

Assessment of Thrombocytopenia In Critically Ill Patients

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا
إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ



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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

Acknowledgement	.....	I
List of contents	.....	II
List of abbreviations	.....	1
List of tables	.....	3
List of figures	.....	6
Introduction	.....	7
Aim of the work	.....	9
Review		
- Chapter 1	.....	10
- Chapter 2	.....	46
Subject & Methods	.....	71
Results	.....	80
Discussion	.....	101
Summary	.....	108
Conclusion	.....	111
Recommendation	.....	112
References	.....	113
الملخص العربي	.....	138

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 is 150000 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:** Plasminogen Activator Inhibitor 1.
- RICU:** Respiratory Intensive Care Unit.
- SaO₂:** 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.

List of Figures

Figure (1): Overview of megakaryocyte production of platelets.

Figure (2): Categorization of DIT by time of onset.

Figure (3): Sex distribution among studied group.

Figure (4): Comorbidities among studied group.

Figure (5): Outcome among the studied cases.

Figure (6): Indications for ICU admission among studied cases.

Figure (7): some complications and interventions in ICU among studied cases.

Figure (8): Comparison between patients with and without thrombocytopenia regarding outcome.

Figure (9): Comparison between patients with and without thrombocytopenia regarding blood transfusion.

Figure (10): Comparison between patients with and without thrombocytopenia regarding septic shock.

List of Figures

Figure (1): Overview of megakaryocyte production of platelets.

Figure (2): Categorization of DIT by time of onset.

Figure (3): Sex distribution among studied group.

Figure (4): Comorbidities among studied group.

Figure (5): Outcome among the studied cases.

Figure (6): Indications for ICU admission among studied cases.

Figure (7): Some complications and interventions in ICU among studied cases.

Figure (8): Comparison between patients with and without thrombocytopenia regarding outcome.

Figure (9): Comparison between patients with and without thrombocytopenia regarding blood transfusion.

Figure (10): Comparison between patients with and without thrombocytopenia regarding septic shock.

List of Tables

Table (1): Clinical features of idiopathic thrombocytopenic purpura in children and adult.

Table (2): Mechanisms of Drug-Induced Immune Thrombocytopenia.

Table (3): Drugs Commonly Implicated as Triggers of Drug-Induced Thrombocytopenia.

Table (4): Causes of thrombocytopenia in most ICU.

Table (5): Comparison between DIC, TTP-HUS and HELLP syndrome.

Table (6): Acute Physiology and Chronic Evaluation II (APACHE II) score

Table (7): Sequential Organ Failure Assessment (SOFA) score

Table (8): Simplified Acute Physiology II (SAPS II) Score

Table (9): Multiple organ dysfunction score (MODS)

Table (10): Descriptive data of the study population.

Table (11): Description of the indications for ICU admission among studied cases.

Table (12): Descriptive data concerning different ICU variables among the studied cases.

Table (13): Description of some complications and interventions in ICU among studied cases.

Table (14): Description of intake of drugs inducing thrombocytopenia among studied cases.

Table (15): Comparison between thrombocytopenic and non thrombocytopenic patients regarding personal characteristics, comorbidities, outcome and MV.

Table (16): Comparison between thrombocytopenic and non thrombocytopenic patients regarding the indication for ICU admission

Table (17): Comparison between thrombocytopenic and non thrombocytopenic patients regarding different ICU variables

Table (18): Comparison between thrombocytopenic and non thrombocytopenic patients regarding some ICU-related complications and interventions.