CERVICAL CARCINOMA SCREENING BY MOLECULAR PAP – TRANSFORMATION OF GYNECOLOGIC CYTOLOGY

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INTRODUCTION

Cervical Cancer in India1

New Cervical Cancer Cases Deaths Due To Cervical Cancer

India ~27% of new Cervical cancer cases in the world

India ~27% of deaths due to Cervical cancer in the world

Cervical Carcinoma screening - Molecular

- DNA based molecular testing for HPV is a novel approach in the context of well entrenched existing technology, the Pap smear.
- Is screening for HPV using a molecular modality superior for selecting the population at risk for cancer development? The answer is complex.2
- The application of biotechnology to cervico-vaginal cytology was first seen during the 1980s when morphologic criteria for the diagnosis of preneoplastic cytoplastic changes were compared successfully with HPV DNA hybridization studies.3
- A number of molecular techniques have been used to detect the presence of HPV in cervicovaginal specimens including viral load quantification, Southern blot, PCR, Hybrid capture & CISH.4
- PCR is considered the most effective method for HPV DNA detection.3
- Positive attributes of CISH include the provision of a cytomorphologic link in assessing HPV positivity and comparative ease of use in laboratories without trained molecular diagnosticists.4

MATERIALS AND METHODS

We present a study spanning 32 months (August 2009 - December 2013) including conventional & LBC methodologies.

Specimen Collection:

- Prefixed conventional smears were received along with the requisite clinical details & were stained using the conventional PAP staining protocol. If HPV required, a separate vial was submitted. Also, if cytology suggested reflex HPV then the patient was recalled.
- LBC: The gynecologist sent material in Preserve solution to the Cytopathology section, specifying whether only LBC or LBC+Cytology was requested. The sample was tested in the molecular biology section.
- For a uniform and thin Pap smear of 20 mm diameter, the sample is processed using the THIN PREP 2000 processor fully automated filtration technique.
- For hemorgenic LBC samples a separate protocol to achieve an optimal cellular yield is carried out.
- The Papacloicous stained performed is the same as that done on conventional Pap smears.

Cytopathology detection:

The 2002 Bethesda System was followed for reporting.

The 40% of patients were in the age range of 20 to 84 years

Squamous cell abnormalities

- ASCUS- Atypical cells of undetermined significance
- LSIL: Low Grade Squamous Intraepithelial lesion
- HSIL- High grade squamous Intraepithelial lesion
- ASC-H- Atypical cells cannot be classified
- Carcinoma

Glandular cell abnormalities

- AGUS- Atypical cells of undetermined significance
- LSIL: Low grade cervical intraepithelial neoplasia
- LSIL: Low grade cervix intraepithelial lesion
- HSIL- High grade cervix intraepithelial lesion
- EE- Endocervical CIS
- Adenocarcinoma

RESULTS

A total of 25651 samples were evaluated of which 16599 were conventional and 9052 LBC.

The age range in our study was 20 to 84 years.

- Abnormal smears - 18% patients of age range of 30 – 60 years

Table 1: HPV type and disease association

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<thead>
<tr>
<th>Disease</th>
<th>HPV Type</th>
<th>HPV prevalence (%)</th>
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<tbody>
<tr>
<td>Normal</td>
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<tr>
<td>ASC-US</td>
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<td>HSIL</td>
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<td>Carcinoma</td>
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