Human Papilloma Virus (HPV) Genotype Screening

by PCR-restriction Fragment Polymorphism Assay

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Background: Uterine cervix cancer is the worldwide most popular cancer which ranks on the second next to breast cancer in women. Human Papilloma Virus (HPV) infection is deeply connected to cervical cancer and the occurrence rate of cervical cancer which is caused by HPV is various depend on its diverse genetic type. For these reason, the importance of HPV genetic screening tests has been on the rise in the laboratory for clinical prognosis or cancer treatments. So far, around 120 types of HPV have been reported according to its genetic sequence identification and half of them are also known that potentially related to the genital infection. HPV 16 and 18 are classified as a high risk group and they are found in most of the cervical cancer lesion.
Materials and methods: The number of samples analyzed in this study was 2,742 and those were collected in the Clinical laboratory of Soon Chun Hyang University Cheonan Hospital from January to July, 2013. Samples were subjected to PCR reaction with upstream and downstream primer set which includes reference sequence of each HPVs. After that, PCR products were treated with particular restriction enzyme to produce the oligomers which contain the reference sequence of respective HPVs. The oligomers were analyzed using Restriction Fragment Mass Ploymorphism (RFMP) method with MALDI-TOF MS. The data distribution was analyzed according to the frequency of positive and unusual data results.
Results: In 772 samples (28%) out of 2,742 samples which were requested to the hospital showed positive result as follows: 191 samples (24%), high risk group; 68 samples (8%), moderate risk group; 432 samples, low risk group; 118 samples (15%), unassigned risk; 37 samples (1%), mixed type. HPV 16 ranked the first majority with 78 cases (9.6%) which was followed by HPV 18 with 31 cases (3.8%), HPV 51 with 25 cases (3.1%) and HPV 52 with 20 cases (2.5%) in descending order. Among the moderate risk group, HPV 66 was 41 cases (5.1%) and HPV 53 was 27 cases (3.3%). HPV 62, 61 and 81 which belong to low risk group showed 109 cases (13.5%), 56 cases (8.4%) and 6.9% respectively. In unassigned risk group, HPV 84 showed 27 cases (3.3%) and others with 70 cases (8.7%).
Conclusion: In the previous studies, HPV infection plays pivotal role in uterine cervical cancer was confirmed. As the infection of HPV progressed on, High risk HPV is increasingly observed in lesion of cervical squamous cells. Analysis of HPV genetic type using MALDI-TOF MS is highly considered as clinical screening test for diagnosis of uterine cervical cancer and cervical squamous cell differentiation.

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