

LETTER

Ocular ultrasonography to detect intracranial pressure in aneurysmal subarachnoid hemorrhage

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Dear Editor,

We congratulate Wang and colleagues for their interesting paper concerning the ultrasound evaluation of the optic nerve sheath diameter (ONSD) in a young patient with an aneurysmal subarachnoid hemorrhage and spinal arachnoiditis.¹

We would like to comment this article because, in our opinion, some points need to be clarified.

In the "Introduction" section, the authors stated that the possibility to assess the increase in intracranial pressure (ICP), measuring ONSD, was discovered in 1989.¹

This statement is incorrect because other papers described this possibility before the one the authors cited.^{2,3}

The lack of a standard setting makes B-scan measurements subjective and quite unreliable in case of small structures such as ONSD. In other words, a lower gain setting will show larger measurements compared to the ones got with a higher gain setting (blooming effect).^{4–8}

We are aware that in a previous paper the authors found a good correlation between ONSD and ICP changes, but unfortunately the formula they found, due to the blooming effect, makes it difficult to utilize in other hospitals.⁹

To overcome this main limitation, we would like to suggest the use of the Standardized A-Scan technique, which is blooming effect free and displays easily noticeable hyperreflective spikes from the interface between arachnoid and subarachnoidal fluid, providing exacter measurements.^{10–12}

The authors correctly stated that papilledema and hemorrhages could not only indicate increased ICP but also

optic nerve inflammation or optic nerve compartment syndrome.¹ Standardized A-scan is a very useful tool to resolve this doubt. In fact, it permits to perform the "30 degrees test," which allows us to distinguish between an ONSD increase caused by raised ICP related to increased subarachnoidal fluid, and that one associated with other diseases.^{2,13,14}

In addition, it is also possible to perform the "optic nerve exercise" to exclude an optic nerve compartment syndrome.¹⁵ This test is performed by inviting the patient to look alternatively to the extremely right and left lateral sides for 15–20 s.

The test will last 3 min, afterwards, the patient is given 2 min too rest with closed eyes allowing the subarachnoidal fluid, which was shifted from the orbit during the exercise, to return into the orbit. In the healthy people, the original amount of orbital subarachnoidal fluid will be normally restored while, in case of an optic nerve compartment syndrome, this will not happen.¹⁵

Conflict of Interest

The authors declare they have no conflict of interest.

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