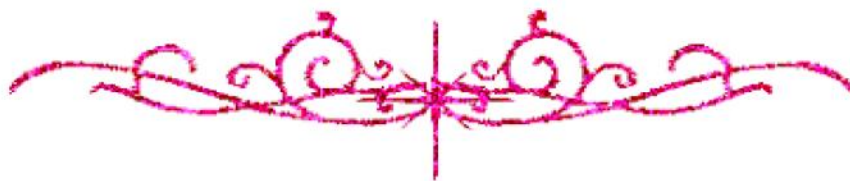


بسم الله الرحمن الرحيم





شبكة المعلومات الجامعية التوثيق الالكتروني والميكروفيلم



جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

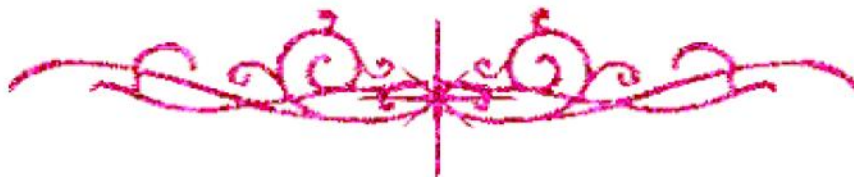
قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



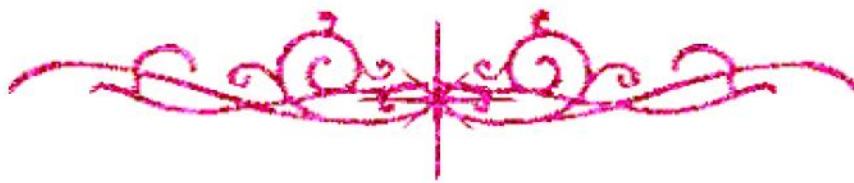
يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار



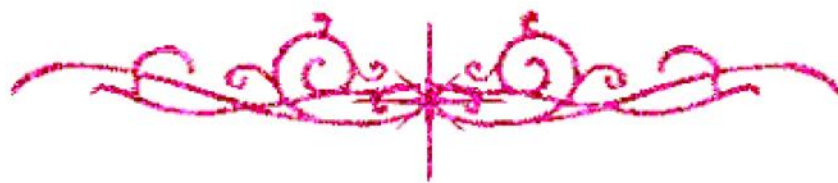


بعض الوثائق الأصلية تالفة





بالرسالة صفحات
لم ترد بالأصل



Outcome of Cyclophosphamide versus Mycophenolate Mofetil in Pediatrics Lupus Nephritis

Thesis

*Submitted for Partial Fulfillment of Master
Degree in **Pediatrics***

By

Shimaa Sobhy Mohamed
*M.B.B.Ch. Faculty of Medicine
Cairo University*

Under Supervision of

Prof. Dr. Ashraf Abdel Baky Salama
*Professor of Pediatrics
Faculty of Medicine, Ain Shams University*

Dr. Nesrine Mohamed Radwan
*Lecturer of Pediatrics
Faculty of Medicine, Ain Shams University*

Faculty of Medicine
Ain Shams University

2020

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

سبحانك لا علم لنا
إلا ما علمتنا إنك أنت
العليم العظيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgment

*First and foremost, I feel always indebted to **Allah** THE Most Beneficent and Merciful.*

*I wish to express my deepest thanks, gratitude and appreciation to **Prof. Dr. Ashraf Abdel Baky Salama**, Professor of Pediatrics, Faculty of Medicine, Ain Shams University, for his meticulous supervision, kind guidance, valuable instructions and generous help.*

*Special thanks are due to **Dr. Nesrine Mohamed Radwan**, Lecturer of Pediatrics, Faculty of Medicine, Ain Shams University, for her sincere efforts, fruitful encouragement.*

*I would like to express my cardinal thanks to all **my family** for their support till this work was completed.*

Last but not least my sincere thanks and appreciation to all patients participating in this study.

Shimaa Sobhy Mohamed

List of Contents

Title	Page No.
List of Tables	i
List of Figures	iii
List of Abbreviations	iv
Introduction	- 1 -
Aim of the Work	3
Review of Literature	
☞ Systemic Lupus Erythematosus	4
☞ Lupus Nephritis	15
☞ Cyclophosphamide	29
☞ Mycophenolate Mofetil	32
Results	41
Discussion	58
Conclusion	64
Summary	68
Recommendations	72
References	73
Arabic Summary	١

