Effect of Using Leukocyte Filter on Ventilatory Functions among Transfusion Dependant Thalassemics

Thesis
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First thanks to **ALLAH** *to whom I relate any*

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List of Content

List of Tables

List of Figure

List of Abbreviation

SQUID	Superconducting Quantum Interference Device
BTM	β- Thalassemia Major
Hb	Hemoglobin
MRI	Magnetic Resonance Imaging
CT scan	Computed Tomography scan
HBV	Hepatitis B virus
HCV	Hepatitis C Virus
HGV	Hepatitis G virus
CBC	Complete blood picture
HU	Hydrxy urea
PMDS	Polydimethyl siloxane
HBED	Hydroxybenzyl Ethyledine Diacetic acid
PIH	Pyridoxal Isonicotinoyl Hydraxone
TM	Thalssemia Major
SC	Subcutaneous
IV	Intravenous
CBT	Cord Blood Transplants
HLA	Human Leucocyte Antigen
ASONs	Antisense OLigonucleotides
TLC	Total Leucocytic count
TLC	Total Lung Capacity
FVC	Forced Vital Capacity
FEV١	Forced Expiratory Volume in One second
ILD	Interstitial Lung Disease
RBC	Red Blood Cell
GVHD	Graft Versus Host Disease
PFT	Pulmonary Function Test
ACE	Angiotensin Converting Enzyme Inhibitor
RV	Residual Volume

VC	Vital Capacity
IOC	Intermittent Oscillation
IOS	Impulse Oscillometry
COPD	Chronic Obstructive Pulmonary Disease
LDF	Leukocyte Deletion Filter
FEF	Forced expiratory flow
FOT	Forced oscillation technique
FRC	The functional residual capacity
IRV	Inspiratory reserve volume
m mol/L	Millimol per liter
mg/day	Milligram per day
mg/dl	Milligram per liter
MVV	Maximum voluntary ventilation
PEFR	Peak expiratory flow rate
DLCO	Diffusing lung capacity for carbon monoxide

Introduction

Beta-thalassemia is the most common hemoglobinopathy in the Mediterranean region. It was estimated that ١٠٠٠٠/١,٥ million per year live births will suffer from thalassemia disease in Egypt (total live births ١،٩٣٦،٢٠٥ in ٢٠٠٦) ***(El-Beshlawy et al., ٢٠٠٩).***

Beta-thalassemia is a hereditary anemia resulting from defects in hemoglobin production. It is caused by a decrease in the production of β-globin chains affecting multiple organs and is associated with considerable morbidity and mortality ***(Rund et al., ٢٠٠٥).***

Lung involvement is one of known complications of thalassemia. Alteration of pulmonary function may be expected in transfusion- dependent patients in spite of no

pulmonary symptoms or normal CXR ***(Azarkeivan et al., ٢٠٠٨).***

Leukocytes are recognized as the major cause of transfusion-related lung injury. The pathogenesis of transfusion-related acute lung injury has been attributed to passive transfer of donor anti-leukocyte antibodies that react with alloanti antigens on the leukocytes of the recipient. Pulmonary vascular leakage associated with lung injury has been shown to be preceded by complement system activations, with neutrophil and endothelial cell injury representing an important factor in the pathogenesis of the acute lung pathology ***(Seeger et al., ١٩٩٠).***

Pulmonary hemosiderosis and interstitial fibrosis have been reported resulting in restrictive pattern at pulmonary function tests due to several pathogenetic

factors. An obstructive pattern has also been described, but the cause mechanism has not been explained ***(Kivity et al., ١٩٩٩).***

Aim of the work

The aim of this study is to: Assess the ventilatory functions (FVC, FEV١, and FEV١/FVC) among transfusion dependant thalassemics before and ٦ months after the application of the Leukocyte filter within each transfusion.