are living with HIV in south and South-east Asia. Now into its third decade, India’s epidemic is marked by heterogeneity—not a single epidemic but marked by a number of distinct epidemics, in some places, within the same state.

India’s epidemic seems to be following a pattern first described in Thailand. The epidemic shifts from the highest risk group (commercial sex workers, homosexual men, drug abusers) to the Bridge population (clients of sex workers, STD patients, migrant population, population in conflict areas and partners of drug abusers); and then to the general population. The trends indicate that HIV infection is spreading in two ways: from Urban to Rural areas and from individuals practicing high risk behavior to the general population. Data from Ante-natal clinics indicate a rise in HIV infection among women with subsequent rise in HIV infection in children.

Based on sentinel surveillance data, the HIV prevalence in the adult population can be broadly classified into three groups of States/UTs in the country

GROUP 1, where the HIV infection has crossed the 5% mark in the high risk group and 1% or more in the ante-natal women, includes Karnataka.

GROUP 2 includes Moderate prevalence states: where the HIV infection has crossed 5% or more among the high risk groups but the infection is below 1% in antenatal women.

GROUP 3 includes Low prevalence states: where the HIV infection in any of the high risk groups is still less than 5% and is less than 1% among the antenatal women

It is estimated that in 2007, there were 2.4 million people living with HIV/AIDS in India with an estimated adult HIV prevalence of 0.34% (0.25%-0.43%). Out of the estimated number of people living with HIV, 39% were females and 3.5% were children. The HIV epidemic in India is concentrated with high prevalence among the high risk groups. However, heterosexual mode of transmission is still the predominant mode of HIV spread in India.

HIV causes progressive degeneration of the Immune system of the affected individuals targeting mainly the T-Helper cells thus causing progressive deterioration of the CD4 counts. Number of CD4 cells (T-helper lymphocytes with CD4 cell surface marker), used to assess immune status, the need for ART and for defining AIDS among other things. Any individual with a CD4 count of less than 200 is said to have AIDS. Normal CD4 counts age generally within 500. Without ART, there is a significant decline in the CD4 counts directly correlating with the viral load. Hence the screening of CD4 cell counts is an effective way to check the progression of HIV and the response to the Anti-retroviral drug treatment.

The greatest difference in mortality between infected and uninfected people is usually observed between the ages of 20 and 40 years. Women tend to die at an earlier age than men reflecting the fact that the rates of HIV infection typically peak among women much earlier than they do in men.

Diseases and lesions affecting the reproductive tract in association with HIV infection is being increasingly recognized as a serious public health problem. Women are more susceptible to these as many Sexually transmitted diseases and reproductive tract infections are without any clinical manifestations in them. As a result of this, many diseases remain undiagnosed and untreated in them. This causes, frequent, severe and long term morbidity in HIV sero-positive women. In addition to this, these diseases if undiagnosed and untreated can cause adverse effects in the pregnancies of the women affected. This in turn can cause various deformities and early onset of labor. It can also cause uterine infections and the premature rupture of uterine membranes.

HIV positive women can also transfer the virus to the fetus through the placenta or while passage of the baby through the birth canal. Risk of abortion is also increased.

HIV infection and other STIs (both ulcerative and non-ulcerative) increase the transmission of HIV by approximately three to five fold. Vaginal candidiasis may occur earlier than other conditions and may serve as an early marker of HIV infection in women.

The test most frequently used to screen Women for cervical lesions is the Pap screening test. The Papanicolaou test (also called Pap smear, Pap test, cervical smear, or smear test) is a used in to detect premalignant and malignant (cancerous) processes in the cervix. Significant changes can be treated, thus preventing. The test was invented by and named after the prominent doctor. In this test, samples from the cervix are taken with a tool (usually Ayer’s spatula) and a smear is made. The stained smear is then examined under a microscope to check for cytological abnormalities in the cells of the cervix. Prior to the introduction of the Pap test, the cervix was a leading cause of cancer death in women. Since the introductions of the Pap test, deaths caused by carcinoma of the cervix have been reduced by up to 99% in some populations where in women are screened regularly.

