Correlation of Colposcopy with Biopsy in Cases of Abnormal Cervical Cytology

Kirtipal Subedi

Department of Gynaecology, Paropakar Maternity and Women's Hospital, Thapathali, Kathmandu

ABSTRACT

Aims: This study aims to find out the role of colposcopy and its correlation with cervical biopsy in detection of pre malignant cervical lesion.

Methodology: This is hospital based prospective observational study on 60 cases with abnormal cervical cytology reports conducted in the Department of Obstetrics and Gynecology, PMWH, Thapathali, Kathmandu. Colposcopy guided biopsies were done and findings noted.

Results: Among 60 cases enrolled in the study the most common cervical cytology finding was ASCUS, LSIL, HSIL and ASC-H present in 46.6%, 31.6%, 15% and 6.6% respectively. The colposcopy finding among these cases was normal, CIN1, CIN 2 and CIN 3 in 45%, 23.3%, 16.7% and 9% respectively. Among these cases the most common biopsy finding was normal, CIN 1, CIN 2, CIN 3 and squamous cell carcinoma in 55%, 18.3%, 8.3%, 15% and 3.3% respectively. The sensitivity, specificity, positive predictive value and negative predictive value of colposcopy with CIN 1 as disease threshold was calculated to be 80.6%, 93.1%, 81.8% and 92.6% respectively. While evaluating the validity of colposcopy with histopathology, colposcopy seems to make an accurate diagnosis in 75% of cases, overestimating in 15% and underestimating in 8% of cases.

Conclusions: There is a good correlation of colposcopy with histopathological diagnosis of cervical cancer.

Keywords: colposcopy, cytology, diagnosis, premalignant

INTRODUCTION

Cancer of cervix is the most common gynecological malignancies and fourth most common malignancy in female with a mortality of 7.5% and ranks as the commonest cancer among women of Nepal.[1] World Health Organization advices screening strategy with cytology by pap smear followed by colposcopy examination where the facilities are available in an effort to decrease the burden of this major public health problem.[2] While the results of pap smear screening have shown very good results in developed countries with availability of structured health system, its benefit in developing and underdeveloped countries is still not adequate.[3] Low-grade cytology abnormalities including atypical squamous cells of unknown significance (ASCUS) and low grade squamous intraepithelial lesions (LSIL) are often correlated with a benign or low-grade (CIN 1) histologic diagnosis whereas high-grade cytological abnormalities reflect a high-grade histologic diagnosis (CIN 2 or 3) in 90% of cases.[4]

Colposcopy is usually done when there is abnormal cytology and the diagnosis of malignancy is confirmed by biopsy and histopathological examination.[5] Studies have shown a low sensitivity of pap smear so cervical biopsy and colposcopy are recommended in patients with ASCUS. Colposcopy and endocervical curettage alone are reported to be better diagnostic tools than a repeat pap smear.[6] Relatively low sensitivity of cervical cytology (50%) have led to the search of better screening methods for early detection of cervical cancer in developing countries.[7]

Various cervical cancer screening tools and confirmatory tests are currently available which require different levels of expertise, cost and time. They have fair level of accuracy and have to be customized based on its pre-requisites. These are visual inspection with acetic acid, conventional Pap, liquid based cytology and HPV DNA test. But there is no screening test with a 100% specificity and there remains a scope to identify a better method for the diagnosis of this common condition.[8] This study aims to find out the role of colposcopy and its correlation with cervical biopsy to evaluate abnormal cytology in detecting pre malignant lesion.

CORRESPONDENCE

Kirtipal Subedi
Department of Gynaecology, Paropakar Maternity and Women's
Hospital, Thapathali, Kathmandu
Phone: +977-9851097158
Email: kirtipalsubedi@gmail.com

METHODS

This study was performed at Paropakar Maternity and Women's Hospital, Thapathali from March 15th2018 to November 15th2018 for the duration of eight months after taking approval from hospital institutional review board. This was the prospective clinical study done among 60 cases between the age group 21 to 65 years with abnormal reports on cervical cytology screening. All cases visiting gynecology OPD with abnormal cytology were included in study after taking informed consent. Data obtained was recorded in a pre designated proforma. The participants were interviewed using a standard questionnaire regarding age, residence, occupation education, chief complaints, menstrual history, obstetrics history, past history, personal history, smoking history. They were explained about the examination procedure in detail.

