Comparative Study of Cytology and Histopathology of Cervical Lesion in VIA Positive Patients in Mymensingh.

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Abstract

Cervical cancer is the second most frequent type of cancer and leading cause of mortality among women worldwide. More than eighty eight per cent deaths from cervical cancer occur in developing countries and by 2030, it will be at least ninety eight per cent. In developed countries, the cases and deaths have declined markedly due to their extensive screening programs. The present study was undertaken to assess precancerous and cancerous cervical lesion by cytology and their comparison with histopathology in VIA positive cases. This descriptive, cross-sectional type of observational study was carried out in the Department of Pathology, Mymensingh Medical College in collaboration with the Department of Gynecology and Obstetrics, Mymensingh Medical College Hospital, during the period of July 2012 to June 2013. Study was carried out among 160 VIA positive patients and selected by non-random judgment sampling from the colposcopy clinic. Histological findings revealed that the most common age group affected by different types of cervical lesions is 30 – 39 years. It also revealed that squamous cell carcinoma (SCC) was very much common in age group 40–49 years. The statistical value of accuracy, sensitivity and specificity of Pap smear cytology test and histopathology yielded some important directives. The sensitivity values of Pap smear cytology was found 87.50%. The accuracy of the Pap smears in this study was 88.13%. The present study show significant relationship between cytological test with histopathological diagnosis. However ocytology testing is not suitable as a single test. In conclusion, it can be stated that combination of cytology (Pap smear) and histopathology would ultimately be more useful.

Keywords: *Cytolog, Histopathology, VIA Positive*

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Introduction

Cervical cancer is the second most frequent type of cancer and the leading cause of mortality among women worldwide (Parkin et al., 2006)[1]. One-third of the world cervical cancer burden is endured in India, Bangladesh, Nepal and Sri Lanka. New estimates of worldwide and regional cancer incidence and mortality published by the World Health Organization in the GLOBOCAN 2008[2] report confirmed the statment that the numbers for cervical cancer would continue to climb, especially in developing countries. More than eighty eight per cent of deaths from cervical cancer worldwide estimated to be in developing countries and by 2030, it will be at least 98 percent (Ferlay et al., 2008)[3].

According to WHO/ICO Report (2010)[4] the age specific incidence rates of cervical cancer in Bangladesh are highest compared to other countries of South Asia and the annual mortality is 11.6 per 100,000 women. The report further stated that 50.19 million women are at risk of developing cancer. Each year 17,686 women are diagnosed with cervical cancer and 10,364 die from the disease. It is observed that the cases and deaths have declined markedly in developed countries from approximately 1.4 to 1.7 per 100,000 women and this reduction was mainly as a result of extensive screening programs, (Carter et al, 2011 and Tomljenovic et al., 2013)[5,6].

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In Bangladesh the prevalence of cervical cancer according to WHO, (2006)[7] is 25–30 per 100 000. About 80% percent of the women with cervical cancer come for treatment at an advanced and inoperable stage due to the ignorance about regular check-up, screening services, lack of adequate and widespread screening facilities. There is worldwide agreement that screening test for cervical cancer is a necessity because it separates healthy persons from those with a high probability of having the disease. The lower incidence in developed countries is due to the access of women to screening test, which allows precancerous lesions to be detected and treated before they develop into full blown cancer (Crum, 2004)[8].

Popular screening tests are Papanicolaou (Pap) smear, visual inspection of cervix with acetic acid (VIA) and HPV DNA test. Visual Inspection with Acetic Acid (VIA) is the recommended screening approach. However, the uptake of screening test in many developing countries is still poor (Goldie et al., 2001; ACCP, 2004, Nogoma, 2006 and Sangwa-Lugoma et al., 2006) [9,10,11,12].VIA has been introduced by the Government of Bangladesh to screen mass population. It is an easy procedure and cost effective. All the government medical college hospitals, district hospitals, maternal and child welfare centers and some of the urban primary health care centers have facilities for VIA test free of cost by the support of UNFPA Bangladesh. Bangabandhu Sheikh Mujib Medical University (BSMMU) is collaborating with Government of Bangladesh in expansion of these facilities (Tahera et al., 2008)[13].