In the conventional Pap smear, the physician collecting the cells smears them on a microscope slide and applies a fixative. In general, the slide is sent to a laboratory for evaluation.

Studies of the accuracy of conventional cytology report a Sensitivity of 72% and a Specificity of 94%.

Due to the high specificity and relatively low sensitivity, the Pap smear is routinely used as a screening test and not as a diagnostic procedure. In case of doubtful cases a cervical biopsy is done to confirm the diagnosis. The relative ease, with which the Pap smear can be taken, makes it ideal for an OPD procedure. Hence patient compliance is better as compared to the biopsies which are often done in the Minor OT.

In liquid-based Monolayer cytology, the samples are placed in a vial containing a liquid medium (usually ethanol) that preserves the cells. It is of two types, Sure-path and Thin-prep. The sample from the vial is processed in the laboratory into a thin cell layer, stained and examined under a light microscope.

Studies of the accuracy of liquid based monolayer cytology report a Sensitivity of 61% to 66% and a Specificity of 82% to 91%.

Some 15, but not all studies report increased sensitivity from the liquid-based smears.

Pap smears are routinely used for the screening of cervical lesions in both sero-positive and sero-negative women. According to the 2001 Bethesda System, the Pap smears can be classified as Negative for intraepithelial lesion or malignancy (NILM), Other and Epithelial cell abnormalities.
The use of Pap smears to test a group of HIV-infected women, both pregnant and non-pregnant, showed a high incidence of low grade squamous intraepithelial lesions, but a low incidence the high grade variety. Various studies have also shown that the risk for cervical intraepithelial neoplasia (CIN) is 4 to 5 times higher in HIV-infected than in HIV non-infected women and girls. And HIV infected women are at significantly higher risk for cervical cancer than are HIV-negative women.

The high-risk types of human papillomavirus (HPV) infection of the female genital tract, cervical cytology, and human immunodeficiency virus (HIV) infection in 67 women. Forty-eight women had a history of intravenous drug use, 18 were heterosexual partners of HIV-infected drug users, and one was a transfusion recipient. Patients received a Pap smear, cervico-vaginal lavage for HPV determination by Southern blot, HPV serum antibody by enzyme immunoassay with Western blot confirmation, and thorough screening for other sexually transmitted diseases. 49% women seropositive for HIV had HPV infection, compared with 25% seronegative women (p < 0.05). 40% HIV-positive women had squamous intraepithelial lesions (SIL) on cervical cytology, compared with 9% HIV-negative women (p < 0.01). Of women with symptomatic HIV infection, 50% had SIL on cytology; more than 90% were HPV-positive. Among 13 asymptomatic HIV-positive women, only three (23%) had such cytological lesions. The findings strongly suggested that HIV-induced immunosuppression exacerbates HPV-mediated cervical cytological abnormalities.

In another study conducted in 1993 by Michelle J. Henry et al., forty-four cervical smears from 23 patients (20 HIV and 3 AIDS) were reviewed. While 11 of the 23 patients produced negative smears, 11 had abnormal cytological findings on at least one occasion. Sixteen smears (36 percent) from 10 patients (43%) showed evidence of HPV and/or SIL Two smears (two patients) were assigned to the benign epithelial atypia category. One of these showed keratosis which may indicate HPV infection. Six smears (three patients) represented either a severe Trichomonas, fungal (Candida sp.), or Herpes infection. Three smears were deemed unsatisfactory for diagnosis due to severe acute inflammation or obscuring blood. Five biopsies were available. In four, histological findings supported the original cytological diagnosis. One patient with a negative smear had a biopsy showing condyloma 24. These are few of the many studies which further supported an association of HPV and/or cervical dysplasia with HIV. Therefore, careful evaluation and follow-up of HIV-infected women is essential.

