

The Effect of Fluid Challenge Test on Optic Nerve Sheath Diameter

Sir,

We are writing to congratulate Komurcu *et al.* for their original study on the effect of the fluid challenge test on optic nerve sheath diameter (ONSD).¹

We agree with the idea of using a fast, non-invasive tool such as ocular ultrasound to measure ONSD in order to assess intracranial pressure during medical procedures, but we would like to comment on some points.

To measure the ONSD, the authors utilised a linear probe B-scan placed on closed eyelids over a sterile transparent cover. Even if this method is commonly used in the international literature, in our opinion, this is not the best way to perform such examination. Placing the probe over closed eyelids makes it difficult to assess the gaze direction resulting in a wrong probe orientation. Moreover, by utilising a sterile cover, the signal's strength is attenuated. For this reason, we suggest performing ocular echography with open eyelids, using methylcellulose and anaesthetic drops, to visualise the patient's gaze in order to correctly orient the probe, and to get help to avoid errors.

Another problem that arises in utilising the B-scan is the so-called "blooming effect". ONSD measurement is influenced by the brightness of the scan and therefore by the gain used. With high gain, the ONSD will be smaller due to the increased wall brightness, and vice versa with low gain. As B-scan lacks a standard sensitivity setting in such a small structure like the optic nerve, this effect influences the result of the measurement.^{2,4} For the above-mentioned reasons, we would like to suggest the use of standardised A-scan. This method displays hyperreflective spikes from the interface between arachnoid and subarachnoid fluid overcoming the blooming effect and therefore provides standardised, objective, and reliable measurements.⁵

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AUTHOR'S REPLY:

Sir,

We thank the authors for their valuable comments regarding our study,¹ and we would like to provide the following comments and clarifications. Although determining the optimal measurement method for Optic Nerve Sheath Diameter (ONSD) is difficult, we used the B-scan ultrasonography (USG) technique over a sterile drape in our study as commonly used in the literature.^{1,2} We agree with their comments that this method may have affected the image quality. Therefore, we measured ONSD at three time points in both eyes to minimize variables that depend on the operator, and the mean value was recorded as ONSD. We also agree that, as the authors mentioned, methylcellulose and an anaesthetic drop on the open eyelid to measure ONSD with A-scan USG may be more helpful.^{3,4}

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