Dermal tattooing following intravenous methylene blue for refractory hypotension after coronary artery bypass grafting

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ABSTRACT

Here we present an image of a middle-aged male after coronary artery bypass grafting who received intravenous methylene blue for refractory hypotension that resulted in dermal tattooing/staining of the venous vasculature of his left shoulder and left upper chest.

Keywords: Methylene blue, Complication, Dermal tattooing, Refractory hypotension, Coronary artery bypass grafting

CASE PRESENTATION

A 48-year-old male, 5 feet 8 inches in height and 100 kg in weight, arrived in the cardiovascular intensive care unit (CVICU) after receiving 3-vessel coronary artery bypass grafting. He arrived in the CVICU on infusions of epinephrine and norepinephrine. His systolic blood pressure remained less than 70 mmHg and he was not responsive to the above-mentioned infusions, or to the addition of a vasopressin infusion and fluid challenges. He subsequently received methylene blue (MB) intravenously, dosed at 2 mg/kg and administered over 30 minutes. The dermal tattooing/staining pattern occurred within 30 minutes of the termination of the MB bolus (Figure 1). The patient’s hypotensive state was corrected. The MB staining resolved within 48 hours.

This patient had a normal to high cardiac output, a low normal central venous pressure, and low systemic vascular resistance. His systemic inflammatory response may be attributed to his cardiopulmonary bypass run. Such a circumstance is normally referred to as vasoplegic syndrome (VS) -- an endothelial dysfunction considered to be secondary to direct and indirect effects of multiple inflammatory mediators. The use of MB, an inhibitor of nitric oxide synthetase and guanylate cyclase, has demonstrated improvement of refractory hypotension in VS. MB has diverse uses. While its use in methemoglobinemia is well known, and its effective use in post cardiopulmonary bypass VS is becoming more substantive, it application in septic shock, hepatopulmonary syndrome, malaria, ifosfamide neurotoxicity, neutralization of heparin, use in high flow priapism, and in Alzheimer’s disease will need more prospective confirmation.

The complication reported here could have occurred because of vasodilation and leakage of intravascular fluid, or damage to the vasculature secondary to manipulation perioperatively and resultant extravasation. It could also involve lymph vessel delineation. While mild skin discoloration has been reported with intravenous use of MB post cardiac surgery, as well as its recognition as a vital stain taken up by tissues that absorb actively, such as the colon and small intestine and its use in sentinel node/lymphatic vessel mapping, a dramatic dermatographic-like clinical presentation described herein remains rare.

REFERENCES