Aims And Objectives

1) To Study The Cervical Cytological Changes in Affected Individuals.

2) To Study The Differences Between HIV Infected And Non-infected Individuals With Respect To Cervical Changes.

MATERIAL AND METHODS

Examination Materials:

1) Protective Equipment.
2) Spoonula
3) Slides
4) 95% Alcohol Fixative
5) Speculums
6) Lubricant
7) Labels
8) Papanicolaou stain

Examination method

The study was conducted at our Medical College. It was a hospital based study on patients who attended the Gynecology clinic of the hospital. Both symptomatic and asymptomatic patients were included in the study.

HIV patients who routinely visited the Gynecology Department were included in the study. Some sero-positive patients were referred to the Hospital from; an NGO working exclusively with HIV affected individuals. Informed consent was taken after explaining the full procedure and reason for the test. The Pap smears were then collected from the patients who consented, after signing the informed consent form.

The study was a case-control type of study, conducted with 30 sero-positive cases and the same number of controls. The main objective was to check the incidence of cervical cytologic abnormalities between HIV-positive and HIV-negative patients. Both symptomatic and asymptomatic cases were included in the study conducted for a period of one year (September 2009 - August 2010). The study included pre-menopausal women in the age-group of 20-50 years.

Conventional Pap smears were taken and examined by cytopathologists. The scrapings from the vagina, cervix (Squamo-columnar junction) and ulcerated epithelial lesions (if any) were collected by an Ayer’s spatula after exposing the cervix with the help of a Simms or Cusco’s speculum. The material obtained was smeared on glass slides and the slides were fixed by 95% ethano.

Relevant information was obtained from each patient and documented in a separate proforma. All the slides were assigned a specific number and then sent to the Department of Pathology for evaluation. The slides were stained by Papanicolaou stain and evaluated by acytopathologist for any abnormality.
In Squamous Intraepithelial Lesions (SIL), nuclear changes may include enlargement with hyperchromasia or pyknosis and chromatin smudging and wrinkling of nuclear contours. Cytoplasmic changes consist of a well-defined peri-nuclear cavity, associated with the peripheral thickening of the cytoplasm or cytoplasmic orangeophilia and rounding of cellular contours.

Epithelial cell abnormalities involve Atypical Glandular cells (AGC). These include:

a) Atypical endocervical cells, NOS
b) Atypical Endocervical cells, Favor Neoplastic
c) Atypical Endometrial Cells.
d) Endometrial Adenocarcinoma.
e) Extraperitoneal Adenocarcinoma 31.

OBSERVATIONS AND RESULTS

The study was conducted with a 30 HIV positive cases and the same number of controls. The results of the study were found to be as follows:

1. Master chart for study group

<table>
<thead>
<tr>
<th>Age (in years)</th>
<th>Cytology number</th>
<th>CD4 count</th>
<th>Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>1829</td>
<td>320</td>
<td>NS</td>
</tr>
<tr>
<td>35</td>
<td>1827</td>
<td>226</td>
<td>Sp inf cocobacilli</td>
</tr>
<tr>
<td>36</td>
<td>1830</td>
<td>297</td>
<td>Infl sm ns</td>
</tr>
<tr>
<td>40</td>
<td>1828</td>
<td>291</td>
<td>Sp inf candidiasis</td>
</tr>
<tr>
<td>39</td>
<td>1821</td>
<td>386</td>
<td>Infl sm ns</td>
</tr>
<tr>
<td>43</td>
<td>1822</td>
<td>298</td>
<td>Infl sm with sq met</td>
</tr>
<tr>
<td>22</td>
<td>1868</td>
<td>146</td>
<td>Infl sm ns</td>
</tr>
<tr>
<td>30</td>
<td>1867</td>
<td>87</td>
<td>LSIL-HPV</td>
</tr>
<tr>
<td>25</td>
<td>1865</td>
<td>152</td>
<td>Infl sm ns</td>
</tr>
<tr>
<td>33</td>
<td>1864</td>
<td>100</td>
<td>NS</td>
</tr>
<tr>
<td>30</td>
<td>1863</td>
<td>70</td>
<td>Infl sm with sq met</td>
</tr>
<tr>
<td>35</td>
<td>1880</td>
<td>540</td>
<td>NS</td>
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<tr>
<td>30</td>
<td>1879</td>
<td>105</td>
<td>Sp inf cocobacilli</td>
</tr>
<tr>
<td>28</td>
<td>1866</td>
<td>54</td>
<td>LSIL</td>
</tr>
<tr>
<td>32</td>
<td>1878</td>
<td>211</td>
<td>Infl sm ns</td>
</tr>
</tbody>
</table>