Colposcopy was done using colposcopy machine of B'orzeInc with model no. Dvc 10000. Inspection was done by using green filter followed by 5% acetic acid and Lugol's iodine application. Margin and color of the lesion along with appearance of blood vessels and iodine uptake were noted and abnormal colposcopy findings were recorded (correlation of colposcopy using Reid index). Punch biopsy were taken from the suspicious colposcopy lesion while four quadrant biopsy was taken in normal colposcopy cases. Tissue with fixation were sent for histopathological study.

Collected data were analyzed by means of statistical software SPSS for windows. Analysis was done by using chi-squared test for calculating sensitivity, specificity, positive and negative predictive value of colposcopy.

RESULTS

In this study 60 patients who presented to the gynaecological OPD with Pap smear positive results were included. There were more women with age of 31-40 years and parity of 3-4. [Table-1].

Table-1: Age and Parity distribution

Age distribution (years)	No of cases (Percent)	Parity	No.of cases (Percent)
20-30	8(13)	Nulliparous	0
31-40	31(52)	1-2	21(50)
41-50	15(25)	3-4	32(53)
51-60	5(8)	3-5	7(12)
More than 60	1(2)	Total	60
Total	60		

Abnormal vaginal discharge and pelvic pain were the commonest symptoms present in 77% and 82% respectively whereas post coital bleeding was present in 20% of cases [Table-2].

Table-2: Distribution of Symptoms

Symptoms	No of cases (Percentage)*
Pelvic Pain	49 (81.7)
Post Coital Bleeding	12 (20)
Abnormal Vaginal Discharge	46 (76.7)
Post Menopausal Bleeding	3 (5)
*One patient may present with multiple symptoms	

Hormonal contraception was found to be most common mode of contraception used by 58.3% of women [Table-3].

Table-3: Use of Contraception

Form of Contraception	Frequency (Percentage)
Hormonal contraception (OCP, Inj DMPA, Implant)	35 (58.3)
Mini lap/Vasectomy	7 (11)
IUCD	1 (1.6)
Barrier	6 (10)
None	11 (18.3)
Total	60

Similarly, among the cases 35% were smoker.

ASC-H and HSIL more correlated with cervical cancer than ASCUS and LSIL [Table-4].

Table-4: Correlation between cervical cytology and histopathology

Biopsy	Abnormal cytology				Total
	ASCUS	LSIL	ASC H	HSIL	
Benign	19	13	1	0	33 (55%)
CIN 1	5	4	1	1	11 (18.3%)
CIN 2	2	0	2	1	5 (8.3%)
CIN 3	1	2	0	6	9 (15%)
Squamous cell carcinoma	1	0	0	1	2 (3.3%)
Total	28 (46.6%)	19 (31.6%)	4 (6.6%)	9 (15%)	60

There was a good correlation of colposcopy using the Reids Index with histopathological diagnosis. The sensitivity, specificity, positive predictive value and negative predictive value of colposcopy with CIN 1

as disease threshold was calculated to be 80.6%, 93.1%, 81.8% and 92.6% respectively [Table-5].

Table-5: Correlation between colposcopy and histopathology

BIOPSY	Colposcopy				Total
	NORMAL	CIN 1	CIN2	CIN3	
Benign	25	5	3	0	33
CIN 1	2	8	1	0	11
CIN 2	0	1	4	0	5
CIN 3	0	0	1	8	9
Squamous cell carcinoma	0	0	1	1	2
Total	27(45%)	14(23.3%)	10(16.7%)	9(15%)	60

While evaluating the validity of colposcopy with histopathology, colposcopy seems to make an accurate diagnosis in 75% of cases, overestimating in 15% and underestimating in 8% of cases [Table-6].

