Original Article

Socio-Economic Factors and its Correlation with HPV Positivity.

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Abstract

Background: Impact of Cervical cancer on the women’s life is gradually increasing in India. The causative organism, Human Papilloma Virus (HPV) detection holds the potential to be used as a tool to identify women at risk. There is a pressing need for identifying prevalence of asymptomatic cervical HPV infection in the population to prevent its progression into cervical cancer.

Objectives: The objectives of this study is to correlate some of the risk factors like education and financial status with the HPV positivity in women prone for cervical cancer. Materials & Methods: 50 women of reproductive age group visiting the gynecology outpatient department in Hyderabad were selected and subjected to polymerase chain reaction, using GP5, GP6 primers to detect HPV. Statistical Analysis of the data was done. Results: 7(14%) women tested positive for HPV DNA and HPV prevalence was noted to be more common among literates of middle & low income group. Conclusion: The study generates prevalence of sub-clinical HPV in the women visiting a tertiary care institute as well as peripheral health centers. This data if done in larger groups may be useful for laying guidelines for mass screening of HPV, treatment and prophylaxis in the population. In future perhaps cervical cancer screening will shift from a cytology based approach to one in which search for HPV becomes the focus of disease detection with refined and better protocols.

Key words: Human Papilloma Virus (HPV); PCR (Polymerase Chain Reaction); GP 5, GP 6 (Glyco-Protein)

INTRODUCTION:
Globally, cervical cancer which is the 4th most common cancer in women and the most frequent cause of cancer death is preventable, yet approximately 527,624 new patients and more than 265,653 deaths occur each year worldwide. Cervical cancer ranks as the 2nd cause of female cancer in India. [¹] Identifying the disease in the early stages has driven researchers to focus on the underlying cause of cervical cancer and how it can be detected at the molecular level. There is overwhelming evidence that virtually all patients of cervical cancer are caused by the Human Papilloma Virus (HPV), making it perhaps the first cancer to be recognized as virally induced. While this burden may come down following implementation of the human papilloma virus (HPV) vaccination, screening will still be required. HPV DNA testing is a promising new technology for cervical cancer prevention and is the most reproducible of all cervical cancer screening tests. [²] Certain factors that were associated with an increased risk of cervical cancer are now considered to be risk factors for HPV infection. Some of these factors include, a women’s age at first sexual intercourse, number of lifetime sexual partners, reproductive history, exposure to hormones, smoking and other factors such lower socio-economic status, as defined by income and education, have also been associated with cervical cancer risk. [³]

MATERIAL AND METHODS
Women under reproductive age group presenting with cervical erosions were selected from Gynecology out-patient department of Modern Maternity Hospital, Peetalburz, Hyderabad. The purpose of study and procedure of sample collection was explained to the patient. With the consent from patient during the clinician’s examination cervical specimens were collected and transported using the DNA Pap cervical sampler or the HC cervical sampler (consisting of a Cervical Brush and a Specimen Transport Medium of Qualigene company) in a specimen transport medium. Out of collected 59 samples, 9 samples yielded DNA of unacceptable quality and were excluded from analysis and women not under reproductive age group were excluded.

Procedures are done under Good Laboratory set-up following aseptic precautions. To avoid contamination, pre PCR and post PCR work have been separated. Waste disposal was according to criteria set by GLP norms. Procedures followed are in accordance with the ethical standards laid down by the ICMR’s Ethical guidelines for biomedical research on human participants (2006).
DNA Isolation was done by using routine conventional method. Then the presence of DNA is checked by gel electrophoresis and subjected to PCR by using glycoprotein GP5 &GP6 primers.

RESULTS

Out of 50 patients 13 patients were literate and among them 3 patients (23%) were positive for HPV DNA and out of 37 illiterate patients 4 patients (10%) were HPV DNA positive. Women who were literate had a significantly higher rate of HPV in this study, however this cannot be inferred because of small size of sample. Chi square value is 0.399 with 1 d.f and p=5275>0.05 it is insignificant.