At the present time a good deal of attention is being paid to screening for early confirmatory detection of cancer. The present study was undertaken to assess precancerous and cancerous cervical lesion by cytology and histopathology in VIA positive cases.

Methods

This was a descriptive, cross-sectional type of observational study. The study was carried out in the Department of Pathology, Mymensingh Medical College. Patients of different age groups were selected from colposcopy clinic of Mymensingh Medical College Hospital. Duration of study was one year ranging from 01.07.2012 to 30.06.2013.. A total of 160 patients of different age group were selected from patients who attended the colposcopy clinic in the mentioned study period with features of inclusion criteria in the Department of Gynecology and Obstetrics, Mymensingh Medical College, Hospital. The study included VIA positive married patients attending the colposcopy clinic, aged between 30-60 years and those who were married for at least 10 years but below 30 years of age. We excluded, Patients who were pregnant, patient who were below twenty years of age and patient at menstruating period.

Result

A descriptive, cross sectional study was undertaken to assess the precancerous and cancerous cervical lesion by cytology and histopathology in VIA positive cases. A total of 160 cases were selected from the colposcpopy clinic of Mymensingh Medical College Hospital for a period of one year ranging from 01.07.2012—30.06.2013. Findings are presented below (Table-I).

Table I: Age distribution of the patients

Age in Years	Frequency	Percentage
20-29	32	22.50
30-39	72	45.00
40-49	37	23.00
50-59	37	9.40
Total	160	100.00

*Mean ($\bar{x}$) = 38.00 Years; Standard Deviation (SD) = 8.15 Years.

Considering each decade as a single age group in years the age distribution of patients under this study revealed that 160 patients were classified into four age groups. Table I shows that 32 (22.50%) patients were in 20 to 29 years age group, 72 (45.00%) patients

belonged to the age group 30 to 39 years, 37 (23.10%) cases in 40 to 49 years age group and 15 (9.40%) cases in 50-59 years group.

Cytological (Pap Smears) Diagnosis of cervical lesions

Table II: Cytological (Pap smear) Diagnosis of Cervical Lesions

Serial no.	Pap smear test result	Frequency	Percentage
01	NILM	63	39.40
02	ASCUS	05	3.10
03	ASC-H	05	3.10
04	LSIL	40	25.00
05	HSIL	17	10.60
06	Squamous Cell Carcinoma	30	18.75
Total		160	100.00

Table II shows the results of Pap smears diagnosis. On cytological examination, 63 (39.40%) cases were diagnosed as Negative for Intraepithelial Lesion and Malignancy (NILM), followed by 5 (3.10%) cases were diagnosed as lesions with Atypical Squamous Cells of Undetermined Significance (ASCUS) and other 5 (3.10%) cases were found Atypical Squamous Cell that cannot exclude HSIL (ASC- H), 40 (25.00%) patients with Low Grade Squamous Intraepithelial Lesions (LSIL); 17 (10.60%) patients with high grade squamous intraepithelial lesion (HSIL)and 30 (18.75%) patients were diagnosed as Squamous Cell carcinoma (SCC).

Histological Diagnosis of patients with cervical lesions

Table-III: Histological Diagnosis of patients with cervical lesions

Serial no.	Histological Diagnosis	Frequency	Percentage
01	Chronic Cervicitis	56	35.00
02	CIN - I	51	31.90
03	CIN II	14	8.80
04	CIN III	3	1.90
05	Squamous cell carcinoma	36	22.50
Total		160	100

The histopathological result of 160 cases represented in Table III. It revealed that 56 (35.00%) cases were chronic cervicitis , 51 (31.90%) cases were mild dysplasia that is CIN-I, 14 (8.80%) cases were diagnosed as having moderate dysplasia /CIN II, 3 (1.90%) patients were severe dysplasia / CIN III and the remaining 36 (22.50%) cases show invasive squamous cell carcinoma (SCC).