In Squamous Intraepithelial Lesions (SIL), nuclear changes may include enlargement with hyperchromasia or pyknosis and chromatin smudging and wrinkling of nuclear contours. Cytoplasmic changes consist of a well-defined peri-nuclear cavity, associated with the peripheral thickening of the cytoplasm or cytoplasmic orangeophilia and rounding of cellular contours.

Atypical squamous cells of Undetermined Significance (ASC-US), involves non-inflammatory changes in squamous cells with mature superficial/intermediate type cytoplasm.
**NS=** NORMAL STUDY

Infl sm with sq met = INFLAMMATORY SMEAR WITH SQUAMOUS METAPLASIA

Infl sm ns = INFLAMMATORY SMEAR NON-SPECIFIC

Sp inf = SPECIFIC INFECTION

LSIL = LOW GRADE SQUAMOUS INTRAEPITHELIAL LESION

ASC-US = ATYPIcal SQUAMOUS CELLS OF UNDETERMINED SIGNIFICANCE

2. Master chart for control group:

<table>
<thead>
<tr>
<th>AGE IN YEARS</th>
<th>CYTOLOGY NUMBER</th>
<th>DIAGNOSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>31</td>
<td>1857</td>
<td>Infl sm ns</td>
</tr>
<tr>
<td>46</td>
<td>1845</td>
<td>Infl sm with sq met</td>
</tr>
<tr>
<td>35</td>
<td>1839</td>
<td>Infl sm ns</td>
</tr>
</tbody>
</table>

| 62           | 1831            | Infl sm ns       |
| 56           | 1820            | Infl sm ns       |
| 40           | 1788            | Infl sm ns       |
| 42           | 1774            | Infl sm ns       |
| 50           | 1769            | Infl sm ns       |
| 33           | 1767            | Infl sm ns       |
| 48           | 1760            | Infl sm ns       |
| 35           | 1752            | Infl sm ns       |
| 65           | 1741            | Infl sm ns       |
| 35           | 1739            | Infl sm ns       |
| 28           | 1738            | Infl sm ns       |
| 38           | 1737            | Infl sm ns       |
| 28           | 1736            | Infl sm ns       |
| 25           | 1731            | Infl sm ns       |
| 24           | 1721            | Infl sm ns       |
| 26           | 1717            | Infl sm ns       |
| 52           | 1688            | Positive for malignancy |
| 35           | 1687            | Infl sm ns       |
| 45           | 1667            | Infl sm ns       |
| 25           | 1654            | Infl sm with sq met |
| 46           | 1644            | Infl sm ns       |
| 52           | 1612            | ASC-H            |
| 42           | 1611            | Infl sm ns       |
| 30           | 1494            | Infl sm ns       |
| 40           | 1579            | Sp inf t.vaginalis |
| 45           | 1566            | Infl sm ns       |
| 40           | 1522            | Infl sm ns       |
A total of 30 cases were considered. Among them, the highest number of cases belonged to the age-group 35-39, with a total of 9 cases. The CD4 counts ranged from 100-540 in this group; 5 having non-specific inflammatory smear, 2 with normal cervical cytology, 1 with Coccobacillary infection and one with t.vaginalis infection. Next in line were the age-groups 25-29 and 30-34 years with a total of 7 patients in each group. The CD4 counts in the 25-29 group ranged from 54-268. There was one case of LSIL, one case of Inflammatory smear with squamous metaplasia and one with ASC-US. One had normal cervical cytology and the rest were with non-specific inflammatory smears. The CD4 counts of patients in the age-group 30-34 years ranged from 70-211. Two among this had inflammatory smears with squamous metaplasia, 1 had LSIL with HPV infection (CD4 COUNT=87), 1 showed candidiasis, one had normal cervical cytology, 1 had specific coccobacillary infection and the rest were with nonspecific inflammatory smears. The group 40-44 year age group with 6 cases, with two showing inflammatory smears with squamous metaplasia, one showing Candidiasis and the rest with non-specific inflammatory smears. The group 20-24 had one case with non-specific inflammatory smear (CD4 count=146)
The highest numbers of cases were those of non-specific inflammatory smears with a total of 13 cases (43.33%). The CD4 counts of these patients ranged from 146-297. There were 4 cases of normal cervical cytology (13.33%) among the HIV infected cases. The CD4 values of these cases ranged from 100-540 (100, 320, 540, 468).

