

HPV Infection in Cervical biopsy and Hysterectomy Specimens of Reproductive Age Females - A Hospital Based Prospective Study

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Abstract: Introduction: Human papilloma virus (HPV) is most common cause for cervical cancer all over world. A study from Mumbai has shown the prevalence of HPV to be 25% in CIN-I & up to 66% in CIN II. There is no data and research about the relation of HPV infection with cervical cancer in the Gujarat region including Bhavnagar district. Aims and objectives: 1. To assess prevalence of HPV infection in cervical biopsy and hysterectomy specimens of women of reproductive age group at Sir T Hospital, Bhavnagar. 2. To assess association of HPV with cervical dysplasia and/or cancer. Materials & methods: A prospective hospital based study of HPV by IHC was done on all cervical tissues and hysterectomy specimens. Inclusion Criteria: All cervical biopsy & hysterectomy specimens of reproductive age females. Exclusion Criteria: 1. Cervix assessed by PAP Smear. 2. Autolysed samples. Result: 37.5% of hysterectomy specimens and 4.2% of cervical biopsies were positive for HPV. The maximum number of patients & HPV positivity was seen in the 4th decade. Conclusion: The proportion of HPV infection in cervix of females in Bhavnagar was 41%.

Keywords: Cervical cancer, HPV, Koilocytes

1. Introduction

Human papilloma virus (HPV) is the most common cause for cervical cancer all over the world and also in India¹. In India, a study from Mumbai has shown the prevalence of HPV to be 25% in Cervical Intraepithelial Neoplasia-I (CIN-I) and upto 66% in Cervical Intraepithelial Neoplasia-II (CIN II)¹. There is no data and research about the relation of HPV infection with cervical cancer in the Gujarat region including Bhavnagar district. It can be detected by Immunohistochemistry (IHC) and in situ hybridization (ISH)^{2, 3, 4}. Hence this hospital based study was planned to assess the prevalence of HPV infection in women of reproductive age, and its association with cervical dysplasia and cancer.

Aims and objectives

- 1) To assess prevalence of HPV infection in cervical biopsy and hysterectomy specimens of women of reproductive age group at Sir T Hospital, Bhavnagar.
- 2) To assess association of HPV with cervical dysplasia and/or cancer.

2. Materials and methods

A prospective hospital based study of HPV by IHC was done on 24 cases of cervical biopsy & hysterectomy specimens of reproductive age females, received at histopathology lab of Sir T hospital and GMC Bhavnagar between August 2019 to August 2020, after approval from IRB.

Sampling: All consecutive samples as per inclusion criteria.

Inclusion criteria: All cervical biopsy & hysterectomy specimens of reproductive age females received at Histopathology lab of Sir T hospital and GMC Bhavnagar.

Exclusion criteria:

- 1) Cervix assessed by Papanicolaou Smear (PAP Smear).
- 2) Autolysed samples of cervical biopsy & hysterectomy specimens.

Method

Total 24 cases of cervical biopsy & hysterectomy specimens of reproductive age females which was received in formalin container at Histopathology lab was grossly investigated. The detailed demographic features and clinical history mentioned in CRF were recorded and studied. All the specimens was inspected grossly. All the received specimens were dissected and then formalin-fixed tissue will be processed, and slides will be prepared.

3. Results and analysis

IHC could be performed on total 24 cases amongst which 20 hysterectomy specimens & 4 cervical biopsy. Of which 10 cases were positive. Hence, total proportion of HPV was 41.6%. Figure 1 shows positive HPV cases. Amongst 10 HPV positive cases hysterectomy specimens showed 45% HPV infection and cervical biopsies showed 25% HPV infection.

Table 1: Age Wise % of HPV

Age (years)	Total No. (N=24)	Overall HPV status from all specimens (N=24)
30-39	3	1 (4.2%)
40-49	20	9 (37.5%)
50-60	1	0 (0%)

None of the biopsy /hysterectomy specimens below 30 years. HPV was present in far higher percentage in age group of 40-49 years. No. patient above 50 years was positive for HPV.

In respective age groups, 33% of all cases of 30-39 years group and 45 % of all cases of 40-49 years group were positive for HPV.

Table 2: % of HPV Positivity According To Cervical Morphology

Morphology No. (%)	HPV +ve No. (%) as per cases in each category (N=10)	Overall HPV +ve status from all cases (N=10)
Normal	-	-
Cervicitis	9 (45%)	9 (90%)
CIN-I	0%	0%
CIN-II	-	-
CIN-III	-	-
CIS	-	-
Invasive Carcinoma	1 (33.3%)	1 (10%)

Out of 24 cases, chronic cervicitis was seen in 83.3%, CIN-I seen in 4.2% and invasive carcinoma was seen in 12.5%.

There were no cases of CIN-II and CIN-III. Two cases (8.3%) were associated with mature squamous metaplasia.

Out of the 3 invasive carcinoma cases, 33.3 % cases were squamous cell carcinoma (Non-keratinizing SCC type) and 66.7% cases were Adenocarcinoma (Endometroid type and clear cell adenosquamous cell type) .

