Method to Use Viral and Host Methylation Markers for Cervical Cancer Screening and Triage in Liquid Prep, Serum/plasma, and Urine: PCR and Sequencing Based Process Methods

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Technology description

Novel Method for Cervical Cancer Screening
Invention novelty:
This invention is a diagnostic method for diagnosis and progression monitoring of premalignant lesions in cervical cancer via DNA methylation and quantitative Methylation Specific PCR (qMSP).
Value Proposition:
Currently, the primary diagnostic for cervical cancer is a Papanicolaou (Pap) smear. If the Pap smear is positive; HPV genotyping diagnostics, a colposcopy, and/or a biopsy are used as confirmation. However, Pap smears and HPV infection tests do not distinguish between lesions that will progress to an invasive carcinoma and those that will not.
Technical Details:
Researchers at Johns Hopkins identified a panel of methylated human papilloma virus (HPV) and human genes that can discriminate between cervical intraepithelial neoplasia, grade 2 or higher (CIN2+) and normal/CIN1 patients in liquid prep samples and in Transrenal DNA (TrDNA) isolated from urine.
The panel of viral and host gene methylation markers identified by the researchers may be used as a reflex test in liquid prep to triage high risk HPV positive women into colposcopy, or as a screening and triage test in TrDNA in combination with the researchers high risk HPV test. The invention can also be developed into a personalized cervical cancer test in which the host and HPV methylome of young women or receivers of the HPV vaccine DNA is sequenced. The methylation level of an individual’ s panel of high risk genes can be identified and tested in urine periodically during the course of that individual’ s life.
Categories: Diagnostic
Keywords: cervical cancer, HPV, papillomavirus, transrenal, qPCR, genome sequencing, noninvasive, Methylation, qMSP

Advantages

This current technology is advantageous as it is:

- Non-invasive, which reduces the risk of infection or inflammation.
- Will potentially aid in the clinical management of HPV-positive/Pap-negative women.
- It is potentially a more sensitive test to monitor progression from no malignancy to cervical cancer.
- Can aid in the identification of patients who will progress to cervical cancer.

Institution

Johns Hopkins University

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