A total of 5 cases (16.67%) were found to be those of Inflammatory Smear with Squamous Metaplasia, with the CD4 counts of the patients being 298, 70, 154, 133 and 430 i.e within the range of 70-430. 3 out of these patients complained of generalized weakness, 2 out of 5 had persistent fever along with dysuria and one presented with chronic diarrhoea.

A total of 5 sero-positive patients (16.66%) presented with specific infections with bacteria and fungi. Two among them (6.66%) showed infection with cocacobacilli, two showed Candidiasis (6.66%) and one was found to be infected with Tvaginalis (3.33%). In both cases of bacterial infection the CD4 range was below 250 (226 and 105). Candidiasis was shown by cases with CD4 counts of 112 and 291, while Tvaginalis infection had one positive case with a CD4 count of 142. In both cases of specific bacterial infections the clinical presentation was persistent fever with white discharge per-vaginum. In the cases with Candidiasis, both patients complained of intense itching and white discharge per-vaginum. One of the patients also had chronic diarrhoea. In the patient presenting with Tvaginalis infection, the clinical presentation was that of itching per vaginum and dysuria.

Two out of the 30 sero-positive cases were found to have Low Grade Squamous Intraepithelial Lesions (LSIL) that is, 6.67%. Both the cases were seen in patients having low CD4 counts; well below 100 (87 and 54). One (with CD4 count of 87) among them also showed infection with Human Papilloma Virus (HPV). Clinically, both patients presented with fever and one of the patients with the HPV infection also presented with a complain of white discharge per vaginum.

The cervical cytology of one sero-positive case (3.33%) showed Atypical Squamous Cells of Undetermined Significance (ASC-US). This patient was with a CD4 count of 186. Clinically, the patient presented with fever and itching per vaginum. The CD4 counts of HIV infected cases in this study ranged from 54 to 540; with the one with 54 showing LSIL and the patient with a count of 540 having normal cervical cytology. A CD4 count of below 200 cells/micro liter is diagnosed as AIDS. Normal CD4 count ranges from 500-1200 cells/micro liter. There were 15 patients with AIDS who were considered for this study.

The AIDS patients (CD4<200) showed more cervical cytological abnormalities. 9 out of the 15 cases showed some degree of metaplasia, dysplasia or infection. Both cases of LSIL and the solitary case of ASC-US were seen in AIDS patients. There was one case each of specific cocacobacillary, Candidiasis and infection by Tvaginalis among the AIDS patients. 3 others showed inflammatory smears with squamous metaplastic changes. The remaining 6 cases were with non-specific inflammatory changes. Thus the AIDS affected individuals showed more predisposition to be affected by opportunistic infections and having pathological cervical cytological changes.

