

## Editorial

# Do bone marrow mononuclear cells can be used as a therapeutic target for trauma hemorrhagic shock?

Manoj Kumar, Sanjeev Bhoi

Department of Emergency Medicine, JPN Apex Trauma Centre, All India Institute of Medical Sciences, New Delhi, India

Hemorrhagic shock (HS) is a major leading cause of death after trauma, up to 50% of death due to the massive hemorrhage. Resuscitation fluids (e.g. Ringer's lactate), blood and its component induces ischemia reperfusion and promotes excessive release of inflammatory cytokine, hyper catecholamine's which induces hematopoietic progenitor cells apoptosis leads multi-organ failure and death,<sup>1,2</sup> condition with limitation of treatment strategies. Besides fluid with blood and blood component no novel therapeutics adjunct has been included in the therapeutics armamentarium of HS. Previous studies reported that bone marrow mononuclear cell (BMCs) have the capacity of self-renewal and tissue regeneration in the nerves system and spinal cord injuries.<sup>3,4</sup> Intravenously, administrations of BMCs protect against organ injury/dysfunction caused by severe HS via activation of signaling pathway and promote immune reconstitution in the presence of acute graft-versus-host disease.<sup>5,6</sup>

BMCs contain hematopoietic stem cells (HPCs), mesenchymal stem cells, epithelial progenitor cells lymphoid cells (lymphocytes, plasma cells), monocytes, and macrophages.<sup>6</sup> BMCs modulate immune system, increased the growth of HPCs, reduced mobilization of HPCs into peripheral blood, and preserve bone marrow cellularity in injured tissue.<sup>7</sup> Previous studies have shown that BMCs immunologically safe, no ethical issue and easily isolated.<sup>8</sup> The author feels BMCs may be reduced mortality and improved outcome and have a therapeutic option for trauma or HS in human. Further research on this subject needs attentions.

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### Corresponding Author:

Manoj Kumar, Department of Emergency Medicine, JPNATC, AIIMS, New Delhi, India. Phone: +91-9654965259, Tel.: 91-11-26731262, E-mail: manojaiims84@gmail.com

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