

Atypical Squamous Cell of Unknown Significance (ASCUS) in Pap Smears: A Study from Rural Based Hospital

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ABSTRACT

Introduction: Foul smelling discharge or whitish discharge per vaginam in the reproductive age females is the most leading cause of Pap smear examination. Pap smear examination of different patient (on both outpatient as well as inpatient) reveals a significant spectrum of abnormality associated with the diagnosis of the disease process. The aim of this study to find out the prevalence of ASCUS which is the most common significant abnormality found out in Pap smear examination of gynecological patients in a rural based hospital. As hygiene plays a major role in the abnormal pap smears in the studied population, hence the study is conducted on rural basis.

Methods: More than 1500 odd (Exact 1530) Pap smears were examined prospectively in the Department of Pathology. The slides are stained by Pap stain and then after proper documentation were sent for interpretation.

Results: Out of 1530 smears examined, 65 (4.2%) slides are rejected to be included in the study because of mismatch diagnosis by different authors. 166 (17.2%) are excluded due to unsatisfactory nature. Total atypical smears includes 90 smears of which 48 were positive for ASCUS, 14 positive for LSIL, 13 positive for HSIL and 02 each for ASCH, AGC-NOS, SCC./ADENO.

Conclusion: The present study highlights the importance of pap smear examination in a rural population, as the above selected study group is more subjected to the present unhygienic condition and on examination reveals the various causes of abnormal pap smears. The various outcomes of the present study includes interrelationship of disease process in the different age groups, different disease process and others.

Keywords: ASCUS, ASC-H, LSIL, HSIL, Adenocarcinoma, Pap Smear, Cervix, Rural.

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INTRODUCTION

Cytology is a science of interpretation of cells from the human body that either exfoliates (fall freely from the epithelial surface) or is removed from various tissues sources by various clinical procedures.^{1,2}

Today primary pathological diagnosis is made on the basis of cytological examination only and the concept of cyto-diagnosis in pathology is well accepted and appreciated worldwide. Cytodiagnosis acquires the major advantage in the form of outpatient procedure as is minimal invasive, cost effective so a better approach to rural population with better patient compliance and well characterized screening approach. Moderate to low sensitivity, frequent screening, failure of follow up after treatment and the fact that it lacks conclusive diagnosis, restrict its uses.³⁻⁵

Pap smear or exfoliative cytology has high specificity which correctly identifies the cervical abnormalities with mild outpatient approach. A well cost effective, outpatient procedure with minimal invasive approach.⁶

Examination of exfoliated cells from cervix and vagina are examined by Pap smears through two approaches i.e. either conventional Pap (CP) smear or Liquid based cytology (LBP), each has its advantages and disadvantages but here in this study conventional Pap smear is used as primary procedure. Exfoliative cytology in Pap smear varies from normal squamous epithelial cells to abnormal squamous epithelial cells. Previously, different cytologist report that findings in a more personal way but In 1991 Bethesda system of reporting Pap smears was introduced, both for conventional and liquid based cytology smears, which clearly delineates atypical cells from normal cells under the categorization of atypical squamous cells or ASC, The term Atypical Squamous cells of unknown significance (ASC-US) was introduced in the original, 1991 Bethesda system. ASC-US refers to cytological changes that are suggestive of low grade Squamous intraepithelial lesion (LSIL) or (SIL) of indeterminate grade. The term ASCUS was modified and reintroduced in 2001 Bethesda

system as Atypical squamous cells of undetermined significance instead of unknown. Atypical squamous cells of Undetermined Significance (ASCUS) accounts for major portion of atypical features among the different squamous cells abnormalities. Considering the fact that cervical diseases are more related to poor hygienic conditions hence a more important study group i.e. rural based population.⁷⁻¹⁰

Cervical cancer continues to be overall the most common cancer among females in the Indian subcontinent. In contrast to the developed countries, there has been no clinical reduction in the incidence rates of cervical cancer in the developing nations, so far. This is due to lack of effective, organized, population-based mass screening programs.⁵ Most of the cancer screening programs in India are not organized, but intended to provide possible cancer screening benefit to the women. These programs integrate variable combinations of cytological testing with Papanicolaou (Pap) test, visual screening methods, colposcopy and guided biopsy. The major centers in India practice The Bethesda system (TBS) for reporting Pap smears on conventional cytology smears. The earlier category of atypical squamous cells (ASC) in the cervico-vaginal cytology reporting was found to be a less reproducible entity, as the cyto-morphological criteria for its interpretation were not well defined. Secondly, it was also frequently associated with spontaneously resolving, self-limited disease. TBS 2001 for cervico-vaginal cytology has subdivided ASC into two categories i.e. atypical squamous cells of undetermined significance (ASC-US) and atypical squamous cells, cannot rule out a high-grade lesion (ASC-H). ASC-US refers to cytological changes suggestive of squamous intraepithelial lesion (SIL) which are qualitatively and quantitatively insufficient for a definite interpretation. These are squamous cells with increased nuclear to cytoplasmic (N/C) area; exhibit minimal nuclear hyperchromasia and irregularity in chromatin distribution or nuclear shape or nuclear abnormalities with orangeophilic cytoplasm ("atypical parakeratosis"). ASC-H refers to cytological changes that cannot exclude high-grade squamous intraepithelial lesion (HSIL). These include single cells or fragments of less than 10 cells; of metaplastic type, with larger nuclei and high N/C ratio.¹⁴ It has been documented that 10-15% cases diagnosed with ASC-US and 30 - 40% cases with ASC-H have been found with underlying precancerous lesions i.e. cervical intraepithelial neoplasia (CIN) 2 or more, on biopsy.¹¹

