A clinico histopathological study of uterine cervix biopsy at tertiary care centre - 2 years study

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Abstract
Objective: The majority of histopathological specimens from the gynaecological department includes uterine cervix biopsy. A retrospective study was conducted for 2 years to evaluate the incidence and age wise distribution of various uterine cervical lesions (neoplastic and non-neoplastic) by histopathological examination.

Materials and Methods: The study was conducted in the Department of Pathology, Government Thiruvarur Medical College, Thiruvarur, Tamil Nadu over a period of two years from January 2016 to December 2017. A total of 1672 specimens were analyzed from both hysterectomy and biopsy specimens. The specimens received were formalin fixed, dehydrated in graded alcohols, embedded in paraffin wax and subsequently stained by hematoxylin and eosin stains.

Results: Among the 1672 specimens, non-neoplastic lesions occupied the major part 1298(77.63%) followed by neoplastic lesions 374(22.37%). The most common histological findings among the cervix biopsy was chronic nonspecific cervicitis-1094(84.28%). However, other inflammatory lesions reported, includes chronic cervicitis with squamous metaplasia 52 (4.01%); papillary endocervicitis 34(2.62%), Bartholin cyst was present in 14(1.07%). Benign endocervical polyp and leiomymatous polyp were reported with equal incidence each of 24 (6.42%). Cervical malignancies include cervical intraepithelial neoplasia, CIN-I: 62(16.58%), CIN-II: 32 (8.55%), CIN-III: 56(14.98%). The most common cervical malignancy was squamous-cell carcinoma 170(45.45%), moderately differentiated type being the frequent. The other rare malignancies included adenocarcinoma, serous cell carcinoma and glassy cell carcinoma of cervix.

Conclusion: Carcinoma of cervix is easily curable disease with advent of early diagnostic and screening procedures. Our study emphasizes the significance and implementation of protocols for early diagnosis by proper screening procedures of patients with cancer of the cervix thereby seeking timely treatment which improves their prognosis.

Keywords: Histopathological Specimen, Cervix biopsy, Chronic nonspecific cervicitis, Cervical intraepithelial neoplasia, Squamous cell carcinoma.

Introduction
Cervical lesions are the most frequently encountered gynaecological problem in women. Cervical cancer is the second most common cancer in the world next to breast cancer in women.¹ In India, Cancer of the uterine cervix is the most frequent neoplasm among women, accounting for 20%-50% of all female cancers and 80% of all female genital Cancers.² In Tamil Nadu, the incidence of cervical cancer is more compared to breast cancer.³ Rural women are at higher risk than urban counter parts.

Materials and Methods
The present retrospective study was conducted in the Department of Pathology, Government Thiruvarur Medical College, Thiruvarur, Tamil Nadu over a period of two years from January 2016 to December 2017. A total of 1672 specimens that were submitted for routine histopathologic investigations were considered for this study. The specimens were studied in different forms such as punch biopsies and hysterectomies received from the Department of Obstetrics and Gynecology of Government Thiruvarur Medical College, Thiruvarur, Tamil Nadu and neighbouring Primary Health centres and Government Hospitals. A relevant clinical profile of cases was taken from case records and requisition forms. All the specimens were fixed in 10% buffered formalin solution and processed and embedded in paraffin blocks that were cut at 4–5 microns thickness and were subsequently stained with hematoxylin & eosin and examined.

Results
The present study consisted a total of 1672 specimens for the histopathological analysis, that were received for the study during the two years study period. The cervical specimen includes either from hysterectomy, polypectomy, cervical biopsy and curettings were analysed. The age of patient in this study, ranges from 20-75 years with peak age incidence of 40 to 60 years. [Chart 1] The majority of women with malignant Squamous cell carcinoma are diagnosed in their mid 40–50.⁴ Among the 1672 specimens, non-neoplastic lesions occupied the major part 1298 (77.63%) followed by neoplastic lesions 374 (22.37%). [Chart 2] Here is a table depicting the Histological patterns of cervix specimens studied. [Table 1]

