Original Article

Correlation of cervical cytology with cervical histology

Saha R[1], Thapa M[2]

[1,2]Lecturers, Department of Obstetrics & Gynaecology, KMCTH

Abstract

Objective: To correlate cervical cytology with Cervical histology. **Methodology:** A hospital based prospective study was carried out in consecutive total forty-three patient attending oncology clinic of Kathmandu Medical College Teaching Hospital, Sinamangal, Nepal from 1st Bhadra 2061 to end of Falgun 2061 (18th August 2004 - 12th February 2005) during authors posting in this clinic. All patients who underwent cervical biopsy on either indication of clinically suspected lesions or abnormal cytology were correlated with Pap smear report. Pap smear was carried out in conventional technique using Ayre's spatula. Cervical biopsy was carried out with help of punch biopsy forceps in operation Theatre without the guidance of colposcopy. All pertinent information regarding patient profile in terms of their age, parity, age at marriage, age at 1st child birth, smoking habit, contraceptive use, and symptom of vaginal discharge was taken. Reports of Pap smear and cervical biopsy of these patients were collected from oncology clinic during their follow up visit and all these information and finding were entered in structured questionnaire. The reporting of Pap smear was done in Bethesda system. The average duration between performing Pap smear and biopsy was of one month. Statistical analysis was carried out by EPI – INFOS6 system. **Result:** Of forty three patients who underwent cervical cytology 22 cases were of Benign lesion, 8 cases of LSIL, 9 cases of HSIL, 3 cases of invasive carcinoma and 1 of ASCUS. Sensitivity, specificity, positive predictive value, negative predictive value, diagnostic accuracy and p-value in benign grade was 76%, 83.3%, 86.4%, 71.4%, 79.1%, 0.0004 respectively. Similarly sensitivity, specificity, positive predictive value, negative predictive value, diagnostic accuracy and p-value in LSIL was 60%, 93.9%, 75%, 88.6%, 86%,0 .0008 respectively. For HSIL it was 100%, 89.5%, 55.6%, 100%, 90.7 0.0001 respectively. Respectively for carcinoma it was 100% for sensitivity, specificity, positive predictive value, negative predictive value, diagnostic accuracy p-value was0 .00008. **Conclusion:** Pap smear significantly correlated with cervical histology.

Key Words: Pap Smear, Histology, Correlation.

Although cervical cancer was the leading cause of death in American women as recently as 1930, both the incidence and mortality from cervical cancer have decreased by almost one-half since 1980's. Largely as a result of wide spread screening with Pap test.[1,2,3]

Cervical screening in many respects is ideal screening test.[1,2,3] Cervical cancer has a defined pre-malignant phase of many years, which allows repeated tests to significantly reduce the impact of individual false negative rate. Treatment is effective in reducing the chance of progression to invasive disease.[1,3]

The success of Pap smear has resulted in unrealistic expectations with a consequence rise in litigation cases when false-negative arises.[2] Traditionally the gold standard for assessing the performance of Pap smear has been histology.

Methodology A hospital based prospective study was carried out in consecutive total forty-three patient attending oncology clinic of Kathmandu Medical College Teaching Hospital, Sinamangal, Nepal from 1st Bhadra 2061 to end of Falgun 2061 (18th August 2004 - 12th February 2005) during authors posting in this clinic. All patients who underwent cervical biopsy on either indication of clinically suspected lesions or abnormal cytology were correlated with Pap smear report. Pap smear was carried out in conventional technique using Ayre's spatula. Cervical biopsy was carried out with help of punch biopsy forceps in operation Theatre without the guidance of colposcopy. All pertinent information regarding patient profile in terms of their age, parity, age at marriage, age at 1st child birth, smoking habit, contraceptive use, and symptom of vaginal discharge was taken.

Correspondence
Dr. Rachana Saha
Lecturer, Department of Obstetrics & Gynaecology, KMCTH
Post Box No. 5919

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Results
Total number of Pap Smear done in year 2061 (13th Apr 2004 – 13th Apr 2005) were 554, out of which inflammatory were 519, LSIL were 21, HSIL were 10 and carcinoma was 4. Table 1 shows the details about the profile of all 43 patients on whom smear and biopsy were taken. Table 2 shows good correlation between Pap smear and cervical biopsy findings.

Table 1: Patient Profile

Mean age of the patients	40.3 Years
Mean age of marriage	21Years
Mean parity of the patient	2.3
Mean age at 1st child birth	23.2 Years
Use of hormonal contraception	11.6%
Smoker	2.3%
Patient with vaginal discharge	62.8%
Socio-economic status-Middle class	100%

Table 2: Correlation of Pap smear and cervical Histology

Pap smear	No	Histology			
		Benign (Inflammatory)	LSIL (CIN 1)	HSIL (CIN 2,3)	Ca
Benign(Inflammatory)	22	19	3		
ASCUS	1		1		
LSIL	8	2	6		
HSIL	9	3	1	5	
Ca	3				3(SCC)

ASCUS=Atypical cells of undetermined significance
LSIL=Low grade squamous intra-epithelial lesion
HSIL=High grade squamous intra-epithelial lesion, Ca=Carcinoma
SCC = Squamous Cell Carcinoma

Table 3: Different statistical value for Pap smear for different grades of disease

Particulars	Benign	LSIL	HSIL	Ca
Sensitivity	76	60	100	100
Specificity	83.3%	93.9%	89.5%	100%
Positive Predictive Value(PPV)	86.4%	75%	55.6%	100%
Negative Predictive Value(NPV)	71.4%	88.6%	100%	100%
Diagnostic Accuracy	79.1%	86%	90.7%	100%
P-value	0.0004	0.0008	0.0001	0.0008

Discussion

This study definitely shows significant correlation between Pap smear and cervical histology. The positive predictive value of Pap smear was highest for malignancy followed by benign, LSIL and HSIL. This was similar to the study by Benedet J-L[4] in which (PPV) was 91.8% for malignancy and lowest for benign (35%). They also reported statistical significant agreement between both cytology and histology within one grade of disease. Cioc AM[5] also reported overall concordance rate of 86.9% between Pap smear and histology in their series of 3,229 cases. Tuon F[7] reported sensitivity (77%), PPV (74%), and NPV (45%) of Pap Smear. Similarly in statistical analysis report of 2001the PPV for CIN 3 was 86%.[7] .GPS Yeoh and Chan KW in their series of 283 cases reported sensitivity of 91.7% and positive predictive value of 93.5%. In our study high PPV of benign disease could be attributed to reasons being the slides of both histology and cytology reviewed only once.

Conclusion

Pap smear correlated significantly with histology. These findings also suggest that biopsy should be performed as soon as possible than to repeat Pap smear in 3 – 6 months time. Correlation study can be used by institutions for evaluation cytodiagnostic capabilities as part of overall laboratory quality improvement.

Acknowledgment

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