

## Exploration of Cervical-Squamous-Epithelial-Cell (CSEC) Biometrics from Thin-Prep Pap Smear on GA Genotype of *Fas-Promoter-670* Gene in Indonesian Women Living with High-Risk HPV and *Candida* sp. Infection: A Case Report

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### ABSTRACT

**Background:** Human Papilloma Virus (HPV) infection can change Cervical-Squamous-Epithelial Cells (CSEC) to be abnormal. Epigenetically, this change in the direction of abnormality in CSEC is partly due to the polymorphism of the *Fas-promoter-670* gene. High-risk HPV patients can be infected by other microbes, for example *Candida* sp. The purpose of this study was to show the appearance of *Candida* sp. and CSEC based on epigenetics on the *Fas-promoter-670* gene polymorphism in Indonesian women with high-risk HPV infection. Biometric quantification is carried out with the following CSEC performance characteristics.

**Case presentation:** Indonesian women at the age of 28 years, living with high-risk HPV and *Candida* sp. infection, on April 21, 2016 had a Pap smear examination using a thin-prep method and also blood drawn from the cubital vein (*vena cubiti*). Blood and thin-prep samples were detected of *Fas-promoter-670* gene polymorphisms by *Restriction Fragment Length Polymorphism* (RFLP) with BstN1 enzyme. Epigenetically, the subjects in this case had the GA genotype of *Fas-promoter-670* gene in both blood and thin-prep samples. *Candida* sp. infection in patients is divided into early and advanced stages. *Candida* sp. infection in the early stages with characteristic by appearance of polymorphonuclear leukocytes on the hyfa, whereas at an advanced stage without polymorphonuclear leukocytes on the hyfa. CSEC performance (n cells=27) as follow: Cell Length (CL)= $5.38 \pm 0.77 \mu\text{m}$  (CI 95%=5.10-5.67  $\mu\text{m}$ ), Cell Width (CW)= $4.37 \pm 0.57 \mu\text{m}$  (95% CI=4, 16-4.58  $\mu\text{m}$ ); Cell Area (CA)= $20.29 \pm 4.46 \mu\text{m}^2$  (95% CI=18.62-22.01  $\mu\text{m}^2$ ); Cell Perimeter (CP)= $16.52 \pm 1.83 \mu\text{m}$  (95% CI=15.80-17.21  $\mu\text{m}$ ); Nucleus Length (NL)= $0.81 \pm 0.11 \mu\text{m}$  (95% CI=0.77-0.86  $\mu\text{m}$ ); Nucleus Width (NW)= $0.62 \pm 0.09 \mu\text{m}$  (95% CI=0.58-0.65  $\mu\text{m}$ ); Nucleus Area (NA)= $0.41 \pm 0.10 \mu\text{m}^2$  (95% CI=0.38-0.45  $\mu\text{m}^2$ ); Nucleus Perimeter (NP)= $2.38 \pm 0.27 \mu\text{m}$  (95% CI=2.29-2.49  $\mu\text{m}$ ); Nucleus Length Index (NLI)= $15.43 \pm 3.03$  (95% CI=14.31-16.62); Nucleus Width Index (NWI)= $14.46 \pm 3.38$  (95% CI=13.32-15.78); Nucleus Area Index (NAI)= $2.16 \pm 0.75$  (95% CI=1.90-2.45) and the Nucleus Perimeter Index (NPI)= $14.61 \pm 2.29$  (95% CI=13.77-15.49).

**Conclusion:** Epigenetically, the subject in this case had the GA genotype of the *Fas-promoter-670* gene in blood and thin-prep samples. We found the early stages of *Candida* sp. infection which is characterized by appearance of polymorphonuclear leukocytes on the hyfa, whereas at an advanced stage without polymorphonuclear leukocytes on the hyfa. Base on the result of biometrics characteristic such as CL, CW, CA, CP, NL, NW, NA, NP, NLI, NWI, NAI and the NPI, CSEC in this case is a normal. Our team recommends a re-examination after 6 months.

**Keywords:** Epigenetically, *Fas promoter-670* gene, *Candida* sp., Cervical-squamous-epithelial-cells, Cell biometrics

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