List of Tables

Table No.	Title	Page No.
Table (1):	Classification Criteria for Systemic Lupus Erythematosus.....	10
Table (2):	The 2003 ISN/RPS lupus nephritis classification system	20
Table (3):	Systemic Lupus Erythematosus Disease Activity Index (SLEDAI).....	22
Table (4):	Distribution of different classes of LN in each group of studied patients:	42
Table (5):	Demonstrating different clinical manifestations at presentation in our studied groups:	42
Table (6):	Demonstrating SLEDAI score in our studied subjects initial and after 1 year:.....	43
Table (7):	Comparison between the number of patients who entered into remission after induction and 6 months of maintenance therapy:	44
Table (8):	Comparison of the initial laboratory investigation between our studied patients:	46
Table (9):	Comparison between follow up laboratory data of studied patients' after 6 months of induction of immunosuppressive therapy:	47
Table (10):	Comparison between laboratory data of studied patients after 1year of start of immunosuppressive therapy:.....	48
Table (11):	Comparison of quantitative 24 hour urinary protein at the 3 different end points in all studied patients	49
Table (12):	Comparison of quantitative C3 at the 3 different points in all of our studied patients:.....	50

List of Tables (Cont...)

Table No.	Title	Page No.
Table (13):	Comparing the change of SLEDAI after induction 6 months of maintenance therapy:.....	50
Table (14):	Comparison between the average numbers of patient's follow up visits in our studied groups: ...	51
Table (15):	Comparison between the number of patients who needed admission in the 3 groups during 1 year follow up.	52
Table (16):	Comparison between the total cost per group and person of immunosuppressive medication in the 3 groups after 1 year of treatment:	53
Table (17):	Comparison between the presence of complications during the course of disease that could be attributed to the immunosuppressive treatment:	54
Table (18):	Comparison between cyclophosphamide and mycophenolate mofetil in induction:.....	54
Table (19):	Comparison between remission, proteinuria and C3 after 1 year therapy according to class of lupus nephritis in group A therapy:	55
Table (20):	Comparison between remission, proteinuria and C3 after 1 year therapy according to class of lupus nephritis in group B therapy:	56
Table (21):	Comparison between remission, proteinuria and C3 after 1 year therapy according to class of lupus nephritis in group C therapy:	57

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Distribution of different classes of LN in the studied sample	41
Figure (2):	Demonstrating the percentage of patients having proteinuria at initial evaluation.	43
Figure (3):	Demonstrating the percentage of patients having positive anti-DNA at the initial evaluation.....	44
Figure (4):	Comparing the remission of our studied groups of patients after induction and 6 months of maintenance therapy.....	45
Figure (5):	Average number of patients' admission in hospital per year in all studied groups.....	52

List of Abbreviations

Abb.	Full term
ACR (SDI):	American College of Rheumatology Damage Index
ACR:	American College of Rheumatology
ANA:	Antinuclear antibody
Anti-dsDNA:	Antidouble stranded deoxyribonucleic acid
AZA:	Azathioprine
BILAG:	British Isles Lupus Assessment Group
BSA:	Body surface area.
CINS:	Calcitonin inhibitors
CYC:	Cyclophosphamide
DMARD:	Disease modifying anti rheumatic drug
ESKD:	End stage kidney disease
ESRD:	End stage renal disease
GC:	Glucocorticoids
GFR:	Glomerular filtration rate
GI:	Gastrointestinal
GN:	Glomerulonephritis
IQR:	Inter quartile range
ISN/RPS:	International Society of Nephrology/ Renal Pathology Society.

List of Abbreviations (Cont...)

Abb.	Full term
MFA:	Mycophenolic acid
MMF:	Mycophenolate mofetil
NIH:	National institute of health
pSLE:	Pedatric systemic lupus erythematosus
SD:	Standard deviation
SLE:	Systemic lupus erythematosus
SLEDAI:	Systemic lupus erythematosus disease activity index
SLICC:	Systemic Lupus International Collaborating Clinics

INTRODUCTION

Systemic lupus Erythematosus (SLE) is an autoimmune inflammatory disease characterized by antibodies directed against self-antigens, resulting in multi-organ damage. Up to 20% of cases are diagnosed during childhood (*Silva et al., 2012*) with 55% of these patients are expected to develop lupus nephritis (LN) (*Huerta et al., 2012*). In children, LN tends to present earlier and behaves more aggressively (*Brunner et al., 2008*). A higher frequency of children SLE (pSLE) is reported in Asians, African American, Hispanics and native Americans (*Hiraki et al., 2009*), with a median age of onset 11-12 years (*Hiraki et al., 2008*). Usually females are more affected than male with a ratio 3-5: 1 (*Cattalini et al., 2017*).

According to the pathological changes in the kidney, LN can be either proliferative (class III or IV) or non-proliferative glomerulonephritis (class II or V). The proliferative forms are more dangerous and may progress to end-stage renal failure over weeks to years (*Henderson et al., 2012*) as only 55% of these patients will achieve remission (*Lee et al., 2007*). That's why induction of remission is the major aim of therapy, with safe and effective maintenance therapy. There are many lines of therapy that are used to induce remission, including steroid therapy, oral cyclophosphamide, pulse intravenous cyclophosphamide, oral mycophenolate mofetil and rituximab (*Henderson et al., 2012*).