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NEUROCRITICAL CARE SOCIETY

LETTER TO THE EDITOR

Response to Dr. Frederick Adam Zeiler

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Dear Editor,

We are very thankful to Dr. Frederick Adam Zeiler for his comments and interest in our article (Petkus V, Preiksaitis A, Krakauskaite S, Bartusis L, Chomskis R, Hamarat Y, et al. Non-invasive Cerebrovascular Autoregulation Assessment Using the Volumetric Reactivity Index: Prospective Study. Neurocrit Care. 2018 June 27; Epub Ahead of Print).

We fully agree that the model of association between VRx and PRx is generally nonlinear [1]. On the other hand, we are using arterial blood pressure (ABP), intracranial blood volume, and intracranial pressure (ICP) slow waves for real-time monitoring of VRx(t) and PRx(t). Amplitudes of all slow waves are much smaller comparing with an interval of mean ABP and mean ICP changes observed during severe traumatic brain injury (TBI) patients' treatment in neurosurgical intensive care units. Slow waves are almost always observed in a linear part of mean ICP versus mean intracranial volume curve.

We appreciate the proposal of Dr. Frederick Adam Zeiler to use more sophisticated statistical analysis in order to evaluate the association between VRx and PRx [1]. We intend to do that and to publish more extended analysis results from our prospectively collected data base of VRx and PRx clinical data.

We do not believe that VRx will replace PRx in the near future. Our intent is to apply VRx in clinical fields where invasive PRx monitoring technology is not applicable [2, 3].

We appreciate the excellent idea to validate non-invasive VRx on the Lassen curve [4]. We see the lower limit of cerebrovascular autoregulation according to the Lassen curve in our clinical studies of VRx(t) monitoring data during cardiac surgery with cardiopulmonary bypass and during intensive care of severe TBI patients. We intend to publish an additional article on this aspect of our prospective VRx monitoring studies.

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