

## LETTER TO EDITOR

doi: 10.5455/medarch.2020.74.323-324

MED ARCH. 2020 AUG; 74(4): 323-324

RECEIVED: AUG 2, 2020 | ACCEPTED: AUG 12, 2020

# Interpretations on Preconditioning with Lidocaine and Xylazine in Experimental Equine Jejunal Ischaemia

Ilker Sengul<sup>1,2</sup>, Demet Sengul<sup>3</sup>, Anton Pelikán<sup>4,5</sup>

Dear Editor,

We read with respect the research article, entitled: 'Preconditioning with lidocaine and xylazine in experimental equine jejunal ischaemia' (1). This beneficial research was designed to show whether protective effects of preconditioning with lidocaine and xylazine on the equine jejunal ischaemia exists. They declared that preconditioning with lidocaine did not have any effect on the tested variables while xylazine exhibited beneficial effect on ischaemia-reperfusion (I/R) injury through apoptosis rate and inflammation.

Nevertheless, clinical significance of these findings remains uncertain because concurrent reduction of histomorphologic injury was not demonstrated. However, their surgical procedure and sample collection included at first, the excision of 10 cm intestinal segment, 1 m proximal to the jejunoileal junction (pre-ischemia [P] sample). Afterwards, the excision of 10 cm intestinal segment was made 2 m proximal to the jejunoileal junction (ischemia [I] sample) where an ischemia was induced by an umbilical tape for 90 min and the excision of an intestinal segment was made (reperfusion [R] sample) from the pre-occluded area which was left for reperfusion for 30 min in the same horse (1). Consequently, hormonal and metabolic responses to surgical and other physiological stresses was defined as a kind of complex phenomena in living organisms (2).

Therefore, as far as we understood, the [I] sample was obtained after exposing to one surgical procedure: the excision of 10 cm intestinal segment, 1 m proximal to the jejunoileal junction and the [R] sample was achieved after exposing to the two surgical procedures: i) the excision of 10 cm intestinal segment, 1 m proximal to the jejunoileal junction and ii) the 10 cm intestinal segment, 2 m proximal to the jejunoileal junction in the same horse. In our own study the hypothesis was set that ischemic postconditioning (IPoC) would reduce the detrimental effects of acute intestinal I/R comparing those of the abrupt onset of reperfusion. For that purpose, the rats were randomly assigned to one of four groups based on the intervention: 1st, control, no intervention either prior to or after superior mesenteric artery occlusion; 2nd, IPoC-3 (the three cycles of 10 seconds of reperfusion-reocclusion, a minute total intervention); 3rd, IPoC-6 (the six cycles of 10 seconds of reperfusion-reocclusion, two minutes total intervention); and 4th, sham operation (laparotomy only).

Eventually, the IPoC exerted protective effect on the intestinal mucosa by reducing the mesenteric oxidant generation, lipid peroxidation, and neutrophil accumulation with the demonstration of the best protection in the six-cycle algorithm. It is obvious and we accept that: i) we studied IPoC, rather than ischemic preconditioning (IPC), ii) many works, have also been reported against the protective effects of IPoC and IPC, iii) we performed the experimental study on the rats, rather than the horses (3, 4). Even so, the stress response to surgery, critical illness, trauma, and burns encompasses derangements of metabolic and physiological processes, leading to disturbances and complexity in the inflammatory, acute phase, hormonal, and genomic responses in living organisms (5). Verhaar and colleagues (1) showed that xylazine was not effective on the attenuation of mucosal injury while lidocaine was not efficient in any outcome. But it is remarkable that relevant

<sup>1</sup>Division of Endocrine Surgery, Giresun University Faculty of Medicine, Giresun, Turkey

<sup>2</sup>Department of General Surgery, Giresun University Faculty of Medicine, Giresun, Turkey

<sup>3</sup>Department of Pathology, Giresun University Faculty of Medicine, Giresun, Turkey

<sup>4</sup>Department of Health Care Sciences, Faculty of Humanities, Univerzita Tomáše Bati ve Zlíně, Zlín, Czech Republic

<sup>5</sup>Department of General Surgery, Faculty of Medicine, Ostravska Univerzita V Ostrave, Ostrava, Czech Republic

**Corresponding author:** Demet Sengul, MD, Professor (Assoc) of Pathology. The Founder Chair, Department of Pathology. The Founder Chair, Scientific and Research Laboratories. Giresun University Faculty of Medicine. Gazipasa Compound, Gazi Avenue. TR28100 Giresun, Turkey. E-mail: demet.sengul.52@gmail.com. ORCID ID: <http://www.orcid.org/0000-0002-0416-0621>.

© 2020 Ilker Sengul, Demet Sengul, Anton Pelikán

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/4.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

samples were taken after the same horses underwent the one or two surgical interventions, so close to the sampling sites. Therefore, we do not know whether the mentioned ineffective and unfruitful properties of xylazine and lidocaine would reverse as protective and beneficial if the experimental sampling procedure and the relevant samples were obtained from areas not exposed to the prior traumatic events like surgical intervention(s) even in the relatively small proportions.

In conclusion, working with horses probably may bring about some difficult conditions unlike the rats, but hormonal, metabolic, and stress responses to surgical and other physiological stresses have been determined as a kind of complex phenomena in all living organisms. As a matter of the fact that, this issue merits further investigation. We thank for Verhaar et al (1) for their worthy study.

- **Authors contribution:** All authors were included in all steps of preparation this letter and made final proof reading.
- **Conflict of interest:** None declared.
- **Financial support and sponsorship:** Nil.

## REFERENCES

1. Verhaar N, Pfarrer C, Neudeck S, König K, Rohn K, Twele L, et al. Preconditioning with lidocaine and xylazine in experimental equine jejunal ischaemia. *Equine Vet J*. 2020 Mar 2. doi: 10.1111/evj.13251. Online ahead of print.
2. Deborah B, Grainne N, George H. Endocrine and metabolic response to surgery. *Continuing Education in Anaesthesia, Critical Care and Pain*. 2004; 4: 144-147.
3. Sengul I, Sengul D, Guler O, Hasanoglu A, Urhan MK, Taner AS, Vinten-Johansen J. Postconditioning attenuates acute intestinal ischemia-reperfusion injury. *Kaohsiung J Med Sci*. 2013; 29: 119-127.
4. Sengul I, Sengul D, Hasanoglu A, Urhan MK, Taner AS, Guler O. Effect of postconditioning on intestinal ischemia-reperfusion injury by inhibiting events in the early minutes of reperfusion in rats. The 45th Congress of the European Society for Surgical Research (ESSR), Faculty of Medicine, University of Geneva (Centre Médical Universitaire-CMU), Geneva, Switzerland, 9-12 June 2010. Abstract Book OP11-2. *Br J Surg*. 2010; 97: 71-72.
5. Finnerty CC, Mabvuure NT, Ali A, Kozar RE, Herndon DN. The surgically induced stress response. *JPEN J Parenter Enteral Nutr*. 2013; 37: 21S-29S.