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LETTER TO THE EDITOR

Caution is required for the evaluation of the accuracy of continuous glucose monitoring devices

We have read with interest the recent article by Sato *et al.*[1] showing that the accuracy of FreeStyle Libre Pro (Abbott, Alameda, CA, USA) is similar to that of iPro2 (Medtronic, Northridge, CA, USA). Both of the continuous glucose monitoring devices are intended to be used for the retrospective analysis of glucose excursion in patients with diabetes mellitus, with the difference being that the FreeStyle Libre Pro is factory calibrated and the iPro2 is calibrated by conventional finger prick glucose tests during the period of use. One problem in this article is that the authors used the measurements of conventional finger prick glucose tests to calibrate the iPro2 and measurements of venous blood glucose to calculate its mean absolute relative difference (MARD). Theoretically, this approach will heavily underestimate the MARD of iPro2, because the measurements by iPro2 greatly depend on the input of the blood glucose levels by finger prick glucose tests used for calibration, which are well correlated with the venous blood glucose levels used to calculate the MARD. To accurately evaluate the MARD of iPro2, venous blood glucose levels that were sampled at the same timing as the finger prick glucose tests need to be excluded from the calculation. Furthermore, the glucose levels used in this study were mostly within the range of 100–200 mg/dL, probably reflecting the good blood glucose control achieved by hospitalization, which makes it difficult to generalize the observations from this study. We must point out that the MARD reported in this study was better than that of the FreeStyle Libre Pro (11.1%) and iPro2 (11.0%) reported by the manufacturers of these devices or by other investigators[2,3]. There is also a similar article published in *Journal of Diabetes Investigation* by Kumagai *et al.*[4] that did not exclude the glucose levels used for calibration. In addition, the article by Sato *et al.* lacked statistical tests comparing the measurements by the FreeStyle Libre Pro and iPro2, unlike the articles by Ida *et al.*[3] and Kumagai *et al.*[4] The accuracy of continuous glucose monitoring devices, including real-time continuous glucose monitoring devices manufactured by Medtronic and Dexcom (San Diego, CA, USA), needs to be evaluated in accordance with the international standards to enable comparison with existing evidence. We encourage the authors to carry out additional future studies with a greater number of participants and wider range of blood glucose levels, and to exclude the glucose levels used to calibrate the iPro2.

DISCLOSURE

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