A study is conducted in rural based hospital to collect a more decisive data. In addition a population and aged basis study attempt is made to make a more elaborative data.

MATERIALS AND METHODS

A prospective study comprises of conventional Pap smears collected both as an OPD/IPD basis at Central Diagnostic Laboratory of F.H.Medical College, Tundla, Firozabad, U.P over a period of a period of eight months starting from April 2017 to September 2017.

Female patients of reproductive age group(15yrs to 45 years) irrespective of their socio economic environment, caste ,creed and religion and who's Pap has been carried either on OPD or IPD basis are included in the study. Complete confidentiality regarding the identity of the individual is maintained and therefore only slide number is provided. The study includes 1530 slides out of which 65(4.2%) are rejected, due to discrepancy in diagnosis among the

authors. A total of 1465 slides were evaluated and screened for the collection of data. The collection pool includes smears received through all modes like camps, patients without any complaints and female visiting for regular health checkups. No follow up studies has been undertaken.

A detailed clinical history inclusive of sexual, menstrual, family and per abdominal examination was provided along with per vaginum (P/V) and per speculum (P/S) findings.

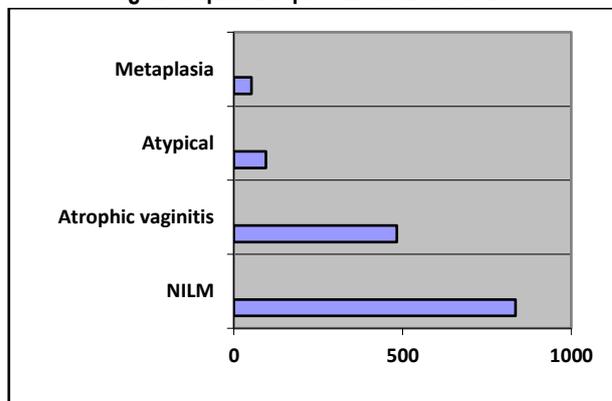
All slides found unsatisfactory either because of paucicellularity, artifacts or obscuring factors are excluded from the study. Slides that were broken during receiving or broken during filing were excluded from the study.

The Method used for Reporting and analyzing the data was based on The Bethesda System 2014(TBS 2014). The staining procedure is conventional Pap smear staining.

RESULTS

None of the slides are rejected except the slides having mismatch diagnosis. In total 1530 slides/cases, 65 slides were rejected on mismatch diagnosis among authors. Slides included for evaluation are 1465. Satisfactory slides for evaluation are 100%. 51 smears show positivity for ASCUS, accounting for 3.5% of total satisfactory smears.

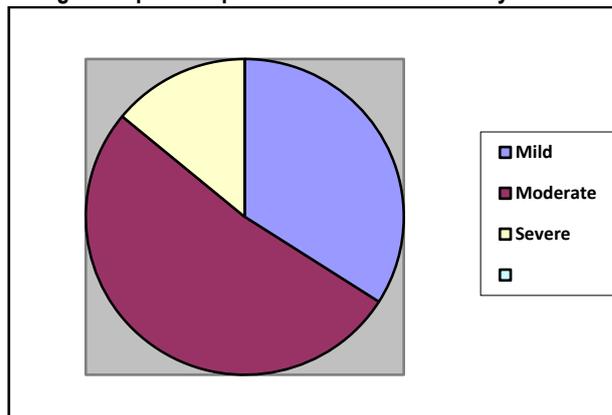
Fig 1: Graphical representation of results.



Out of 1465 slides 835(57%) show NILM, 483(33%) with atrophic vaginitis, 95(6.5%) shows atypical features and 52(3.5%) shows metaplasia [Figure 1].

Inflammatory smears include 1113(76%) and non-inflammatory smears are 352(24%) slides respectively. They include mild inflammation 498 (34%), moderate inflammation 760 (52%) and 205 (14%) with severe inflammation respectively [Figure 2].

Fig 2: Graphical representation of inflammatory smears.



Positivity for microorganisms include 389 (26.6%) slides whereas negative slides include 1076 (73.4%) smears. Positive slides further shows bacterial vaginosis in 249 (64%) smears, trichomonas vaginalis in 50(13%), candida species in 39(10%) and remaining 50(13%) have mixed infection.

