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LETTER TO THE EDITOR

Response to "Letter to the Editor" by R. Dhar

Henrik Engquist[1,2*] and Per Enblad[1]

Dear Sir,

We appreciate the valuable comments by Dr. Dhar regarding our recent article on effects of HHH therapy on CBF in poor-grade SAH patients with clinical suspicion of DCI [1].

It is absolutely true that information about oxygen metabolism and oxygen extraction rate would provide important information for the evaluation of HHH therapy as can be achieved by positron emission tomography (PET). Unfortunately, our experience is that PET procedures are complicated in the acute clinical care of these patients. At present, we are analyzing cerebral microdialysis data to evaluate the metabolic effects of HHH therapy in conjunction with Xenon CT CBF measurements, however, with the limitation that microdialysis only reflects a small region of the brain.

We agree that there is a possibility that the observed increase in CBF in our study could to some extent be outweighed by decreased oxygen-carrying capacity due to the hemodilution.

Regarding the induced hypervolemia, we are not convinced that a beneficial effect can be ruled out in the treatment of DCI. In the study by Lennihan [2], *prophylactic* hypervolemia was investigated and the degree of hypervolemia was low according to blood volume calculations and the unchanged hematocrit.

The clinical effect of HHH therapy used in our protocol was difficult to evaluate, but the relatively favorable clinical course outcome and low frequency of cerebral infarctions may indicate that the sum effect of intravascular volume status and rheological effects achieved have been beneficial. However, our study provides no definite proofs and raises many questions as importantly pointed out by Dr. Dhar.

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References

1. Engquist H, Rostami E, Ronne-Engström E, Nilsson P, Lewén A, Enblad P. Effect of HHH-therapy on regional CBF after severe subarachnoid hemorrhage studied by bedside xenon-enhanced CT. Neurocrit Care. 2017. https://doi.org/10.1007/s12028-017-0439-y.
2. Lennihan L, Mayer SA, Fink ME, Beckford A, Paik MC, Zhang H, Wu YC, Klebanoff LM, Raps EC, Solomon RA. Effect of hypervolemic therapy on cerebral blood flow after subarachnoid hemorrhage: a randomized controlled trial. Stroke A J Cereb Circ. 2000;31(2):383–91.

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