EDITORIAL

Hypovolemic Shock and Nitric Oxide System. Implications of Anesthesia

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Previous works carried out by this very same group of researchers confirmed the role of nitric oxide in hypovolemic shock pathogenesis, and demonstrated that activation of the cardiac nitric oxide synthase enzyme might be involved in the hemodynamic alterations observed after an acute bleeding event. (1) It was also demonstrated that inhibition of the nitric oxide system is beneficial, mainly when mean arterial pressure is maintained; as a result, hypovolemia might modulate the activity and expression of cardiac nitric oxide synthase enzyme. (2)

In this work, the authors –following their research area of interest– assess the role of mytochondrial nitric oxide system in the adaptive response of the cardiovascular system in anesthetized and non-anesthetized rats under hypovolemic shock. Although the authors did not observe significant differences in the values of mytochondrial respiratory parameters among the different study groups, functional activity of mytochondrial nitric oxide synthase in anesthetized animals was lower in the group with bleeding shock. This effect was even lower in non-anesthetized animals subjected to bleeding. In addition, mytochondrial production of nitric oxide decreased in the groups of anesthetized and non-anesthetized animals subjected both to bleeding, compared to controls.

The work of Arreche, et al. (3) that is published in this issue of the *Revista Argentina de Cardiología* is original and significant, since it studies in depth the adaptive mechanisms to bleeding shock by including the variable of the anesthetized or awake animal. It also demonstrates that mytochondrial production of nitric oxide might be involved in the cardiovascular adaption response in cases of acute volume depletion, and such role might depend on the state of consciousness.

The findings of Arreche, et al. raise new questions that will require more research to find out the role of mytochondrial nitric oxide synthase in hypovolemic shock, and its connection with the level of anesthesia.

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