Cervical Cytology at a Teaching Hospital in Northern Nigeria

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Abstract

Background: Cervical cytology has not only been useful in screening for cervical intra-epithelial neoplasia (CIN) lesions but is also of value in the characterization of various genital tract infections. Objective: To assess the outcome of cervical cytology in randomly selected patients. Sample/Methods: The sample population were 450 randomly selected sexually active women attending the antenatal, postnatal, gynecology and family planning clinics in the Department of Obstetrics and Gynecology of the University of Maiduguri Teaching Hospital from April 2001 to May 2002. The pap smears of these patients were examined microscopically. A questionnaire assessing the ages of the patients was administered. Results: CIN lesions were identified in 16.2% of the study population. Sixty-six (14.7% of the 450 patients studied had specific infections, 12.9% had non-specific inflammation, 10.7% had HPV associated changes while 45.65 had a normal smear. Conclusion: Cervical cytology, besides screening for CIN lesions, is of value in the diagnosis of genital tract infections.

Introduction

The superficial cells of the normal squamous epithelium of the cervix are normally shed periodically and replaced by new cells from the deeper layers; these cells do not usually show any form of atypia. Malignant transformation can occur within the cervical epithelium and this often arises from the squamo-columnar junction of the transformation zone 1. Cervical carcinoma is responsible for 466,000 deaths per annum world-wide and is the leading cause of death in women aged 35-45 years 2. In spite of its high case fatality rate in developing countries, cancer of the cervix has up to 100% cure rate if detected early 1. This early detection is possible through the study of the cells of the squamo-columnar junction of the transformation zone of the cervix. This is known as cervical cytology or the Papanicolaou smear. The Papanicolaou smear for cervical cytology fulfils all the criteria for an ideal screening test. Not only is it cost effective, acceptable to most patients and adaptable to wide spread screenings, it is specific enough to detect human Papilloma virus changes (HPV) changes and subsequent progression to cervical intra-epithelial Neoplasia (CIN) resulting in decreased morbidity and mortality from invasive cervical cancer 3. Cervical cytology has not only served the purpose of screening for CIN lesions but has been useful in the diagnosis of genital tract infections such as Gardnerella vaginalis, Trichomonas vaginalis and Candida albicans. Cervical cytology is attractive because it can be performed in an out-patient setting and is cost effective when compared with, for example, DNA Hybridization, PCR amplification or viral culture for the detection of HPV which may be predisposing oncogen to cancer of the cervix 4. It can usually be done without anesthesia. Surprisingly, there is paucity of studies that evaluate the value of cervical cytology as a diagnostic tool in gynecological practice in Nigeria, although the cervix is one of the most frequently sampled tissues in gynecological practice. The present study is thus limited to the cervix and attempts to identify the various pathological process associated with the cervix by the use of cervical cytology.

Materials and Methods

The subjects were 450 randomly selected sexually active women attending various clinics in the Department of Obstetrics and Gynecology of the University of Maiduguri Teaching Hospital, Nigeria. These included the antenatal, postnatal, gynecology and family planning clinics. They were recruited after consenting to participate and a formal approval had been given by the institution’s Ethics and Research Committee. The recruitment continued until a sample size of 450 was reached. This was calculated using the WHO Epi Info Version 6 programme for population or descriptive study using simple random sampling. It was based on a population of 4,342 patients/clients attending the recruiting clinics from April 2001 and May 2002. The purpose, nature and value of the procedure were explained to each prospective patient and her consent sought. All consenting patients had pap smears taken using a moistened un lubricated Cusco’s bivalve speculum and an Ayre’s wooden spatula after a questionnaire containing the age and reproductive factors had been filled. The smears were immediately transported to the histopathology...
laboratory immersed in 95% ethanol for preparation, staining and reading. The smears were examined microscopically by a pathologist at the magnifications of 4, 10 and 100. Inclusion criteria: All sexually active women attending the above clinics and who consented to participate in the programme were included until a sample size was reached. Exclusion criteria: Women who declined to consent were exempted, so were those who had never been sexually exposed. In addition, those with obvious cervical lesions, vaginal discharge and those who were menstruating were excluded from the study.

