

**UNIVERSITI TEKNOLOGI MARA**

**PREVALENCE OF  
INTERMEDIATE AND HIGH  
PROBABILITY OF PULMONARY  
HYPERTENSION BASED ON  
ECHOCARDIOGRAPHY AND ITS ASSOCIATED  
FACTORS IN  
PATIENTS WITH SYSTEMIC LUPUS  
ERYTHEMATOSUS ATTENDING  
RHEUMATOLOGY CLINIC  
HOSPITAL SELAYANG**

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**MMed**

**November 2019**

## 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.

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## ABSTRACT

**Introduction:** Pulmonary hypertension (PH) in SLE has a wide prevalence with significant morbidity and mortality if not detected early. This study aims to determine the prevalence of intermediate and high probability of pulmonary hypertension (PH) in SLE patients, to investigate its associated factors and to determine the relationship on between NT-proBNP, 6-minute walk test and echocardiography findings.

**Method:** This is a cross-sectional study involving SLE patients who were followed-up in a Malaysian rheumatology centre. A total of 60 patients underwent echocardiogram, 6-minute walk test and NT-proBNP test. Probability of pulmonary hypertension was determined based on ESC guideline. The demographic characteristics, SLE clinical manifestation and immunological profile, 6-minute walk test, echocardiography features and NT-proBNP were compared between groups of low, and intermediate and high probability of PH. Correlations of NT-proBNP, 6-minute walk test and echocardiogram 'PH signs' were analysed. The parameters of 6-minute walk test and echocardiogram 'PH signs' were compared between groups of low and high NT-proBNP levels were also analysed, with a cut-off of 150

**Results:** The prevalence of intermediate and high probability of PH in SLE patients was 16.7%. We did not find significant associated factors with intermediate and high PH probability, apart from oxygen saturation post 6-minute walk test. Patients with elevated level of NT-proBNP level had significantly shorter 6-minute walk distance ( $340.91 \pm 43.69\text{m}$ ,  $p=0.009$ ) and higher TRVmax ( $2.83 \pm 0.74$  m/s,  $p=0.006$ ), PRVmax ( $1.82 \pm 0.71$  m/s,  $p=0.004$ ), PA diameter ( $24.27 \pm 2.284\text{m}$ ,  $p < 0.001$ ) and IVC size ( $16.09 \pm 3.30\text{mm}$ ,  $p=0.002$ ) compared to those with low NT-proBNP level.

**Conclusion:** This study found a high prevalence (16.7%) of SLE-PH according to echocardiography finding. We found that patients with intermediate and high PH probability had significantly lower oxygen saturation post 6-minute walk test and since this is an easy and cheap test, this can be an initial test to be performed on all SLE patients. We have shown NT-proBNP had significant relationship with distance in 6-minute walk test and PH signs in ECHO. It is therefore, a useful test to be considered for initial SLE-PH assessment, especially in patients who are not able to perform a 6-minute walk test.

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## TABLE OF CONTENTS

<b>CONFIRMATION BY PANEL OF EXAMINERS</b>	iv
<b>AUTHOR'S DECLARATION</b>	v
<b>ABSTRACT</b>	vi
<b>ACKNOWLEDGEMENT</b>	vii
<b>LIST OF TABLES</b>	xi
<b>LIST OF FIGURES</b>	xii
<b>LIST OF ABBREVIATIONS</b>	xiii
<b>CHAPTER ONE: INTRODUCTION</b>	
1.1            Research background	1
<b>CHAPTER TWO: LITERATURE REVIEW</b>	
2.1            Epidemiology	
2.1.1      Systemic lupus erythematosus (SLE)	4
2.1.2      Pulmonary hypertension (PH)	4
2.1.3      SLE-PH	5
2.2            Pathophysiology	
2.2.1      Systemic lupus erythematosus (SLE)	5
2.2.2      Pulmonary hypertension (PH)	5
2.3            PH Diagnosis: Right heart catheterisation vs Echocardiography	6
2.4            Limitations of previous studies	6
2.5            Rationale of current study	9
<b>CHAPTER THREE: RESEARCH METHODOLOGY</b>	
3.1            Objectives	10
3.2            Hypothesis	10
3.3            Ethical approval	10
3.4            Design	10
3.5            Population	10
3.5.1      Reference population	10