

CORRESPONDENCE

Open Access



Norepinephrine formulation for equivalent vasopressive score

Nicolas Mongardon^{1,2,3*}, Quentin de Roux^{1,2,3}, Marc Leone⁴ and Philippe Guerci^{5,6}

Correspondence

Kotani and colleagues should be commended for comparing the vasopressive effects of most vasopressors available on the market. Their work aims at harmonizing the vasopressive burden in patients with shock [1].

In our opinion, the authors forgot to mention that, depending on countries and institutions, two formulations of norepinephrine are available: either as tartrate/bitartrate at 2 mg/mL or as base at 1 mg/mL. This means that the equipotent vasopressive formulations can require to adapt the dose by a factor 2, a conversion factor of paramount importance in daily practice. The Surviving Sepsis Campaign (SCC) 2021 recommended adding vasopressin in septic shock patients when the dose of norepinephrine reaches 0.25–0.5 µg/kg/min [2]. For an 80-kg adult, this translates by introducing

vasopressin at a threshold ranging from 1.2 mg/h of norepinephrine when the base formulation is used at the lowest recommendation to 4.8 mg/h when the tartrate/bitartrate formulation is used at the higher recommendation. Interestingly, in an international survey on the adhesion to SSC guidelines, 50% of 820 respondents were unaware of the formulations used in their units [3]. This bias can lead to unwanted high doses of norepinephrine and misinterpretation of clinical trial results. In addition, delayed vasopressin introduction may be less effective than an early multimodal strategy based on combination of several vasopressors [4, 5].

In conclusion, there is a need for homogenizing the norepinephrine formulation in order to improve the interprofessional communication on vasopressive equivalence scores across the different publications and practices all over the world.

Acknowledgements

Not applicable.

Author contributions

NM, QDR, ML and PG wrote and approved the final manuscript. All authors read and approved the final manuscript.

Funding

No funding was required.

Availability of data and materials

Not applicable.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent for publication

Not applicable.

This comment refers to the article available online at <https://doi.org/10.1186/s13054-023-04322-y>.

*Correspondence:

Nicolas Mongardon
nicolas.mongardon@aphp.fr

¹ Service d'Anesthésie-Réanimation Chirurgicale, DMU CARE, Assistance Publique-Hôpitaux de Paris (AP-HP), Hôpitaux Universitaires Henri Mondor, 1 Rue Gustave Eiffel, 94010 Créteil, France

² Université Paris Est Créteil, Faculté de Santé, 94010 Créteil, France

³ U955-IMRB, Equipe 03 "Pharmacologie et Technologies pour les Maladies Cardiovasculaires (PROTECT)", Inserm, Univ Paris Est Créteil (UPEC), Ecole Nationale Vétérinaire d'Alfort (EnvA), 94700 Maisons-Alfort, France

⁴ Service d'Anesthésie et de Réanimation, Assistance Publique-Hôpitaux Universitaires de Marseille, Aix Marseille Université, Hôpital Nord, 13015 Marseille, France

⁵ Department of Anesthesiology and Critical Care Medicine, Institut Lorrain du Coeur et des Vaisseaux, University Hospital of Nancy, 57000 Vandoeuvre-Les Nancy, France

⁶ INSERM U1116, DCAC, University of Lorraine, Nancy, France



© The Author(s) 2023. **Open Access** This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>. The Creative Commons Public Domain Dedication waiver (<http://creativecommons.org/publicdomain/zero/1.0/>) applies to the data made available in this article, unless otherwise stated in a credit line to the data.

Competing interests

NM and PG received consulting fees from AOP Health. ML served as consultant for Viatrix, Gilead, AOP Pharma and LFB and as speaker for AOP Pharma. QDR has no potential conflict of interest.

Received: 8 February 2023 Accepted: 9 February 2023

Published online: 16 February 2023

References

1. Kotani Y, Gioia AD, Landoni G, Belletti A, Khanna AK. An updated "norepinephrine equivalent" score in intensive care as a marker of shock severity. *Crit Care*. 2023;27:29.
2. Evans L, Rhodes A, Alhazzani W, Antonelli M, Coopersmith CM, French C, et al. Surviving sepsis campaign: international guidelines for management of sepsis and septic shock 2021. *Intens Care Med*. 2021;47:1181–247.
3. Bitton E, Zimmerman S, Azevedo LCP, Benhamou D, Cecconi M, Waele JJD, et al. An international survey of adherence to Surviving Sepsis Campaign Guidelines 2016 regarding fluid resuscitation and vasopressors in the initial management of septic shock. *J Crit Care*. 2022;68:144–54.
4. Guerci P, Belveyre T, Mongardon N, Novy E. When to start vasopressin in septic shock: the strategy we propose. *Crit Care*. 2022;26:125.
5. Leone M, Einav S, Antonucci E, Depret F, Lakbar I, Martin-Loeches I, et al. Multimodal strategy to counteract vasodilation in septic shock. *Anaesth Crit Care Pa*. 2023;42: 101193.

Publisher's Note

Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Ready to submit your research? Choose BMC and benefit from:

- fast, convenient online submission
- thorough peer review by experienced researchers in your field
- rapid publication on acceptance
- support for research data, including large and complex data types
- gold Open Access which fosters wider collaboration and increased citations
- maximum visibility for your research: over 100M website views per year

At BMC, research is always in progress.

Learn more biomedcentral.com/submissions