Comparison of Histological and Cytological (Pap smear) diagnosis

Table IV below shown that on histological examination of 160 cases, a total of 56 (35.00%) cases were found with chronic cervicitis, among them 50 (79.37%) cases were correctly diagnosed previously cytologically as negative for intraepithelial lesion. Out of 51 (31.90%) diagnosed CIN I cases, 34 (85.00%) cases were diagnosed cytologically as LSIL. Out of 14 (8.80%) cases diagnosed as CIN II, 10 (58.82%) cases were diagnosed cytologically HSIL. Out of 3 (1.90%) cases of histologically diagnosed CIN III, 2 (11.76%) cases were diagnosed cytologically as HSIL. The 30 cases were diagnosed cytologically as Carcinoma and those cases are histologically proven Squamous cell carcinoma. There is highly significant relationship in respect to Cytological (Pap smear) and Histological Diagnoses of Cervical lesions in the study group.

Table IV: Comparison of Cytological (Pap smear) and Histological Diagnoses of Cervical Lesions

Frequency in Pap smear diagnosis		Frequency in histological diagnosis				
Pap smear Test	Frequency	Chronic Cervicitis	CIN I	CIN II	CIN III	Squamous cell carcinoma
NILM	63	50(79.37)	13(20.63)	00	00	00
ASCUS	05	00	3(60.00)	2(40.00)	00	00
ASCH	05	00	00	2 (40.00)	1(20.00)	2 (40.00)
LSIL	40	6 (15.00)	34 (85.00)	00	00	00
HSIL	17	00	1 (5.89)	10 (58.82)	2 (11.76)	4 (23.52)
Squamous cell carcinoma	30	00	00	00	00	30 (100.00)
Total	160	56	51	14	03	36

* Figures within parentheses indicate percentage

Relationship of age group with Histological Findings

Table V: Histological Findings of cervical lesions by age group

Age in years	Frequency	No. of patients positive to Histological diagnosis				
		Chronic Cervicitis	CIN I	CIN II	CIN III	Squamous cell carcinoma
20-29	46(28.25)	36(78.26)	8(17.39)	02(4.35)	00	00
30-39	70(43.75)	13(18.57)	43(61.42)	8(11.43)	1(1.83)	5(7.14)
40-49	30(18.75)	5(16.66)	00	2(6.66)	2(6.66)	21(70.00)
50-59	14(8.75)	2(14.28)	00	2(14.28)	00	10(71.42)
Total	160	56	51	14	03	36

*Figures within parentheses indicate percentage

Table. V: Represents the comparative findings of cervical lesions on the basis of age group. It was revealed that most of the patients 36 (78.26%) were diagnosed as chronic cervicitis in the 20-29 years age group. In 30-39 years age group 57(81.43%) patient's shows positive for precancerous and cancerous lesion out of 70 patients. In the age group 40-49 years, 25 (83.33%) patients out of 30 patients showed positive for precancerous and cancerous lesion , followed by age group 50-59 years, positive in 10 (71.42%) patients out of 14 patients.

Evaluation of Pap smear cytology

Table – VI Statistical value of Pap smear cytology

Statistical value	Pap smear cytology in Percentage
Sensitivity	87.50
Specificity	89.29
Accuracy	88.13
Predictive value of a positive test	93.81
Predictive value of a negative test	79.37

The result illustrates that the sensitivity value of Pap test was found 87.50% and the specificity value the Pap test yielded 89.29% .

Discussion

This descriptive, cross-sectional type of observational study was carried out in the Department of Pathology, Mymensingh Medical College. The present study focused on traditional Pap smear method for cervical screening and their comparison with colposcopic biopsy.

In this study, 160 VIA positive women were selected. Pap smear cytology and histopathological examination were done in every cases. On cytological (Pap Smears) examination it was revealed that 63 (39.40%) cases were diagnosed as Negative for Intraepithelial Lesion and malignancy (NILM), 5 (3.10%) cases were diagnosed as Atypical Squamous Cell of Undetermined Significance (ASCUS) and 5 (3.10%) cases were Atypical Squamous Cell cannot exclude HSIL (ASC-H), 40 (25.00%) patients with Low Grade Squamous Intraepithelial Lesions (LSIL); 17 (10.60%) patients with high grade squamous intraepithelial lesion (HSIL) and 30 (18.75%) cases were diagnosed as Squamous Cell carcinoma (SCC). Ashrafunnessa et al., (2002)[14] reported in a study on patients attending the OPD of BSSMU showed much lower incidence in Pap smear. The percentages of SCC, LSIL and NILM were 0.20%, 4.20% and 91.70% respectively. The lower incidence may be due to incorporation of normal cases.