DISCUSSION

The present study is a prospective study comprising of 1530 slides of Pap smears of which 65 slides are rejected due to mismatch diagnosis among the authors. Other criterion for rejection of slides include unsatisfactory smears, smears with severe obscuring factors, drying artifacts, hemorrhage etc. but none of the slides are found to be rejected on these grounds.

This study is mainly conducted to find out the Prevalence of ASCUS among rural female, reproductive age group patients but all age group patients are included for the study as the maximum patients are from rural background as the hospital is rural based. The follow up criterion is not included as patients following up are very less and are affecting the study directly.

The outcome of the study shows a prevalence of ASCUS as 3.5%. The observations made during the study indicate the prevalence of ASCUS whereas prevalence of other atypical cells obtained during the study is also indicated. ASCUS with other atypical cells is mostly seen among the female patients of 21- 60 years of age group, which clearly indicates a strong correlation of the disease process between early adulthood to late adulthood. As this population is more prone to unhygienic conditions, vulnerability to environment changes, menstrual ailments, increased sexual activity resulting in trauma to genital tract etc. None of the slides are rejected due to any obscuring causes except the slides which are rejected due to mismatch of conclusive diagnosis.

Other observations - In total 1530 slides/cases (as only one best slide per case is taken in the study) 65 slides are rejected on the basis of mismatch of diagnosis among authors, hence a total of 1465 slides were taken in the study. A total of 100% slides are

found satisfactory for evaluation hence no slides are rejected on the above basis, no other basis of rejection of slides was met during evaluation of the slides. A total of 51 smears were positive for ASCUS, accounting for 3.5% of total satisfactory smears on which studied is conducted.

Out of 1465 slides 835(57%) are NILM, 483(33%) have atrophic vaginitis, 95(6.5%) shows atypical features, and 52(3.5%) shows metaplasia.

Out of total slides 1113 (76%) shows inflammation whereas 352(24%) slides shows no inflammation. The inflammatory slides show 498 (34%) with mild inflammation, 760 (52%) with moderate inflammation and 205 (14%) with severe inflammation respectively.

Out of total slides 389 (26.6%) are positive for microorganisms whereas the remaining 1076 (73.4%) are negative. Of the positive slides 249 (64%) are of bacterial vaginosis, 50(13%) are of trichomonas vaginalis, 39(10%) are of candida species and remaining 50(13%) have mixed infection.

Atypical cells accounts for 95(3.5%) of the total Cases 1465 examined. ASCUS accounts to 51 positive cases i.e a high percentage of prevalence of ASCUS among total positive atypical smears, accounting a high percent of 54 taking a heavy load of total positive smears.

The result obtained from the present study correlates well with various studies reported in the literature in many concepts [Table 1,2]. The observations made in the present study are compared with those made by other authors bearing in mind the recommendations of TBS 2004.

Out of total slides examined 52(3.5%) shows metaplastic changes. Douglas Broderick et al study in 2002 gives ASCUS with a prevalence of 2.65%.¹² N Izadi Mood et al study in 2004 shows an 2.76 % of prevalence of ASCUS.¹³ Reeda S Saad et al study in 2006, shows prevalence of 7.3%.¹⁴ Sengupta Rinku et al study in 2007 shows 5.3% prevalence.¹⁵ Chris Yick kwong et al study in 2007 shows prevalence of 5.3% ASCUS.¹⁶

Table 1: Age related Atypical Observations.

Age	ASCUS	LSIL	HSIL	ASCH	AGC-NOS	SCC./ADENO.	TOTAL
> 20	7	2	1	nil	1	2	13
21-40	20	8	3	2	1	2	32
41-60	14	6	2	1	1	1	22
61-80	8	1	1	1	1	1	13
< 80	2	nil	nil	1	nil	nil	03
total	51	17	11	5	5	6	95
% prevalence	3.5	1.2	0.8	0.3	0.3	0.4	6.5

Table 2: Age related total observations.

Age gp.	NILM	ATR.	ASCUS	LSIL	HSIL	ASCH	AGCNOS	SCC	TOTAL
> 20	505	5	7	2	1	nil	1	2	523
21-40	70	65	20	8	5	2	1	2	173
41-60	86	137	14	6	4	1	1	1	250
61-80	152	204	8	1	1	1	2	1	370
<80	21	73	2	nil	nil	1	nil	nil	97
TOTAL	835	483	51	17	11	5	5	6	1413

CONCLUSION

There is 3.8 % prevalence of ASCUS in the data studied which correlates well with other studies. The study highlights the importance of pap smear examination in a rural population, as the above selected study group is more subjected to the present unhygienic condition and on examination reveals the various causes of abnormal pap smears. The various outcomes of the present study includes interrelationship of disease process in the different age groups, different disease process and others.

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