As can be seen in table 2, HPV was seen in 45% of total cervicitis cases and 33% of total invasive carcinoma cases. Of all the HPV cases, 90% of HPV cases were found in cervicitis and 10% in invasive carcinoma.

Table 3: Association of Koilocyte with HPV

Koilocyte (N=7)	HPV	
	Positive No. (%)	Negative No. (%)
Present	4(57.2%)	3(48.2%)
Absent	6(35.2%)	11(64.8%)

Overall 29.1% cases were associated with koilocytic change. Of these, 57% were HPV positive. However, HPV positivity was also seen in 35% of koilocyte negative cases.



Figure 1: Shows Nuclear positivity for HPV wart (IHC 40x)

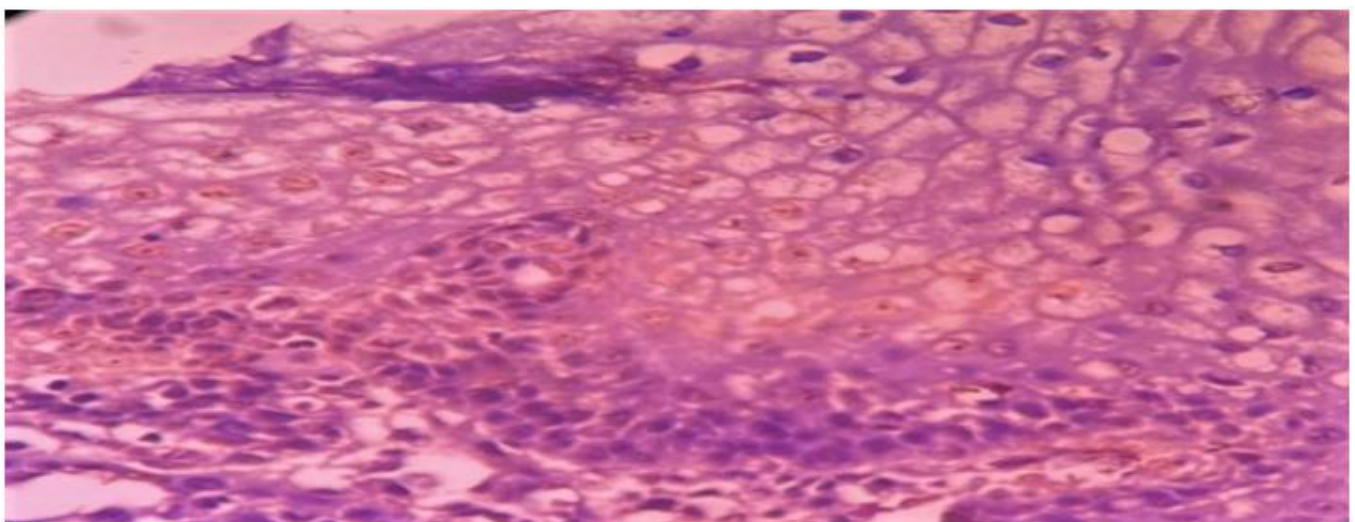


Figure 2: Case showing HPV positivity in all layers including basal. PS50%IS2+(IHC40x)

4. Discussion

Table 4: % of HPV in Cervix in Gujarat in different studies

Study	Sample size	% of HPV in cervix No (%)
Kinjal (2014) ⁵ A'bad PCR	52	31 (59.6%)
Goswami (2017) ⁶ A'bad PCR	263	151 (57.4%)
Present study IHC	24	10 (41.6%)

Table 4 shows that percentage of HPV in Cervix/Cervical lesions in different studies of Gujarat ranges from 40-60%.

Table 5: % of HPV in Squamous metaplasia in different studies

Study	Method	Sample size No.	Sq. metaplasia No. (%)	HPV in Sq. metaplasia No.(%)
Chabra (1996) ⁷ Karnataka	IHC	348	7(2%)	7(100%)
Brahmacharimayum(2013) ⁸ Karnataka	IHC	101	14(13.86%)	1(7.1%)
Anna A (2017) ⁹ Kerala	IHC	130	11(72.3%)	7(63.3%)
Presentstudy	IHC	24	02(8.3%)	1(50%)

It can be seen from table 5 that the presence of HPV infection in Squamous metaplasia ranged from 7.1 % to 100%. In present study, HPV positivity was seen even in meta plastic tissue & in the adjoining metaplastic gland.

5. Conclusion

The proportion of HPV infection detected by IHC was 41% in cervical biopsy and hysterectomy specimens of reproductive age group females in Sir T hospital, Bhavnagar.

33% cases of cervical cancer had HPV IHC positivity. This study emphasises that patient can be easily detected to have HPV infection by simple IHC procedure and can hence be followed up at regular interval for development of squamous intraepithelial lesion.

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All over cases showed nuclear positivity having Percentage score of 20-80% and Intensity score of 1+ or 2+. None of the cases showed Intensity score of 4+, as was seen in the control tissue of skin wart. This could be due to the skin wart being a new lesion with high amount of viral DNA, whereas all cervical lesions may be considered to be longstanding infections, as evident from presence of HPV in upper layers of the squamous lining of cervix. No studies are available with intensity and percentage scoring of IHC for comparison.

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