The result of histo-pathological examinations of 160 cases were represented that 56 (35.00%) cases were chronic cervicitis, 51 (31.90%) cases were mild dysplasia that is CIN-I, 14 (8.80%) cases were diagnosed as having moderate dysplasia (CIN II), 3 (1.90%) patients were severe dysplasia (CIN III) and the remaining 36(22.50%) cases show invasive squamous cell carcinoma (SCC). Ashrafunnessa et al (2006)[15] worked on 70 histologically diagnosed cases of CIN. Out of 70 cases, 34 (48.60%) cases were CIN-I and 36 (50.40%) cases were CIN-II/III. Syrjanen et al., (2005)[16] from Brazil reported the percentage of CIN-I, CIN-II and squamous cell carcinoma to be 12.00%, 4.30% and 1.00% respectively. The higher percentage of the present study reflects the inclusion of VIA positive cases only. Israt (2006)[17] in her cross

sectional study found the above occurrences as 21.40%, 10.00% and 29.00% respectively.

For comparing the Pap smear findings with histopathological diagnosis Pap smear results of 160 cases were reviewed. A total of 63 (39.40%) cases were found with Negative for intraepithelial lesion and Malignancy. Among them 50(79.37) cases were diagnosed histologically as Chronic cervicitis and 13(20.63%) cases were CIN-I. Out of 5 (3.10%) ASCUS cases 3(60.00%) were diagnosed as CIN-I and 2(40.00%) cases were diagnosed as CIN-II. Among 5(3.10%) ASCH cases 2(40.00%) cases were diagnosed CIN- II, 1(20.00%) case was CIN-III and 2(40.00%) cases were Squamous cell carcinoma. Out of 40(25.00%) LSIL cases 6(15.00%) were diagnosed as chronic cervicitis and 34(85.00%) cases were correctly diagnosed histologically as CIN-I. Among 17(10.60%) HSIL cases 1(5.89%) case was CIN-I, 10(58.82%) cases were CIN-II, 2(11.76%) cases were CIN-III and 4(23.52%) cases were diagnosed as Squamous cell carcinoma. Among cytologically diagnosed 30 (18.75%) Squamous cell carcinoma cases all are proven histologically as Squamous cell carcinoma. There is highly significant relationship to Cytological (Pap smear) and Histological Diagnoses of Cervical lesions in this study group.

It is therefore evidenced that out of 160 cases 91(56.88%) cases were correctly diagnosed by cytology,13 (8.13%) cases were false negative, 6 (3.75%) cases were false positive and 50 (31.25) cases were negative for precancerous and cancerous lesions. There is a significant correlation between Pap smear and Histological findings. In their studies Islam (2013),[17] Israt (2006)[18] and Xu et al., (2009)[19] similarly found a significant concordance between Pap smear and histological tests for the diagnosis of precancerous cervical lesions.

The present study shown that the precancerous and cancerous lesion affects relatively with increasing age. The present findings are similar to the other studies where such prevalence rises with increasing age (CDC. 2004. National Prevention Information Network, Centers for Disease Control and Prevention (CDC). Rockville, Maryland.). In the present study the age of 160 patients ranged from 20 to 59 years with a mean age of 38 years and SD 8.15. Syrjannen et al., (2005)[16] in a similar study reported the mean age of the women to be 37.90 years (range 14 – 67; median 37.70 years).

Conclusion

Based on findings of the study, it can be concluded that routine comfination Pap smear test and histopathological examination is enough for detecting cervical lesions. So, mass screening programme does not need any costly test like HPV DNA test. Based on study findings recommendations can be made that pap test should be routinely used in every patient attending the colposcopy clinic, biopsy should be taken in all VIA positive patient, combined pap test and histopathological examination is enough to detect cervical precancerous and cancerous lesion and in our country HPV DNA test is not mandatory as a routine test.