There were no cases of malignancies found in the HIV infected cases. In the control samples, the maximum cases reported were those of non-specific inflammatory smears, with 25 controls falling under this category. There were 2 cases if Inflammatory smears (Ages = 45, 46 yrs), 1 case of ASC-US (Age = 52 yrs), 1 of HSIL and specific infection with Tvaginalis (Age = infection and 1 case positive for malignancy (Age = 35 yrs). The ages of the controls ranged from 24-52 years.

**Non-specific inflammatory smear**
This study was conducted with a total of 30 HIV positive women and the same number of controls. Pap smear analysis showed cervical cytological abnormalities in 13 cases. These included 2 cases of LSIL, 1 case of ASC-US, 2 cases of specific infection by Coccobacilli, 2 cases with specific infection with candida, 1 case of T. vaginalis infection and 5 cases of inflammatory smear with squamous metaplasia. The majority of the cases had non-specific inflammation of the cervix (13 cases), with 4 having no cytological abnormalities.

In comparison to the cases, the control group had a majority of non-specific inflammatory smears (25 cases), considerably more than that in HIV patients. However cervical cytological abnormalities were found in only 5 of the samples in the control group in comparison to 13 in the HIV positive cervical smears. This is in accordance with the established fact that HIV positive individuals tend to have more opportunistic infections and the incidence of metaplasia and dysplasia is considerably higher in them than in their sero-negative counterparts. The control group had 2 inflammatory smears with squamous metaplasia against 5 of them in the HIV positive cases. It also had one ASC-H case. There were no such cases in the HIV positive samples; however there was one sample showing ASC-US. Both groups showed T. vaginalis infection (1 in each group) but the one in the control group also showed HSIL. The HIV positive group had 2 cases of LSIL, with one having HPV infection. This finding being in contrast to the findings in the control group where there were no cases of LSIL. The control group however showed 1 case of malignancy. There were no such cases found in the sero-positive group. This finding is considerably different from other case studies which show a high risk of cervical carcinoma in HIV positive patients:

Young women infected with HIV and HPV are predisposed not only to develop cervical or anal carcinoma but also may be at increased risk for vaginal carcinoma with more aggressive and less responsive disease. Furthermore, although vaginal carcinoma is usually a slow-growing neoplasm, this case illustrates the aggressive behavior of such a tumor when associated with HIV infection. Apart from the well known association of cervical cancer with Human Papilloma Virus (HPV), cervical cancer has been associated with Human Immunodeficiency virus (HIV), and it is classified as Acquired immunodeficiency syndrome (AIDS) defining disease since 1993. The prevalence of cervical dysplastic lesions present at colposcopic/biopotic examination was 3.2 times greater in HIV+ women than in HIV- women (38% vs 12%, p<0.001) and that of lesions of a higher degree 7 times greater. Compared to non-HIV+ women, patients who were positive presented more severe dysplastic lesions, a higher frequency of HPV-derived lesions and inflammatory pictures. There was also a correlation between high incidence of dysplastic cervical lesions and advanced stage of immunodepression. The negative predictive value of the Pap test was higher in the seronegatives (95%) than in the seropositives (83%, p<0.01). The overall agreement between cytology and colposcopy/histology was greater in the seronegatives than in the seropositives (87% vs 74%, p<0.05).

In these studies, HIV infection was strongly associated with an increased risk of cervical carcinoma, our study however did...
not show any sample positive for malignancy in the HIV-Positive group. Our study did demonstrate a correlation between high incidence of dysplastic cervical lesions and advanced stage of immunodepression, with both cases of LSIL in patients with a CD4 count of less than 100, well in accordance with the earlier study quoted above, and conducted in 2003. Various studies also establish a link between cervical dysplasias and HIV infections:

“The incidence of cervical dysplasia and carcinoma is known to be increased in HIV-infected women. In addition, there is a positive correlation between HIV viral load (VL), CD4+ count, and opportunistic infections, as well as the incidence of various malignancies. Of 82 cases of cervical dysplasia, 33 (40.24%) were mild (CIN I), 47 (57.32%) were either moderate or severe (CIN II–III) dysplasia, and 2 demonstrated invasive squamous cell carcinoma (2.44%). A significant statistical difference was found when comparing either HIV plasma VL or CD4+ T-cell counts with the presence of cervical dysplasia on biopsy (P < 0.005).”38.

