RESEARCH ARTICLE

HPV Genotyping Linear Assay Test Comparison in Cervical Cancer Patients: Implications for HPV Prevalence and Molecular Epidemiology in a Limited-resource Area in Bandung, Indonesia

Ramdan Panigoro[1], Herman Susanto[2], Sinta Sasika Novel[3], Sri Hartini[4], Edhyana Sahiratmadja[1,3]*

Abstract

Background: Persistent infection with high risk human papillomavirus (hrHPV) is strongly associated with cervical cancer. Normal cervical cells may also harbor hrHPV, and detection of early hrHPV infection may minimize risk of cervical cancer development. This study aimed to compare two commercial HPV genotyping assays that may affordable for early screening in a limited-resource setting in Bandung, Indonesia. Materials and Methods: DNA from cervical biopsies with histologically confirmed as squamous cell cervical cacinoma were HPV genotyped by Linear Assay 1 (Roche Diagnostics, Mannheim, Germany) or Linear Assay 2 (Digene HPV Genotyping RH Test, Qiagen Gaithersburg, MD). In a subset of samples of each group, HPV genotype results were then compared. Results: Of 28 samples genotyped by linear assay 1, 22 (78.6%) demonstrated multiple infections with HPV-16 and other hrHPV types 18, 45 and/or 52. In another set of 38 samples genotyped by linear assay 2, 28 (68.4%) were mostly single infections by hrHPV type 16 or 18. Interestingly, 4 samples that had been tested by both kits showed discordant results. Conclusions: In a limited-resource area such as in Indonesia, country with a high prevalence of HPV infection a reliable cervical screening test in general population for early hrHPV detection is needed. Geographical variation in HPV genotyping result might have impacts for HPV prevalence and molecular epidemiology as the distribution in HPV genotypes should give clear information to assess the impact of HPV prophylactic vaccines.

Keywords: Cervical cancer - HPV genotypes - linear assay - Bandung Indonesia

Asian Pac J Cancer Prev, **14 (10)**, 5843-5847

Introduction

High risk human papillomavirus (hrHPV) is known as the aetiological agent of cervical cancer, and persistent hrHPV might develop to cervical cancer later in the life time of women (Castellsagué, 2008). Cervical cancer is the second most prevalent female cancer after breast cancer worldwide, of which 80% of the patients reside in the developing countries in sub-Saharan Africa, Latin America, and South and South East Asia (Castellsagué, 2008). In Indonesia, cervical cancer ranks first among gynaecological cancers and becomes a major health problem (Aziz, 2009). The hrHPV genotypes, including HPV types 16, 18, 31, 52, and 58 that are most prevalent globally and also other hrHPV types such as HPV type 33, 35, 39, 45, 51, 56, 59, 68, 73, and 82, are considered as the most carcinogenic types; where as HPV types 26, 53, and 66 are considered as probably carcinogenic, and HPV types 6, 11, 40, 42, 43, 44, 54, 61, 70, 72, 81 are the low-risk types (de Sanjosé et al., 2007). hrHPV might infect transiently and causes a self-limiting disease, and thus, normal cyotological examination cervical tissue may harbor hrHPV (Bruni et al., 2010). Therefore, detection of early hrHPV infection will minimize the cervical cancer development risks.

For early diagnosis of epithelial neoplasia such as cervical dysplasia, anogenital lesions, and also oral and oropharyngeal squamous cell carcinomas, sensitive and specific detection of HPV in cervical samples might be a useful tool (Pannone et al., 2012). The most common used test for cervical abnormality screening in general population is conventional PAP smear, though some other alternatives in a limited-resource setting may exist such as liquid based cytology and visual inspection with acetic acid (VIA) (Bradford and Goodman, 2013). With increasing molecular technologies for HPV detection,

[1]Department of Biochemistry, [2]Department of Obstetrics and Gynecology, Hasan Sadikin Hospital, [3]Health Research Unit, Faculty of Medicine Universitas Padjadjaran, Bandung, [4]Lab of Clinical Pathology, Dharmais National Cancer Hospital, Jakarta, Indonesia
**For correspondence: e.sahiratmadja@gmail.com*