Results

Table 1 shows the cytology results of the Papanicolaou smears. Abnormal smears occurred in 245 (54.5%) of the patients screened. Forty-eight women (10.7%) had HPV associated changes, constituting 19.6% of all abnormal smears. Specific infections were identified in 66 of the patients studied giving an overall prevalence of 14.7%. Cervical intra-epithelial Neoplasia (CIN) lesions were seen in 73 (16.2%) of the patients studied. The ages of the patients screened is shown in table 2. The ages of the patients ranged between 15 and 64 years, with a mean of 26.3 years. Table 3 shows the specific infections identified, with Candida albicans constituting the highest prevalence of 7.1% of all infections.

See the table in the more illustration files

Discussion

This study has shown that cervical cytology has not only served the purpose of screening for cervical intra-epithelial (CIN) lesions, but has been useful in the characterization of cytological features pathognomic of infections such as HPV which may be the predisposing oncogen to cervical cancer. It has also been useful in the diagnosis of genital tract infections such as Gardnerella vaginalis, Trichomonas vaginalis and Candida albicans, which have continued to assume immense importance because of the myriads of clinical and pathological changes they elicit in various body tissues, organs and systems. They have been implicated in neonatal meningitis, urinary tract infections, pyogenic liver abscess and following prostatectomy. In low resource areas where facilities might not easily be adequate to detect these genital infections, cervical cytology has been found to be very helpful. It is also specific enough to detect cytological changes pathognomic of human papilloma virus, which ordinarily is difficult to isolate under normal laboratory conditions, except the use of special techniques like DNA hybridization, PCR amplification or viral culture. Chronic non-specific inflammation occurred in 12.9% of cases and may be of aetiological significance in infertility. However, the microbial agents are not readily identifiable by simple cytological examination of the cervix.

Conclusion

This study has shown the place of cervical cytology in the diagnosis of other genital tract conditions outside screening for CIN. There is need for an increased use of this cost effective and acceptable diagnostic tool in gynecological practice, especially in centers with organized cervical cytology screening programmes and in low resource settings where manpower might be in short supply and facilities might not be adequate since it is essentially an office procedure.

References

Illustrations

Illustration 1

Table 1: Result of Pap smear in 450 subjects

<table>
<thead>
<tr>
<th>Class of Pap smear</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>205</td>
<td>45.6</td>
</tr>
<tr>
<td>Specific infections</td>
<td>66</td>
<td>14.7</td>
</tr>
<tr>
<td>Non specific inflammation</td>
<td>58</td>
<td>12.9</td>
</tr>
<tr>
<td>CIN</td>
<td>73</td>
<td>16.2</td>
</tr>
<tr>
<td>HPV changes</td>
<td>48</td>
<td>10.7</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>450</td>
<td>100</td>
</tr>
</tbody>
</table>
Illustration 2

Table 2: Age distribution of the women screened

<table>
<thead>
<tr>
<th>Age (Years)</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>60</td>
<td>13.3</td>
</tr>
<tr>
<td>20-24</td>
<td>158</td>
<td>35.1</td>
</tr>
<tr>
<td>25-29</td>
<td>138</td>
<td>30.7</td>
</tr>
<tr>
<td>30-34</td>
<td>53</td>
<td>11.8</td>
</tr>
<tr>
<td>≥ 35</td>
<td>41</td>
<td>9.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>450</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>
Illustration 3

Table 3: Percentage distribution of the organisms

<table>
<thead>
<tr>
<th>Organism</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Candida albicans</em></td>
<td>32</td>
<td>7.1%</td>
</tr>
<tr>
<td><em>Gardnerella vaginalis</em></td>
<td>23</td>
<td>5.1%</td>
</tr>
<tr>
<td><em>Trichomonas vaginalis</em></td>
<td>11</td>
<td>2.4%</td>
</tr>
<tr>
<td><em>Candida albicans</em></td>
<td>8</td>
<td>1.8%</td>
</tr>
<tr>
<td>+ <em>Gardnerella vaginalis</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall prevalence</strong></td>
<td>14.7%</td>
<td>N=450</td>
</tr>
</tbody>
</table>
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