

LETTER TO THE EDITOR

Cerebral vasoreactivity in white coat hypertension – response to comments written by V.K. Sharma**and A.K. Sinha**B. Fülesdi^a and D. Páll^b^aDepartment of Anaesthesiology and Intensive Care and ^bDepartment of Medicine, Medical and Health Science Centre, University of Debrecen, Debrecen, Hungary

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Sir,

We were pleased to read the comments on our manuscript entitled 'Impaired cerebral vasoreactivity in white coat hypertensive adolescents [1]' written by Sharma and Sinha. There were two main concerns that were raised in their letter:

First, the regulation of the arterial tone by sympathetic and parasympathetic nervous system and its influence on cerebral vasoreactivity and autoregulation. In fact, there are numerous factors that may contribute to the cerebral arteriolar tone, and amongst them, the balance between parasympathetic and sympathetic innervation plays also a role. However, this role is not exclusive and may not explain flow-metabolism coupling of the brain parenchyma in all details. In recent decade, more and more observations came

into light supporting the role of nitric oxide-endothelin balance as main actor in determining cerebral vascular tone. It is believed that both the resting tone and vasodilatory and vasoconstrictory reactions occur through alterations in activation of the NOS by different stimuli. At present, there are three main known subtypes of NOS, amongst them iNOS (produced by the vascular endothelium) and nNOS (produced by the nitrergic nerves) are believed to play a pivotal role in determining cerebral vascular tone, vasoreactivity, and autoregulatory reactions. Metabolic changes (such as hypercapnia, altered cGMP, hyperoxia, or hypoxia) as well as neurogenic activities are thought to exert their vasoregulatory actions through this system. This concept may entirely explain flow-metabolism coupling, autoregulatory, and vasodilatory reactions of the cerebral vasculature [2]. In a previous review of acetazolamide tests, our group provided a simplistic description of these underlying mechanisms [3]. The role of nitric oxide-endothelin imbalance in determining hypertension has been also proven previously in adolescent hypertensives [4,5]. The present study just aimed to underline the fact that decreased baseline nitric oxide concentrations are already observed in white-coat hypertensives compared with healthy persons.

In their second comment, Sharma and Sinha raised their concern about the formula used to evaluate the vasodilatory response. In fact, fixed time of breath holding may not represent a similar challenge in differently aged adults with different lifestyle and comorbidities. However, in the Debrecen Hypertension Study, young adults aged between 14 and 19 years with average lifestyles (no divers or professional swimmers) were included. We hypothesized that lung functions and vital capacities were normal in these

young subjects. Despite this, in some cases, it was necessary to repeat the breath-holding tests because of improper cooperation. To overcome this, we elaborated a technique that facilitates the cooperation of the subjects as described in a previous article in detail [6] and used the method also in the present study.

However, in fact, breath holding index described by Markus and Harrison [7] may be a more sophisticated option for assessing cerebral vasoreactivity in elderly people and in patients with comorbidities.

Again, thank you very much for your excellent comments on our article.

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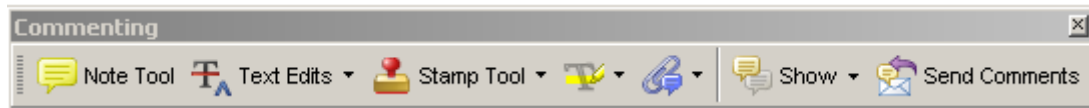
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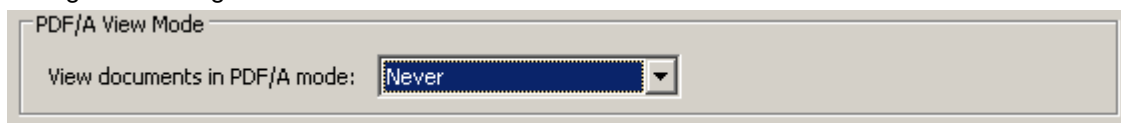
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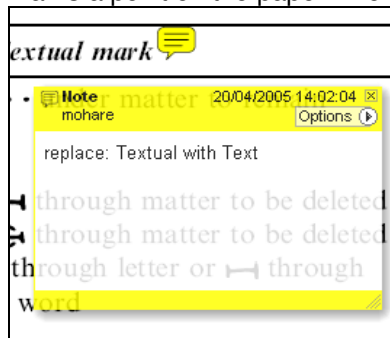
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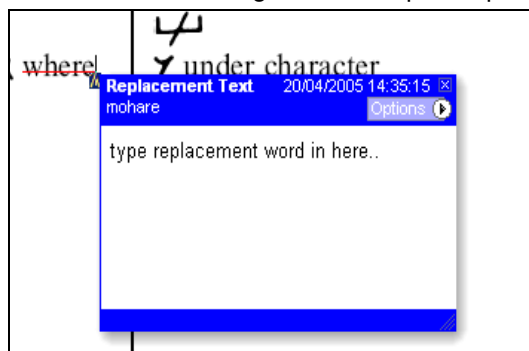


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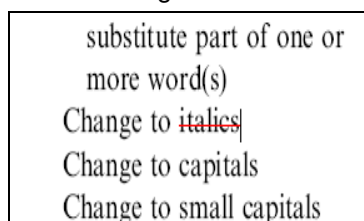


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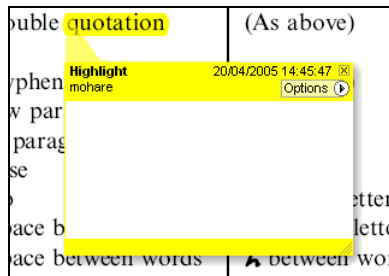


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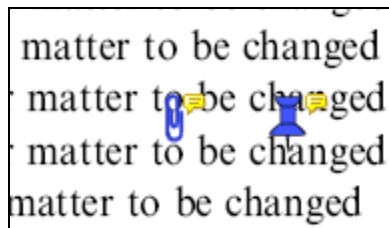


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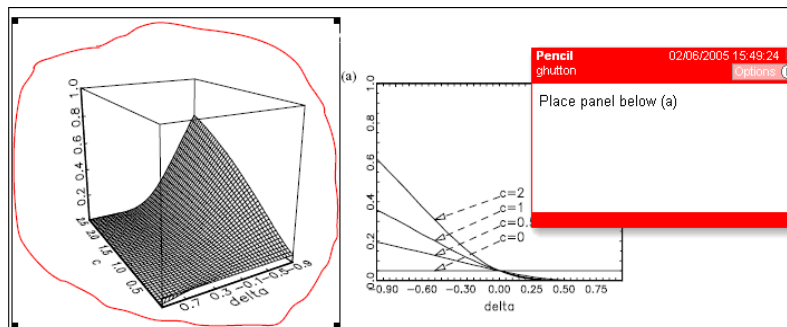


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