From the above table it is observed that inflammatory lesions were the commonest lesions of the cervix. Next most common lesions were malignancies of the cervix followed by benign lesions
and then cervical intraepithelial neoplasias and least common were cervical glandular lesions. [Chart 4]

Chart 1: Age distribution

![Age distribution chart]

Chart 2: Proportion of neoplastic and non neoplastic diseases

![Proportion chart]

Chart 3: Proportion of non neoplastic diseases

![Proportion chart]
Chart 4: Proportion of neoplastic lesions

Table 1: Histopathological distribution of cervical lesions

<table>
<thead>
<tr>
<th>Cervical Lesions</th>
<th>Total cases</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non neoplastic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic Nonspecific Cervicitis</td>
<td>1094</td>
<td>84.28%</td>
</tr>
<tr>
<td>Papillary Endcervicitis</td>
<td>34</td>
<td>2.62%</td>
</tr>
<tr>
<td>Squamous Metaplasia</td>
<td>52</td>
<td>4.01%</td>
</tr>
<tr>
<td>Bartholin Cyst</td>
<td>14</td>
<td>1.07%</td>
</tr>
<tr>
<td>Descriptive</td>
<td>104</td>
<td>8.02%</td>
</tr>
<tr>
<td>Neoplastic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benign</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leiomyomatous Polyp</td>
<td>24</td>
<td>6.42%</td>
</tr>
<tr>
<td>Endocervical Polyp</td>
<td>24</td>
<td>6.42%</td>
</tr>
<tr>
<td>Cervical Intraepithelial Neoplasia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CIN –I</td>
<td>62</td>
<td>16.58%</td>
</tr>
<tr>
<td>CIN –II</td>
<td>32</td>
<td>8.55%</td>
</tr>
<tr>
<td>CIN –III</td>
<td>56</td>
<td>14.98%</td>
</tr>
<tr>
<td>Malignancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCC</td>
<td>170</td>
<td>45.45%</td>
</tr>
<tr>
<td>Others</td>
<td>6</td>
<td>1.60%</td>
</tr>
<tr>
<td>CIN - Cervical Intraepithelial Neoplasia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SCC - Squamous cell Carcinoma</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Distribution of cervical cancer reported by other authors

<table>
<thead>
<tr>
<th>S Study</th>
<th>No. of cases of carcinoma cervix of Ca. cervix</th>
<th>Total Cervical lesions studied</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solapurkar et al (8)</td>
<td>488</td>
<td>1472</td>
<td>33.8%</td>
</tr>
<tr>
<td>Present study</td>
<td>176</td>
<td>1672</td>
<td>10.5%</td>
</tr>
</tbody>
</table>

Table 3: Comparative distribution of squamous cell carcinoma of the cervix in different studies

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Authors ors</th>
<th>Year</th>
<th>Total Invasive Carcinomas</th>
<th>Squamous Cell carcinoma</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Gupta et al (9)</td>
<td>1979</td>
<td>122</td>
<td>115</td>
<td>94.26%</td>
</tr>
<tr>
<td>2</td>
<td>Solapurkar at al (6)</td>
<td>1985</td>
<td>466</td>
<td>446</td>
<td>95.70%</td>
</tr>
<tr>
<td>3</td>
<td>Swan et al (15)</td>
<td>1973</td>
<td>223</td>
<td>191</td>
<td>85.65%</td>
</tr>
<tr>
<td>4</td>
<td>Present study</td>
<td>2018</td>
<td>176</td>
<td>170</td>
<td>96.59%</td>
</tr>
</tbody>
</table>
Fig. 1: LPF- Squamous Cell Carcinoma- Cords and sheets of tumor cells with abundant keratin pearls & mild atypia

Fig. 2: HPF- Glassy Cell Carcinoma- atypical cells with abundant eosinophilic ground glass cytoplasm with distinct cell membranes

Fig. 3: HPF- Serous Adenocarcinoma - finger-like papillae with a central core of fibrovascular tissue, epithelial tufting & stratification

Fig. 4: HPF- Adenocarcinoma – Villous structures have thin fibrovascular cores and are lined by pleomorphic glandular epithelium

