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Letter to the Editor

SSEP amplitude for prognostication in post-anoxic coma: A further step towards standardisation

To the Editor,

We read with great interest the manuscript from van Soest et al.[1] entitled "SSEP amplitudes add information for prognostication in postanoxic coma". In their study, the authors investigated the ability of three different amplitudes of short-latency somatosensory evoked potentials (SSEPs) to predict poor neurological outcome in patients who were comatose after resuscitation from cardiac arrest. Namely, they measured the amplitude as (1) the difference between the N20 wave and the baseline (N20-baseline); (2) the difference between the N20 and the subsequent positive P25 wave (N20/P25); and (3) the highest between the two previous measurements and the difference between the P25 and the subsequent N35 wave (maximum). Their results showed that a low N20/P25 amplitude was the most sensitive predictor of poor neurological outcome at 100% specificity and that adding low SSEP amplitude to the 'absent N20 criterion' significantly increased sensitivity, which is often low for SSEPs.[2,3]

That study is an important confirmation of the recent findings from our multicentre study[4] showing that SSEP amplitude as a predictor is a continuous – rather than a dichotomous – variable, and that low-voltage SSEP is as reliable as a bilaterally absent SSEP for predicting severe hypoxic-ischaemic brain injury. Inevitably, when continuous variables are used to predict a dichotomous outcome (good vs. poor), there is a trade-off between sensitivity and specificity along the values of these variables, and we need to establish a threshold value to maximise the measure of accuracy that is more clinically relevant (in this case, specificity). The major problem with this approach is that these thresholds are often inconsistent across studies,[5,6] and it is very good news that the threshold for 100% specificity van Soest et al. found for N20/P25 was almost identical (0.99 vs. 1.01 μV) to the one we found in our study at 72 h from return of spontaneous circulation (ROSC). Unfortunately, the authors do not report the timing of their SSEP assessment. This is important, because the SSEP amplitude threshold for 100% specificity varies over time.[4] However, since the assessment was made after rewarming from targeted temperature and off sedation, we presume it has been made at 48–72 h after ROSC.

The time chosen by van Soest et al. for assessing SSEPs may have avoided a potential interference from sedative agents on SSEP amplitude,[7] even if lingering sedation cannot be excluded even at 48 h from discontinuation of sedation when long-acting sedative agents are used.[8] However, the authors may have missed the opportunity to evaluate the ability of a high SSEP amplitude to predict good neurological outcome, which – similarly to EEG[9,10] – is best assessed at 12 h from ROSC.

A final important finding of the study by van Soest et al. is that the N20/P25 difference – the most commonly used among the cortical SSEP amplitude measures used in current literature – is also the most accurate. This is a step forward towards standardisation of the N20 SSEP amplitude as a predictor.

In conclusion, we congratulate the authors for their excellent study, which confirms that the SSEP amplitude has a potential to become the new standard for SSEP interpretation in post-anoxic coma.

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Conflict of Interest statement

Claudio Sandroni is member of the Editorial Board of *Resuscitation*.

The remaining authors have no conflict of interest to disclose.

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