



# Corneal thickness, optic nerve sheath diameter, and retinal nerve fiber layer evaluation to assess the risk of cerebral edema in type 1 diabetes in children

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Dear Editor,

We read with great interest the article by Jeziorny et al. evaluating the possibility of measuring corneal thickness, optic nerve sheath diameter, and retinal nerve fiber layer to assess the risk of cerebral edema in children with type 1 diabetes [1].

We would like to congratulate the authors for their interesting and nice paper, but we would like to comment on this article, because, in our opinion, there are some points that need to be clarified.

The first point that we would like to comment is the use of an US pachymeter in measuring the corneal thickness. Even if US pachymetry has been widely considered to be the gold standard, gold standard not always means precision.

In fact, as we had the occasion, to point out in another article [2] with US is difficult to evaluate the same points of the cornea in two subsequent assessments.

Second, in the edematous cornea, the US are slower than in the normal cornea; this could give a wrong assessment of the thickness, overestimating it [2].

For this reason, we would like to suggest optical techniques that can overcome some of the drawback of this technique, in case a comparison or a follow up is planned.

Another point that we would like to comment is the measurement of the optic nerve with the B scan technique.

This technique is widely used to detect ocular diseases, but it is not very reliable when we need to measure orbital structures, due to the so-called blooming effect [3–5]. This effect is due to the lack of a standard sensitivity setting and should not be confused with the Doppler-related blooming effect. It means that, if we measure the ON image with a lower sensitivity setting, this will give bigger ON dimensions compared to the ones obtained with an increased sensitivity setting. This effect could be misleading if we suppose a difference inferior to 0,5 mm, as it happens when we measure ON sheath diameter, but less important when we deal with large lesions. Therefore, our suggestion should be to use the so-called standardized A scan technique, which can be much more accurate, although it is a little bit more difficult to perform and it requires some skill.

Furthermore, we have some concerns about the methodology used to evaluate ONSD, because the picture is not clear, as it seems that the longitudinal measurement does not reach both the layers of the ON.

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## Compliance with ethical standards

**Conflict of interest** The authors declare that they have no conflict of interest.

**Ethical approval** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent** For this type of study, formal consent is not required.

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Managed by Antonio Secchi.

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