UNIVERSITI TEKNOLOGI MARA

EVALUATION OF CXCL10 AS POTENTIAL BIOMARKER FOR EARLY DETECTION OF SEVERE DENGUE.

SITI NORAIHAN BINTI KHAMIS

MPATH

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AUTHOR'S DECLARATION

I declare that the work in this dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student	:	Siti Noraihan binti Khamis
Student I.D. No.	:	2014592233
Programme	:	Master of Pathology (Medical Microbiology) MD774
Faculty	:	Medicine
Dissertation Title	:	**EVALUATION OF CXCL10 AS POTENTIAL BIOMARKER FOR EARLY DETECTION OF SEVERE DENGUE.**
Signature of Student	:	……..
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ABSTRACT

BACKGROUND: Dengue has become one of the most important infectious diseases and it causes a significant threat to public health in both tropical and sub-tropical countries including Malaysia. Severe dengue (SD) can be life-threatening and characterized by severe plasma leak, severe bleeding and severe organ impairment. Antibody-dependent enhancement (ADE) and cross-reactive memory T cells activation are well-known factors contribute to dengue pathogenesis. It leads to overproduction of cytokines indirectly causing an increase of C-X-C Motif Chemokine Ligand 10 (CXCL10). Despite providing innate immunity, CXCL10 also involves in SD. CXCL10 induces chemotactic activities and apoptosis. Activated T lymphocytes are stimulated following chemotactic activities and secrete a high level of cytokines which contribute to plasma leak.

OBJECTIVES: This study aims to determine the contribution of the CXCL10 in dengue severity and proves the role of CXCL10 as a marker of SD.

METHODS: A case-control study involved dengue in-patient of Hospital Sungai Buloh was selected. The control was collected from the healthy adults and the cases were categorized into dengue without warning sign (DwoWS), dengue with warning sign (DWWS) and SD. Dengue patients with positive NS1 antigen or serological test for either IgM or IgG or both were included in this study whereas patients with negative for both IgG and IgM and those infected with other etiology were excluded. The socio-demographic characteristics, clinical presentations and laboratory parameters (platelet and hematocrit) were obtained and recorded. Serum CXCL10 quantification performed for control and cases using quantitative enzyme-linked immunosorbent assay (ELISA). The statistical analysis conducted using SPSS version 22. The descriptive analysis used to analyze demographic data and One Way Analysis of Variance (ANOVA) with Tukey HSD post hoc tests applied to establish the relationship between CXCL10 and the severity of dengue. The probability value of $p < 0.05$ was counted as significant. The correlation between CXCL10, hematocrit and platelet level were performed using Pearson's correlation test.

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