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DNA-Based Typing of HLA-A and Profiling of RET Gene Polymorphisms for Identification of Genetic Susceptibility Factor in Nasopharyngeal Carcinoma in East Coast Region of Peninsular Malaysia

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ABSTRACT

Objectives/Research Problem: Nasopharyngeal carcinoma (NPC) is the fourth most commonly diagnosed cancer in Malaysian male. Yet, the research on NPC is relatively scarce. In Malaysian population, NPC has higher rate among the Chinese compared to the Malays but rare among the Indians. Interestingly, the Bidayuh natives in Sarawak have the highest incidence of NPC in the world, with age-adjusted rate of 31.5 per 100,000. Although the recent suggested aetiological factor is Epstein-Barr Virus infection, dietary lifestyle, and genetic susceptibility, the pathogenesis of NPC is yet fully understood. Hence, genetic is believed as the crucial factor responsible for NPC. Previous research showed relationship between HLA genes with the risk of NPC. RET gene polymorphisms (SNPs) that has been associated with thyroid carcinoma also suspected for NPC susceptibility. Currently, there is no study on the genetic association with NPC ever been reported in East Coast Region of Peninsular Malaysia.

Materials and Method: Biological samples are collected from a total of 50 NPC patients and 50 controls. Then, DNA will be extracted from the samples and the targeted region will be amplified by Polymerase Chain Reaction (PCR). DNA sequencing will be done by DNA-Based Typing method. Identification of HLA-A allele type will be referred to the IPD-IMGT/HLA Database, while the profiling of RET gene SNPs will done through NCBI-BLAST. The frequency of specific HLA-A type and RET gene SNPs will be analysed by Pearson's chi-square test to examine the association on distribution of HLA-A genotype and RET polymorphisms among cases and controls.

Results and Discussion: It is anticipated that HLA-A specific type and RET gene SNPs will show association with the risk of NPC.

Conclusion: It is hoped that this study will determine the association between HLA-A and RET gene SNPs with the risk of NPC in the East-Coast region of Peninsular Malaysia.

KEYWORDS: Nasopharyngeal Carcinoma (NPC), Human Leukocyte Antigen (HLA), HLA-A, RET Proto-Oncogene (RET), DNA-Based Typing

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