Our study showed a correlation between HIV infection and cervical dysplasias as well as opportunistic infections with 16.67% of cases showing opportunistic infections, 16.67% with squamous metaplasia, 6.66% with LSIL and 3.33% with ASC-US, both being considerably higher than in the control group of seronegative cases. Hence our study is in accordance with the established fact that HIV infection predisposes to various cervical cytologic abnormalities.

Unlike other studies, our study does not show any case positive for malignancy in the HIV positive group, although there was an HPV infection. This finding can be due to the fact that our study involves both symptomatic and asymptomatic patients and the sample sizes are limited due to the short duration of study.

The primary aim of this study was to study the cervical cytologic changes in HIV positive patients. This obviously has been accomplished. The secondary objective was to study the differences between HIV infected and non-infected individuals with respect to cervical changes, can still be worked upon further especially on the part establishing a relationship between HIV infection and malignancy.

CONCLUSION
The study conducted with the Pap smears of 30 HIV infected cases and 30 controls showed that HIV infection was associated with an increased incidence of opportunistic infections along with dysplasias of the cervix. This is in accordance with various earlier researches which prove the same.

This study however could not establish a relationship between cervical carcinoma (malignancy) and HIV infection. Further evaluation in this field is hence needed. Also the cases with Dysplastic changes need to be followed up as there is often rapid progression to malignancy in HIV infected individuals.

SUGGESTIONS
9 out of 15 AIDS cases showed some degree of cervical cytological abnormality or infection by opportunistic pathogens. This is in accordance with the fact that decreased CD4 count leads to low immune status of an individual. Hence, with all the evidence in mind it would be logical to make Pap smear screening tests mandatory for all AIDS patients and encourage them to come for regular follow-ups.

Reference
4. NACO Govt.of India (1999), Ministry of Health and Family Welfare, New Delhi
5. Dr Arnoldo. Progression of cervical lesions in HIV-seropositive women: a cytological study. Section of Pathology, Emílio Ribas Institute, Av. 165, 012 46-902 São Paulo, S.P, Brazil
7. ‘UNAIDS, 2009, November;
8. Joe IE. Gallant, Christopher Hoffmann "CD4 Cell Count 03.18.2009
17. Ellerbrook TV et al. Incidence of cervical squamous intra-epithelial lesions in HIV infected women JAMA 2000; 283; 1031-1037
19. Frisch M et al Human Papilloma virus associated cancers in patients with Human Immunodeficiency Virus-1 (HIV) positive and high risk HIV negative women J Natl Cancer Inst 2000; 92; 1500-1510
24. Michelle J. Henry-Stanley M.S., C.M.I.A.C., Margaret Simpson M.D., Michael W. Stanley M.D Cervical Cytology Findings in women infected with Human Immunodeficiency Virus. Diagnostic cytopathology, vol 9, issue 5, 508-509


27. The National Response to HIV/AIDS in India, National AIDS Control Project Phase-2, NACO, Govt. of India (1999), Ministry of Health and Family Welfare, New Delhi

28. K.Park, Park’s textbook of preventive and social medicine, Edn. 20, 2009; 299


31. Marluce Bibbo, David Wilbur Comprehensive Cytopathology; 2009; edn 3; 82-86


34. Williams and Wilkins Street CM Papanicolaou techniques in exfoliative cytology. In: Cowdry EV (ed). Laboratory technique in Biology and Medicine, 3rd edn. Baltimore; 1952; 253-259