Fig. 5: HPF- Endocervical Polyp – Dilated, branching papillary structures lined by tall columnar, mucinous epithelium

Fig. 6: HPF –CIN-I: Koilocytosis – mature squamous cells with perinuclear halos and enlarged nuclei with atypia
Cervical intraepithelial neoplasia (CIN) - disease confined to the epithelium.
CIN I: disease confined to the lower third of the epithelium. [Fig. 6]
CIN II: disease confined to the lower and middle thirds of the epithelium.
CIN III: affecting the full thickness of the epidermis. [Fig. 7]
Cervical malignancies formed most common malignant tumours of the female genital tract, mostly seen in elderly females. Persistence of HPV infection is the most important factor in developing cervical cancer; HPV is detected in 99% of cervical tumours. There are around 80 types of HPV that are related to cervical cancer. The high-risk types - HPV 16 and 18 - are highly involved in 70% of cervical cancer. 

Other risk factors include: 

- Heterosexual women.
- Women with multiple sexual partners, or partners of promiscuous males.
- Lower social class.
- Smoking.
- Immunosuppression - eg, HIV and post-transplant.
- Combined oral contraceptive.
- Non-attendance at the cervical screening programme.

Squamous cell carcinoma was the commonest of the invasive lesions encountered in this study, accounting for 96.54% of the total invasive carcinoma. This is analogous with the studies of Solapurkar et al. (95.70%) and Gupta et al. (94.26%). [Table 3] [Table 2]

Cancer that develops in the ectocervix is usually squamous cell carcinoma, and around 80-90% of cervical cancer cases (more than 90% in India) are of this type. Cancer that develops in the endocervix is usually adenocarcinoma. Squamous cell carcinomas were graded in this study according to Broder’s classification into well-differentiated squamous cell carcinoma (30.09%), moderately differentiated squamous cell carcinoma (63.13%) and poorly differentiated squamous cell carcinoma (5.42%). Thus, it is observed that majority of the squamous cell carcinomas were of the moderately differentiated type [Fig. 1] comparable with the study done by Husin N et al.

Cervical carcinoma spreads characteristically by direct extension to the vagina, corpus (endometrium and myometrial wall), parametrium, lower urinary tract, and uterosacral ligaments. Lymph node metastases are also common.

Adenocarcinoma Cervix: Adenocarcinoma of the uterine cervix is second most common tumor type following squamous cell carcinoma. Adenocarcinomas have been rising in incidence since the 1970’s, especially in women younger than 35 years of age. Gross lesions can be exophytic or flat or invasive and ulcerated. HPE...
shows columnar cells with elongated, hyperchromatic nuclei showing marked nuclear atypia and coarse chromatin. The cells are often clusters or individual containing amorphophilic or eosinophilic apical cytoplasm. Brisk mitotic activity seen. The glands are densely arranged with loss of lobular arrangement in a complex racemose pattern. [Fig. 4]

**Glassy Cell Carcinoma:** It comprises <1% of cervical cancers with poor prognosis. Microscopic features include solid nests of pleomorphic large polygonal cells with finely granular eosinophilic ground glass-type cytoplasm with distinct cell membranes, and large eosinophilic nuclei with prominent nucleoli. Mitotic figures are abundant. Heavy lymphoplasmacytic and eosinophilic inflammatory cells seen in stroma. [Fig. 2]

**Serous Adenocarcinoma:** The malignant neoplasm composed of papillary tufts and complex papillae lined by cells with moderate to severe nuclear pleomorphism. Inflammatory infiltrates within papillary cores and stroma seen. Mitotic figures and psammoma bodies noticed. [Fig. 3]

**Conclusion**

Inflammatory lesions were the most common cervical lesions followed by malignancies. Commonest cervical malignancy was Invasive squamous cell carcinoma, moderately differentiated being the commonest type at age group of 40 – 50 years. HPV is most frequently associated with Invasive cervical cancer.

**References**

3. Aswathy Sreedevi, Reshma Javed, and Avani Dinesh: Epidemiology of cervical cancer with special focus on India.