Indian Journal of Clinical Anaesthesia 2023;10(4):409–410

Content available at: https://www.ipinnovative.com/open-access-journals

Indian Journal of Clinical Anaesthesia

Journal homepage: www.ijca.in

Letter to Editor

Should inotropes be depended on as the only savior in haemodynamic crisis? a case study of symmetrical peripheral gangrene of limb extremities in a patient with traumatic brain injury

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ARTICLE INFO

Article history:
Received 22-07-2023
Accepted 27-09-2023
Available online 28-11-2023

Respected Editor,

We want to report a case of symmetrical peripheral gangrene (SPG) in a traumatic brain injury (TBI) patient requiring Vasopressor support. SPG is a rare syndrome defined by the peripheral ischemic lesion of two or more extremities in the absence of major vascular obstructive disease.[1] Though there is paucity of high-quality data regarding the disease, available literature indicates that low –flow states and the subsequent use of vasoactive drugs are a major factor for its development.[2]

A 35yr/male case of traumatic brain injury (E2V1M5), underwent decompressive craniectomy under GA with standard ASA monitoring, including invasive blood pressure (IBP). He had multiple episodes of hypotension intraoperatively (blood loss- 800 ml) and required nor-adrenaline infusion at a rate of 4 – 10 μg/min which continued into the postoperative period. He was monitored in the neuro Intensive care unit and mechanically ventilated. Intermittent pneumatic compression pump was applied to the lower limbs. He developed high grade fever on Post operative day (POD) 3 and persistent hypotension requiring noradrenaline 20 μg/min while on intravenous (IV) Piperacillin and Tazobactam. Vasopressin was added at a rate of 0.03 units/min on POD5 and antibiotics escalated to IV Vancomycin for suspected meningitis.

The blood profile showed anaemia, thrombocytopenia, leukocytosis, high procalcitonin (27.8 ng/ml) and INR of 1.6, with negative initial cultures and inconclusive CSF reports. The investigations on POD-8 showed elevated liver enzymes and B/L lung infiltrates on Chest Xray. Endotracheal aspirate culture grew MDR Acinetobacter baumanii and the antibiotics were escalated to IV Meropenem, Polymyxin B and nebulised Colistin as per culture sensitivity. Onset of cold extremities refractory to warming measures and discolouration was observed on POD-8. Ultrasound doppler scan for Deep vein thrombosis revealed signs of vascular flow occlusion in the right hand and left foot.

Gangrenous changes developed over the next two days (Figure 1 a, b). However, vasopressors continued to be required until POD-10 to maintain MAP of 65-70 mmHg. By day 10 of admission, he achieved haemodynamic stability and vasopressin and noradrenaline were tapered off sequentially. There was no improvement of the neurological status. Regular surgical consent for the gangrenous limbs were sought and as there was no clear line of demarcation of the gangrene, the patient was managed conservatively.

SPG involves a wide array of infective and noninfective etiological factors. Primarily, a low-flow state is

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https://doi.org/10.18231/j.ijca.2023.088

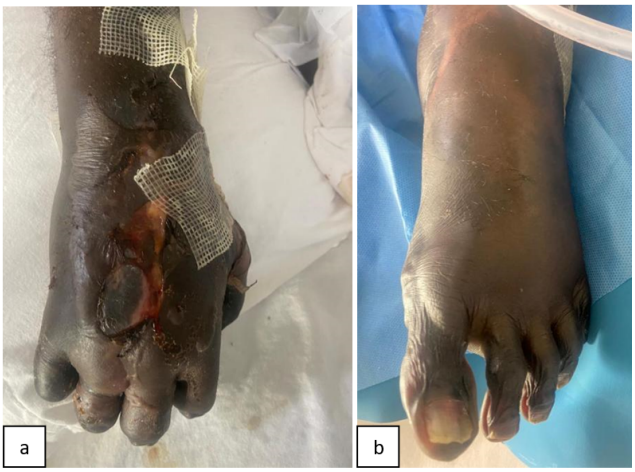

Figure 1: Showing SPG

commonly present in association with a hypercoagulable vasospastic situation leading to microcirculatory occlusion[3] Coagulopathy is a frequent observation in the acute phase of trauma.[4] Vasopressors and inotropes cause vasoconstriction or increase cardiac contractility and increase systemic vascular resistance, thereby, improving the MAP. The hypotension and vasopressor therapy reduce the blood flow into the distal extremities, and therefore predispose the patient with a septic shock with Disseminated intravascular coagulation to microthrombosis and a consequent ischemia and progression to necrosis and gangrene. Detection of limb discolouration was delayed due to the dark skin-tone of the patient. Identification and treatment of the underlying cause remains the most important part of the treatment of SPG. Precautionary measures involve aggressive fluid resuscitation, treatment of DIC, highly judicious usage and early withdrawal of vasopressors and inotropes, early use of appropriate parenteral antibiotics and an astuteness for early ischemic features. Amputation of the gangrenous areas may be inevitable. Further investigations, preferably involving collaborative interdisciplinary studies, are needed to create appropriate treatment guidelines for SPG.

Conflict of Interest

None.

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Cite this article: Debbarman S, Khakhlary B, Sokhal N. Should inotropes be depended on as the only savior in haemodynamic crisis? a case study of symmetrical peripheral gangrene of limb extremities in a patient with traumatic brain injury. *Indian J Clin Anaesth* 2023;10(4):409-410.