References

1. *Parkin, D.M., 2006. The global burden of infection-associated cancers in the year 2002. Int. J. Cancer 118, 3030-44.*
2. *"GLOBOCAN 2002 database: summary table by cancer". Archived from the original on 2008-10-26.*
3. *Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008: Cancer Incidence and Mortality Worldwide: IARC Cancer Base No. 10 [Internet]. Lyon, France: International Agency for Research on Cancer; 2010.*
4. *WHO/ICO Information Centre on HPV and Cervical Cancer (HPV Information Centre), 2010. Human Papilloma virus and related cancers in Bangladesh. Summary Report [accessed: 10-03-2013]; available at www.who.int/hpvcentre.*
5. *Carter, JR, Ding, Z and Rose, BR. 2011 HPV infection and cervical disease: A review. Australian and New Zealand Journal of Obstetrics and Gynaecology, 51: 103- 108*
6. *Tomljenovic L,Shaw C.A, Spinosa JP2013. Human Papillomavirus (HPV),Vaccines as an option for Preventing cervical malignancies; (How)effective and safe? Current pharmacological design, 19 (00) Pp; 01-02*
7. *World Health Organization (February 2006). "Fact sheet No. 297: Cancer". http://www.who.int/mediacentre/factsheets/fs297/en/index.html. Retrieved 2007-12-01*

8. Crum, PC 2004. 'The Female Genital Tract' in Robbins and Cotran Pathologic Basis of Diseases. 7th edition Kumar V, Abbas AK and Fausto, N (eds) Elsevier Saunders, Philadelphia. Pp1049 – 1053.
9. Goldie SJ, Kuhn L, Denny L, Pollack A, Wright TC. Policy Analysis of Cervical Cancer Screening Strategies in Low-Resource Settings: Clinical Benefits and Cost-effectiveness. JAMA 2001; 285:3107-15.
10. ACCP (Alliance for Cervical Cancer Prevention) 2004. Planning and implementing cervical cancer prevention and control programs. A manual for managers. ACCP, Seattle.
11. Ngoma, T., 2006. World Health Organization cancer priorities in developing countries. Ann. Oncol. 17, Suppl 8, viii9-viii14. 12. Sangwa-Lugoma, G., Mahmud, S., Nasr, S.H., Liars, J., Kayembe, P.K., Tozin, R.R., Drouin, P., Lorincz, A., Ferenczy, A., Franco, E.L., 2006. Visual inspection as a cervical cancer screening method in a primary health care setting in Africa. Int. J. Cancer 119, 1389-95.
12. Tahera, A, Ashrafunnessa, Jebunnessa, R.2008 Development of a visual inspection programme for cervical cancer prevention in Bangladesh. Reproductive Health Matters. 2008; 16(32): 78 - 85
13. Ashrafunnesa, Khatun.S, shamsuddin L., Rahman A.J.e.n., Kamal., Kabir S.,etal.,2002.Cervical dysplasia among the women attending gynaecological outpatient department of a teaching hospital. Bangladesh Journal of medical science,8(1);39-41.
14. Ashrafunnesa, Khatun.S, Haq F.,Islam M N.,Hossain MS.,Aziz M M.,et al.,2006.Human Papilloma virus in cervical cancer in Bangladesh.Bangladesh j obster gynecol, 21(2);51-57.
15. Syrjänen, K., Naud, P., Derchain, S., Roteli-Martins, C., Longatto-Filho, A., Tatti, S. et al., 2005. Comparing Pap smear Cytology. Aided Visual Inspection, Screening colposcopy, cervicography and HPV testing as optional screening tools in Latin America. Study design and Baseline Data of the LAMS study. Anticancer research 25: 3469-3480.
16. Islam, Shamina. 2013 Relation of Human Papilloma Virus (HPV) load with cervical precancerous and cancerous lesions. MD thesis Department of Pathology, BSMMU, Dhaka
17. Israt, T., 2006. Study on PV DNA test and conventional PAP test for identification of cervical intraepithelial lesions and cancer. MD thesis, Dept. of Pathology, BSMMU, Dhaka,
18. Xu, Y., Dotto, J., Hui, Y., Lawton, K., Schofield, K., and Hui, P., 2009. Grade cervical Intraepithelial Neoplasia and Viral load High risk Human Papilloma virus. Significant correlations in patients of 22 years old or younger Int. J. Clin. Exp.Path. 12: 169- 175