Table-6: Validity of colposcopy using Reid index with histopathology

Reid's index	Over estimation	Under estimation	Accurate estimation	Total
Normal	0	2(7.4%)	25(92.6%)	27
CIN 1	5 (36%)	1(7%)	8(57%)	14
CIN 2	4(40%)	1(20%)	4(40%)	10
CIN 3	0	1(11%)	8(89%)	9
Total	9 (15%)	5(8%)	45(75%)	60

DISCUSSION

Cervical cancer is the most common cancer in women with 500 thousand annual deaths in the developing world.[5] This major public health problem in females of developing countries have become a rare entity in the developed world because of structured screening program by frequent pap smear examination.[8] However in countries like Nepal where there is decreased knowledge in the population about the general knowledge of cervical cancer and the necessity and availability of frequent screening, pap smear screening program have not shown increased benefit to reduce its disease burden.[9,10] Moreover studies have shown that Nepalese women present in advanced stage of the cancer probably due to misinterpretation of the presenting complains by a health care provider and unavailability of cervical examination.[11] The general recommendation of a repeat pap smear after the treatment of infection for benign cellular changes is usually not followed in our country due to loss of follow up which causes missing in diagnosis of pre malignant cases.[12,13,14] Thus the necessity of frequent screening over a wide age range, requirement of skilled manpower and the low sensitivity of pap smear have lead the clinicians of developing world to search for a better screening program to catch this preventable disease in its early and treatable sate. This study mainly aims to find out the relation of colposcopy the histopathological diagnosis of cervical cancer.

The most common age group of cervical cancer was 30 to 40 years and the most common parity was 3-4 in this study which is comparable to the study done by Kohli et al from India.8 While abnormal vaginal discharge is the most common symptoms reported by authors in studies done among women with cervical cancer, we have observed pelvic pain to be as common as vaginal discharge in our study.[5,17,18] Hormonal contraception is a known risk factor for cervical cancer.[15,16] This study also show a higher frequency (58%) of hormonal use as contraception in women with abnormal pap smear. In this study 30% of the cases where smoker which is slightly higher than a population based cancer screening study done in Bharatpur which found only 20% of women with cervical cancer to be smokers.[19]

In our study ASCUS was present in 46% of cases followed by LSIL in 32%, HSIL in 15% and ASC-H in 7%. ASCUS is reported to be the most common positive cytology finding by authors from India and Turkey.[8,20] Similarly benign lesion in colposcopy is reported to be the most common finding by Saha et al from Kathmandu in comparision to the present study.[21] The sensitivity and specificity of colposcopy is 80.6% and 93.1% which is similar to Savitha et al where it is 85% and 83% respectively.[22] In another study done by Yagnik et al the sensitivity of colposcopy was 74% and specificity was 90.7%.[23]Similarly, comparable to Durdi et al, colposcopy is found to be a reliable test for detection of cervical cancer in our study with accurate estimation in 75% of cases.[17]

CONCLUSIONS

Thus colposcopy has a good correlation with histopathological diagnosis of cervical cancer. Its satisfactory diagnostic efficacy makes it a reliable tool for the diagnosis and management of malignant and premalignant lesions of the cervix.

REFERENCES

1. World Health Organization - Cancer Country Profiles, 2014. URL:https://www.who.int/cancer/country-profiles/npl_en.pdf?ua=1

2. World Health Organization. WHO guidelines for screening and treatment of precancerous lesion for cervical cancer prevention. ISBN: 978 92 4 154869 4. South Africa:WHO:2013.

3. Sankaranarayanan R, Budukh AM, Rajkumar R. Effective screening programmes for cervical cancer in low- and middle-income developing countries. Bull World Health Organ. 2001;79(10):954–62.

4. Zhang M, Carrozza M, Huang Y. Correlation discrepancies between high-grade squamous intraepithelial lesions and high-grade cervical intraepithelial neoplasia: A cytological/histological correlation study from a single-institution experience. Acta Cytol. 2014;58(1):47–52.

5. Karimi-Zarchi M, Peighmbari F, Karimi N, Rohi M, Chiti Z. A comparison of 3 ways of conventional pap smear, liquid-based cytology and colposcopy vs cervical biopsy for early diagnosis of premalignant lesions or cervical cancer in women with abnormal conventional Pap test. Int J Biomed Sci. 2013;9(4):205–10.

