Assessment of Thrombocytopenia In Critically Ill Patients

Thesis

Submitted for Partial Fulfillment of Master Degree in Pulmonary Medicine

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بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لاَ عِلْمَ لَنَا إِلاَّ مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ العَلِيمُ الحَكِيمُ

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Aim of The Work

The aim of this study is to evaluate the incidence, risk factors and outcome of thrombocytopenia in patients admitted to the respiratory intensive care unit.

Contents

Introduction

Platelets arise from the fragmentation of megakaryocytes. After leaving the bone marrow space, about one-third of the platelets are sequestered in the spleen, other two-thirds circulate in the blood for 7to10 days, sharing in the process of hemostasis. The normal platelet count is150000 to 450000/cmm) ***(Robert ., 2005)***.

Thrombocytopenia was defined as a platelet count of < 150000/cmm. It was categorized depending on the severity as mild, moderate, severe or very severe on the basis of platelet counts below 150000/cmm, 100000/cmm, and 50000/cmm or 20000/cmm, respectively ***(Agrawal et al ., 2008).***

Various causes have been identified for the occurrence of thrombocytopenia, like presence of disseminated intravascular coagulation, immune mechanisms, reduced production, increased consumption or abnormal sequestration of platelets or a combination of these ***(Bogdonoff et al ., 1990),***and ***(Housinger et al ., 1993).***

Thrombocytopenia in critically ill patients is often multifactorial and likely a marker of illness severity ***(Drews***

et al ., 2003),and ***(Drews et al ., 2000)***. This is supported by the observation that critically ill patients with thrombocytopenia have higher Multiple Organ Dysfunction Scores (MODS), Simplified Acute Physiology Scores (SAPS), and Acute Physiology and Chronic Health Evaluation (APACHE) scores compared with patients admitted with normal platelet counts at the time of ICU admission (***Vanderschueren et al ., 2000),***and ***(Strauss et al ., 2002).***

Nearly all studies analyzing thrombocytopenia as a prognostic marker in ICU patients found an inverse correlation of the platelet count with the risks for a prolonged ICU stay and mortality (mortality rate 31%–46% in thrombocytopenic patients vs 16%–20% nonthrombocytopenic patients) (***Vanderschueren et al ., 2000)***,and ***(Crowther et al ., 2005)***.

List of abbreviations

ABG: Arterial blood gases analysis.

AML: Acute Myelogenous Leukemia.

APACHE II score: Acute Physiology and Chronic Evaluation II score.

APLAs: Antiphospholipid Antibodies.

CNS: central nervous system.

CTP: Cyclic Thrombocytopenia.

DIC: Disseminated Intravascular Coagulation.

DIT: Drug-Induced Thrombocytopenia.

ECG: Electrocardiography.

EDTA: Ethylene Diamine Tetraacetic Acid.

FDPs: Fibrin Degradation Products.

FIO2: Fraction of Inspired O2

GPIIb/IIIa: Glycoprotein IIb/IIIa.

HELLP syndrome: H: hemolysis, EL:elevated liver enzymes, LP: low platelets.

HIT: Heparin-induced thrombocytopenia.

HUS: Hemolytic Uremic Syndrome.

ICU: Intensive Care Unit.

Ig: Immunoglobulin.

INR: International Normalized Ratio.

ITP: Idiopathic thrombocytopenic purpura.

LDH: Lactate Dehydrogenase.

MAHA: Microangiopathic Hemolytic Anemia.

MAP: mean arterial pressure.

M-CSF: Macrophage Colony Stimulating Factor.

MDS: Myelodysplastic Syndromes.

MODS: Multiple Organ Dysfunction Score.

MYH9 gene: Myosin Heavy chain 9-non muscle protein gene.

NAIT: Neonatal Alloimmune Thrombocytopenia.

NSAIDs:Non-steroidal Anti-inflammatory Drugs.

PAI-1: Plsminogen Activator Inhibitor 1.

RICU: Respiratory Intensive Care Unit.

SaO_2: Arterial Oxygen Saturation.

SAPS: Simplified Acute Physiology Scores.

SLE: Systemic Lupus Erythematosus.

SOFA: Sequential Organ Failure Assessment.

TPO: Thrombopoietin.

TTP: Thrombotic Thrombocytopenic Purpura.

vWD: von Willebrand Disease.

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