Table 1: Distribution of HPV DNA positive patients according to literacy

<table>
<thead>
<tr>
<th>Literacy</th>
<th>No. of Patients</th>
<th>HPV DNA</th>
<th>% of Pts. With HPV DNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literate</td>
<td>13</td>
<td>3</td>
<td>23.07</td>
</tr>
<tr>
<td>Illiterate</td>
<td>37</td>
<td>4</td>
<td>10.81</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Distribution of HPV DNA positive patients according to Financial Status

<table>
<thead>
<tr>
<th>Economic Status of the family (Aggarwal et al 2006)</th>
<th>No. of Patients</th>
<th>HPV DNA</th>
<th>% of Pts. With HPV DNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Income Group (Rs. &lt;10,000/year)</td>
<td>33</td>
<td>4</td>
<td>12.12</td>
</tr>
<tr>
<td>Middle Income Group (Rs. 10,000 – 40,000/year)</td>
<td>17</td>
<td>3</td>
<td>17.64</td>
</tr>
<tr>
<td>High Income Group (Rs. &gt;40,000/year)</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Out of 50 patients 33 patients were of low-income group and among them 4 patients (12%) were HPV DNA positive and out of 17 middle-income group 3 patients (17%) were HPV DNA positive and in our study no high income group patients were found. Women who were middle income category had a higher rate of HPV in our study. Chi square value is 0.011 with 1 d.f and p=0.4589>0.05 it is insignificant.

DISCUSSION:

Studies have shown that prevalence of HPV was consistently high in women with low literacy. According to Varghese the prevalence among the illiterates was high compared to literates.\[4\] Aggarwal et al., observed that women who were illiterate or had less than 6 years of education had a higher rate of HPV.\[5\] In the present study among the literate patients 3 out of 13 (23%) were positive for HPV DNA and among the illiterates 4 out of 37 patients (10%) were HPV DNA positive. Women who were literate had a significantly higher rate of HPV in the present study. Although hygienic practices are expected to be better in this group, the differences noted may also be due to higher awareness, higher reporting, and seeking of medical attention among this group. Access to health care is an important component of the issue. Though unlikely to be applicable to our patient population, it is also relevant to note the possibility that women from educated families are likely to continue their education and may marry later than those from relatively poor families. The multiplicity of sexual partners play an important role in the present population. This could not be elicited due to socio-cultural stigma. Hence, due to the possibility of under-estimation of this sensitive parameter, age at first intercourse was not elicited.

Several authors including Franceschi et al., have recognized low socioeconomic status as a risk factor for cervical carcinoma as well.\[6\] According to Aggarwal et al women belonging to low socioeconomic group (62.7%) had high rate of HPV infection, than those from medium (32.2%) or higher socioeconomic groups (37.1%), although the difference was not statistically significant.\[7\] According to Varghese (2000) the prevalence among the highest income category was 3.2% compared to 4.8% in the middle income group and 6.9% in the lowest income category.\[8\] In the present study 12.2% of women in the lower income group and 17.6% of women in the middle income stood positive for HPV DNA, while there were no women testing positive from the high income group. So, our data shows a consistency with the above studies with a high prevalence in this region as compared to Trivandrum study by Varghese, but lesser than the Chandigarh study by Aggarwal et al., Associated factors that modify this specific finding are events related to a women’s socioeconomic status, e.g. age at marriage, marital history, reproductive history, education, nutrition etc. However in view of small sample size no significant conclusions can be drawn.

In our study GP5+, GP6+ polymerase chain reaction was used to detect the presence of HPV DNA. We have observed that 14% patients were positive for HPV. This correlates well with studies done in some other parts of India – Gopalakrishna et al. New Delhi reported positivity of 13.3%,\[9\] Clifford et al 14.2% from Tamil Nadu.\[10\]However, Aggarwal et al 36.8% from Chandigarh.\[11\] There is one report of a lower percentage of HPV DNA positivity – Duttagupta et al 8.8% from West Bengal.\[12\]

CONCLUSION:

In our study, HPV DNA positivity is maximum in literate women of middle & low income group. In a resource poor country, it is not feasible to offer universal molecular testing for high-risk HPV, till HPV screening is made cheaper. Identification of population at risk will enable focused screening, with a greater cost effective utilization of resources. As our sample size had to be necessarily small (50), follow-up with larger samples and at multiple centers will yield high significance data which would be of great utility to the Indian context in view of gravity of the situation.

REFERENCES:

2) Bhatla N, Moda N (2009). The clinical utility of HPV DNA testing in cervical cancer screening strategies. Indian Journal of Medical Research 130; Pg: 261-265


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