6. Karimi Zarchi M, Binesh F, Kazemi Z, Teimoori S, Soltani HR, Chiti Z. Value of colposcopy in the early diagnosis of cervical cancer in patients with abnormal pap smears at Shahid Sadoughi hospital, Yazd. Asian Pacific J cancer Prev. 2011;12(12):3439–41.

7. Cervical Cancer Prevention FACT SHEET Pap Smears: An Important But Imperfect Screening Method. 2002.

8. Kohli B, Bala S, Goel JK, Sinha M, Kar J, Tapasvi I. Comparison of PaP Smear and Colposcopy in Detection of Premalignant Lesions of Cervix. J South Asian Fed Menopause Soc. 2014;2(1):5–8.

9. Ranjit A, Gupta S, Shrestha R, Kushner AL, Nwomeh BC, Groen RS. Awareness and prevalence of cervical cancer screening among women in Nepal. Int J Gynecol Obstet. 2016;134(1):37–40.

10. Joy Teresa, Sathain Brijesh, Bhattarai Chacchu CJ. Awareness of Cervix Cancer Risk Factors in Educated Youth: A Cross-Sectional, Questionnaire Based Survey in India, Nepal, and Sri Lanka. Asian Pacific J Cancer Prev. 2011;12:1707-12.

11. Gyenwali D, Khanal G, Paudel R, Amatya A, Pariyar J, Onta SR. Estimates of delays in diagnosis of cervical cancer in Nepal. BMC Womens Health. 2014;14(1):29.

12. Dasari P, Rajathi S, Kumar S V. Colposcopic evaluation of cervix with persistent inflammatory Pap smear: A prospective analytical study. Cytojournal. 2010;7:16.

13. Massad LS, Einstein MH, Huh WK, Katki HA, Kinney WK, Schiffman M, et al. 2012 Updated Consensus Guidelines for the Management of Abnormal Cervical Cancer Screening Tests and Cancer Precursors. Obstet Gynecol. 2013;121(4):1–27.

14. Joseph N, Hinchcliff E, Goodman A. Cervical Cancer Screening: The challenges of Tracking and Follow-up. J Genit Syst Disor. 2015;4:4.

15. Smith JS, Green J, Berrington de Gonzalez A, Appleby P, Peto J, Plummer M, et al. Cervical cancer and use of hormonal contraceptives: a systematic review. Lancet. 2003;;361(9364):1159–67.

16. McFarlane-Anderson N, Bazuaye PE, Jackson MD, Smikle M, Fletcher HM. Cervical dysplasia and cancer and the use of hormonal contraceptives in Jamaican women. BMC Womens Health. 2008;8:9.

17. Durdi GS, Sherigar BY, Dalal AM, Desai BR, Malur PR. Correlation of colposcopy using Reid colposcopic index with histopathology- a prospective study. J Turkish Ger Gynecol Assoc. 2009;10(4):205–7.

18. Gyenwali D, Pariyar J, Onta SR. Factors Associated with Late Diagnosis of Cervical Cancer in Nepal. Asian Pacific J Cancer Prev. 2013;14(7):4373–7.

19. Sherpa AT, Karki BS, Sundby J, Nygard M, Franceschii S, Clifford G. Population Based Study of Cervical Cancer Screening in Bharatpur, Nepal. J Manmohan Meml Inst Heal Sci. 2015;1(4):3–8.

20. Barut MU, Kale A, Kuyumcuoğlu U, Bozkurt M, Ağaçayak E, Özekinci S, et al. Analysis of Sensitivity, Specificity, and Positive and Negative Predictive Values of Smear and Colposcopy in Diagnosis of Premalignant and Malignant Cervical Lesions. Med Sci Monit. 2015;21:3860–7.

21. Saha R, Thapa M. Correlation of cervical cytology with cervical histology. Kathmandu Univ Med J. 2005;. 3(11):222–4.

22. A comparison of Pap smear, colposcopy and colposcopy directed biopsy in evaluation of unhealthy cervix.

23. S YA, Singh R, Med IJ, Health R. A Prospective Study of comparison of Pap smear, Villi and Colposcopy In cervical cancer screening. Int J Med Res. 2016;5(4):50–7.