2. Helviz Y, Einav S, Hersch M, Shapiro H, Ioscovich A. Thromboelastography and amniotic fluid embolism. *Perinat Med* 2014;**3**:97–101.
3. Legrand M, Rossignol M, Dreux S, et al. Diagnostic accuracy of insulin-like growth factor binding protein-1 for amniotic fluid embolism. *Crit Care Med* 2012;**40**:2059–63.
4. Huissoud C, Carrabin N, Audibert F, et al. Bedside assessment of fibrinogen level in postpartum haemorrhage by thromboelastometry. *BJOG* 2009;**116**:1097–102.
5. Loughran JA, Kitchen TL, Sindhakar S. Rotational thromboelastometry (ROTEM®)-guided diagnosis and management of amniotic fluid embolism. *Int J Obstet Anesth* 2019;**38**:127–30.

0959-289X/$ - see front matter

https://doi.org/10.1016/j.ijoa.2019.02.005

Optic nerve ultrasonography for evaluating increased intracranial pressure in severe preeclampsia

We were very interested in the article by Brzan Simenc et al. regarding the use of the ocular ultrasonography for diagnosing increased intracranial pressure in patients with severe preeclampsia.[1]

We would like to congratulate the authors for their paper, however we wish to comment on the methods used to measure the optic nerve sheath diameter (ONSD). First, the authors used the B-Scan technique, an examination broadly utilized to diagnose ocular diseases. This technique has limited sensitivity for measuring orbital structures, as it is affected by the so-called 'blooming effect'.[2] This is related to the lack of a standard sensitivity setting in performing a B-Scan and should not be confused with the Doppler-associated blooming effect. In the case of the B-Scan, it means that if ONSD is measured at a lower sensitivity setting, bigger dimensions will be seen in comparison to those obtained at an increased sensitivity setting. This effect could be misleading if a difference of less than 0.5 mm is being considered, as happens when we evaluate ONSD, but is less important when considering larger lesions.[3]

Another issue is the use of the probe through the closed eyelids, making detection of the direction of gaze, and consequently the exact probe position, difficult. In ophthalmology, during the ultrasound examination, the B-scan probe is routinely used with open lids, using methylcellulose and anesthetic drops. This allows visualization of the eye, making the probe orientation much more reliable.[4]

Due to these aforementioned limitations, in future studies we suggest utilizing the standardized A-Scan technique.[5] With this technique it is not only possible to measure the ONSD with more precision, because the interface between the arachnoid and subarachnoid fluid gives high reflective spikes that allow an objective way of performing such measurements,[6] but also with this method there is no blooming effect.[7–9]

For this reason, the A-Scan technique provides a more accurate reference range for ONSD that can be widely used and replicated without the need for laboratory-related reference settings. Finally, we strongly disagree with the authors when they state that "ultrasonography is an easy-to-learn technique". Because of the blooming effect and the difficulties in the exact placement of the probe, skill is required to get reproducible measurements.[10]

Maddalena De Bernardo, Livio Vitiello, Nicola Rosa
Department of Medicine, Surgery and Dentistry "Scuola Medica Salernitana"
University of Salerno, Salerno, Italy
Corresponding author at: Department of Medicine Surgery and Dentistry, "Scuola Medica Salernitana" University of Salerno, Via S. Allende, 84081 Baronissi Salerno, Italy
E-mail address: mdebernardo@unisa.it

References

1. Brzan Simenc G, Ambrozic J, Prokselj K, et al. Ocular ultrasonography for diagnosing increased intracranial pressure in patients with severe preeclampsia. *Int J Obstet Anesth* 2018;**36**:49–55.
2. Rosa N, Lanza M, Borrelli M, et al. Low intraocular pressure resulting from ciliary body detachment in patients with myotonic dystrophy. *Ophthalmology* 2011;**118**:260–4.
3. De Bernardo M, Rosa N. Measuring optic nerve sheath diameter as a proxy for intracranial pressure. *JAMA Ophthalmol* 2018;**136**:1309–10.
4. Tenuta M, De Bernardo M, Rosa N. Comments on "Neuromuscular ultrasonography of cranial nerves". *J Clin Neurol* 2017;**13**:212–3.
5. Ossoinig KC. Standardized echography of the optic nerve. In: Till P, editor. *Documenta Ophthalmologica Proceedings Series, Ophthalmic Echography 13*, 55. Dordrecht: Springer Netherlands; 1990. p. 3–99.
6. Ossoinig KC, Cennamo G, Frazier-Byrne S. Echographic differential diagnosis of optic nerve lesions. In: Thijssen JM, Verbeek AM, editors. *Documenta Ophthalmologica Proceedings Series Ultrasonography in Ophthalmology*, 29. The Hague: Springer Netherlands; 1981. p. 327–32.
7. De Bernardo M, Rosa N. Clarification on using ultrasonography to detect intracranial pressure. *JAMA Ophthalmol* 2017;**135**:1004–5.
8. De Bernardo M, Rosa N. Transbulbar B-Mode sonography in multiple sclerosis: Clinical and biological relevance. *Ultrasound Med Biol* 2018;**44**:508.
9. Rosa N, De Bernardo M. Measurement of the optic nerve in a resource-limited setting. *J Neur Rural Prac* 2017;**8**:310–1.
10. Iaconetta G, De Bernardo M, Rosa N. Coronal axis measurements of the optic nerve sheath diameter. *J US Med* 2017;**36**:1073.

0959-289X/$ - see front matter

https://doi.org/10.1016/j.ijoa.2018.12.010