

To Compare Norepinephrine and Norepinephrine with Methylene Blue for the Management of Septic Shock

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Abstract : Introduction: Refractory shock is a typical consequence of sepsis that does not improve with standard vasopressor therapy. A possible adjuvant therapeutic option for treating refractory shock in sepsis is methylene blue. This study looked at the effects of intravenous methylene blue plus norepinephrine given as a single bolus infusion on mortality and hemodynamic improvement in patients suffering from refractory shock. Methodology: This six-month observational prospective study was carried out at an intensive care unit, teaching hospital, and medical college. It involved 112 patients who had been diagnosed with refractory septic shock and needed vasopressor medication. Group B received injection norepinephrine 0.01 µg/kg/min infusion alone, while Group A received injection methylene blue 2 mg/kg iv single bolus (fixed dose) in addition to injection norepinephrine 0.01 µg/kg/min infusion. Both groups' noradrenaline doses were titrated to reach the desired MAP of 60-75 mm Hg. The amount of norepinephrine needed to sustain a MAP of more than 60 mm Hg was the data gathered. Serum lactate, procalcitonin level, C-reactive protein, length of stay in the intensive care unit (ICU), sequential organ failure assessment (SOFA) score, and duration of mechanical ventilation, incidence of acute kidney injury (AKI), and mortality were compared. Results: A total of 112 patients with refractory shock were included in the study. With the use of IV methylene blue, 36 (59.3%) patients showed significant improvement in MAP within 2 hours (77.12 ± 8.90 vs 74.28 ± 21.84 , $p = 0.005$). Responders were 4.009 times more likely to have vasopressor-free time within 24 hours (19.5% vs 6.1%, $p = 0.022$, odds ratio 5.017, 95% confidence interval, 1.110-14.283). The serum lactate was lower, and urine output was higher in group I than in group II ($p < 0.05$). Group I had a significantly greater reduction in SOFA score in 12 hours than group II. However, there was no significant difference in terms of mortality, length of ICU stay, ventilator free days, and incidence of AKI. In the responder group, there was a significant increase in the MAP and decrease in vasopressor requirement pre- and post-infusion of methylene blue ($p < 0.05$). Responder had shorter vasopressor-free days as compared with non-responder (5.44 vs 6.99, $p = 0.007$). Conclusion: When administered as adjuvant therapy, a single-dose bolus infusion of Methylene Blue plus Norepinephrine may aid in meeting early resuscitation goals for the management of patients with septic shock. But the patients' death rate, ICU stay duration, ventilator-free days, or incidence of AKI were unchanged.

Keywords : norepinephrine, methylene blue, shock, vasopressor

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