Exploring *TLR2* Gene Polymorphisms in Cervical Cancer Development

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Abstract

Human papillomavirus is a pathogen that directly infects cervical keratinocytes and may cause persistent infection that leads to cervical cancer. Toll like receptors (TLRs) play an essential role in initiating antiviral immune responses. Therefore, polymorphisms in *TLR* gene may contribute to cancer susceptibility. This study aimed to explore the *TLR2* gene distribution and susceptibility to cervical cancer. In this case-control study, cervical cancer patients and their controls were recruited from the Department of Obstetrics and Gynecology, Dr. Hasan Sadikin General Hospital. Genomic DNA was extracted from blood of patients with histopathologically confirmed cervical cancer (n=100) and from unrelated, healthy female controls (n=100) during 2011. Three single nucleotide polymorphisms (SNPs) of the *TLR2* gene were genotyped on the BeadXpress Reader system (Illumina)®. Chi square test was used to calculate the role of *TLR2* and susceptibility to cervical cancer. Only subjects with complete clinical and genetic data were analyzed. Analysis of TLR2 rs3804099, rs4696480 and rs5743708 of cervical cancer patients and controls showed no significant association with the cervical cancer risk (p 0.424, p 0.275, p 0.209, respectively). Further classification in the FIGO (*Fédération Internationale de Gynécologie et d'Obstétrique*) criteria for lower stage (FIGO I/II) and higher stage (FIGO III/IV) showed a lack of association between *TLR2* and cancer development, suggesting the possibility that *TLR2* polymorphism does not play a role in the susceptibility to cervical cancer in this study. Other toll like receptors may be involved in the cancer susceptibility. The significance of TLR polymorphism should be further studied. [**MKB.** 2013;45(4):257–62]

Key words: Cervical cancer, toll like receptor, TLR2

Polimorfisme Gen TLR2 dan Perkembangan Kanker Serviks

Abstrak

Kanker serviks disebabkan oleh human papillomavirus (HPV), patogen yang dapat langsung menginfeksi keratinosit serviks secara persisten dan dapat berkembang menjadi kanker. Toll like receptors (TLR) berperan dalam merangsang respons imun, sehingga polimorfisme gen TLR dapat berkontribusi dalam kerentanan terhadap kanker. Tujuan penelitian ini adalah untuk mengetahui distribusi gen TLR2 dan perananya terhadap kerentanan kanker serviks. Pada studi kasus kontrol, DNA genomik diekstraksi dari darah penderita kanker serviks yang terdiagnosis secara histopatologi (n=100) dan kontrol dengan *Pap smear* normal (n=100) tahun 2011 di Departemen Obstetri dan Ginekologi RSUP Dr. Hasan Sadikin Bandung. Pemeriksaan tiga *single nucleotide polymorphisms* (SNP) gen TLR2 dilakukan menggunakan *BeadXpress Reader system* (Illumina). Hanya subyek dengan data klinik dan genetik lengkap yang dianalisis dengan menggunakan uji chi square. Analisis dari TLR2 rs3804099, rs4696480 dan rs5743708 antara pasien dan kontrol tidak menunjukkan perbedaan yang bermakna (p 0.424, p 0.275 dan p 0.209). Di antara pasien dengan klasifikasi FIGO (*Fédération Internationale de Gynécologie et d'Obstétrique*) tingkat rendah (FIGO I/II) dan tingkat tinggi (FIGO III/IV) juga tidak tampak perbedaan yang bermakna. Dari penelitian ini terbukti polimorfisme TLR2 tidak berperan dalam proses kerentanan maupun perkembangan terjadinya kanker serviks. Kemungkinan TLR yang lain seperti TLR 1, 3, 9 lebih berperan dalam perkembangan terjadinya kanker serviks. [**MKB.** 2013;45(4):257–62]

Kata kunci: Kanker serviks, toll like receptor, TLR2

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