UNIVERSITI TEKNOLOGI MARA

PROCALCITONIN AND CLINICAL FACTORS ASSOCIATED WITH SEVERE DENGUE INFECTION IN HOSPITALISED ADULTS IN MALAYSIA

HUZAIRI BIN SANI

Disertation submitted in fulfillment
of the requirements for the degree of
Master of Internal Medicine

Faculty of Medicine

May 2018

CONFIRMATION BY PANEL OF EXAMINERS

I certify that a Panel of Examiners has met on 14th May 2018 to conduct the final examination of Huzairi Bin Sani in his **Master of Internal Medicine** thesis entitled "Procalcitonin and clinical factors associated with severe dengue infection in hospitalised adults in Malaysia" in accordance with Universiti Teknologi MARA Act 1976 (Akta 173). The Panel of Examiner recommends that the student be awarded the relevant degree. The Panel of Examiners was as follows:

Professor Azian bt. Abd Latiff
Faculty of Medicine
Universiti Teknologi MARA
(Chairman)

Professor Dato Dr Aminuddin Ahmad
Faculty of Medicine
Universiti Teknologi MARA
(Internal Examiner)

Assoc. Professor Dr Sazzli Kassim
Faculty of Medicine
Universiti Teknologi MARA
(Internal Examiner)

Dr Alwi B. Muhd Besari
Faculty of Medicine
Universiti Sains Malaysia
(External Examiner)

PROF SR DR HAJI ABDUL HADI HAJI NAWAWI
Dean
Institute of Graduates Studies
Universiti Teknologi MARA
Date: 14th May 2018

AUTHOR'S DECLARATION

I declare that the work in this disertation 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	:	Huzairi Bin Sani
Student I.D. No.	:	2013706503
Programme	:	Master of Internal Medicine – MD771
Faculty	:	Medicine
Thesis	:	Procalcitonin and clinical factors associated with severe dengue infection in hospitalised adults in Malaysia
Signature of Student	:	.....
Date	:	May 2018

ABSTRACT

Background: Dengue infection is the commonest mosquito-borne viral infection that results in hospitalisation amongst patients in Malaysia. The cornerstone of managing dengue infection is the prediction hence prevention of severe dengue from developing. Warning signs proposed by WHO as clinical predictors of severe dengue are insensitive. Procalcitonin (PCT) has been shown to increase in bacterial infections and is useful in predicting disease severity and mortality. **Objective:** To determine the level of PCT and other clinical and biochemical parameters in inpatient adults with dengue fever. **Methods**: This is a prospective observational study conducted over 6 months from September 2017 to February 2018. Patients aged 18 years and above who were hospitalised in Hospital Selayang for a serologically-confirmed dengue fever were recruited. PCT level was taken upon recruitment within 24 hours of hospital admission. Patients were followed up throughout admission until discharge or death. **Results:** Out of 133 recruits, 117 (88%) had uncomplicated dengue and 16 (12%) had severe dengue either with shock (44%) or organ failure (56%). There were 2 (13%) deaths from the severe group. Median PCT levels were higher in severe [0.35 ng/mL (0.15-4.4)] versus non-severe [0.28 ng/mL (0.17-0.54)] dengue, however there was no significant difference between both groups (p=0.518). Other clinical and biochemical factors analysed showed there was significant values for defervescence phase (p=0.043), lethargy (p=0.000) and albumin <35g/L (p=0.015). On multivariate analysis, parameters significantly associated with severe dengue include lethargy (p=0.001) and hypoalbuminemia (p=0.009). These two parameters plus PCT >0.3 ng/mL predict severe dengue with a sensitivity of 73% and specificity of 85%. PCT [median 3.6 ng/mL (3.2-4.0)] is also significantly associated with death (p=0.021). **Conclusion**: PCT at a cut-off of >0.3 ng/mL predicts severe dengue when combined with lethargy and albumin <35g/L. Furthermore, PCT is significantly associated with death.

TABLE OF CONTENT