

Role of thrombocytopenia as an independent prognostic marker in critically ill patients with multi organ failure

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By

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

﴿يُؤْتِي الْحِكْمَةَ مَنْ يَشَاءُ^ج وَمَنْ يُؤْتَ الْحِكْمَةَ فَقَدْ
أُوتِيَ خَيْرًا كَثِيرًا^ق وَمَا يَذَّكَّرُ إِلَّا أُولُو الْأَلْبَابِ ﴿

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Introduction



Introduction

Platelet disorders fall into two categories: those characterized by abnormal numbers of circulating platelets and those characterized by abnormal platelet function.

Platelets form the first line of defense when endothelial surfaces are breached. Exposure of the subendothelial layer of vessels results in exposure of tissue factor, collagen, and von Willebrand factor (vWF), which promote platelet aggregation. In rapid succession, platelets change shape, degranulate, and expose surface phospholipids that generate small amounts of thrombin, triggering clotting amplification. Hence, the deficiency or dysfunction of platelets represents a serious hemostatic problem **(Crowther et al., 2005)**.

Independent of bleeding, studies have consistently demonstrated an association between thrombocytopenia and poor clinical outcomes **(Shalansky et al., 2002)**.

The frequency of thrombocytopenia varies according to the definition used, the type of critical care population involved and the time of determination. Thrombocytopenia is usually defined as a platelet count $< 150 \times 10^9/L$, while a count of $\leq 50 \times 10^9/L$ is taken to represent severe thrombocytopenia **(Strauss et al., 2002)**.

Thrombocytopenia is one of the most common laboratory abnormalities in ICU patients. Thrombocytopenia can be a result of increased (non immune or immune) platelet destruction, hemodilution, platelet sequestration (as in hypersplenism), or decreased platelet production. The cause of a low platelet count in ICU may be difficult to be determined and is often multifactorial **(Vanderschueren et al., 2000)**.

Thrombocytopenia in critically ill patients is likely a marker of illness severity. 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. 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. Notably, the platelet count pattern over time provides important information about the likely underlying reasons for thrombocytopenia. Differentiation of the causes of thrombocytopenia is essential for efficient and appropriate treatment (**Vanderschueren et al., 2000**).



Review of Literature

