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LETTER TO THE EDITOR

Reply to Stokic and Curt

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We would like to thank the authors of the Letter to the Editor[1] for their careful reading of our study,[2] and for taking the time to comment on it. We are aware of the important initiative by the International Federation of Clinical Neurophysiology to update the recommendations for the clinical use of somatosensory-evoked potentials (SSEPs).[3] However, unfortunately, the review by Cruccu *et al*.[3] you cited was published last year, and our study was designed 10 years ago. Thus, when the protocol was started in 2003, there were no 'new recommendations' to follow, although we do intend to use the guidelines and report clinical outcomes when we have completed the 5-year follow-up.

When the patients were selected for our study, SSEP studies were performed in ideal conditions, in a Faraday cage. As described in the paper, the subjects were evaluated before stem cell infusion, every 3 months thereafter for the first 6 months, and twice a year for two and a half years. All studies were conducted and evaluated by the same neurophysiologist.

Bipolar transcutaneal electrical stimulation was applied to the skin over the median nerve, just above the flexor retinaculum and the tibial nerve near the medial malleolus. The distal anode and proximal cathode were 2.5 cm apart. A circular ground electrode of 15 cm was placed on the limb to be examined, 15 cm from the stimulating electrode. A single-phase square wave current was used, with electrical pulses of 0.2 ms duration and a frequency of 2 Hz. To verify the intensity of current flow, the motor threshold was observed, that is, a slight muscle contraction. The sensory threshold was not used, as the patients had sensory alterations. In some cases, a maneuver was used to facilitate examination of inhibition of the clonus (involuntary muscle contractions) triggered by the electrical current.

The average number of stimuli to the upper limbs was 1104.02, and to the lower limbs, 763.35. The analysis time for the upper limbs was 50 ms and for the lower limbs, 100 ms. Filters were applied at high frequencies (3000 Hz for the upper limbs and 250 Hz for the lower limbs) and low frequencies (25 Hz for the upper limbs and 5 Hz for the lower limbs). Electrodes for standard electrocardiogram capture were used, with a skin impedance of 2000 ohms. The electrodes were placed according to the 10–20 international system, at the ERB point. As stated in our published paper, 'In the SSEP study of the upper limbs, the median nerves in the wrists were stimulated and recorded at the FZ position—ERB point, P3′/P4′-A1/A2. In the SSEP study of the lower limbs, the tibial nerves were stimulated at the ankles and recorded from the scalp at the FZ-PZ positions.'[2] Two measurements per limb were recorded, to ensure reproducibility. In some cases, several attempts were necessary to obtain the two measurements, because often the test was hampered by the patient's clinical condition, such as the presence of clonus.

The terminology followed international standards: N9—Erb's point; P13—spinal entry and afferent pathway in the spine, and N20—primary somatosensory cortex response for the upper limbs; and N32, P40, N50, P60 and N70 for the lower limbs.

Multilevel analysis was used in the examinations of the upper limbs. In the lower limbs, only the primary somatosensory cortex response was studied, as the aim of this study was to demonstrate the presence of cortical response after infusion of stem cells. Multilevel data collection in the lower limbs would have been undermined by the fact that many patients had undergone fixation and/or decompression surgery previously, modifying the nervous structures of the region and therefore altering the results of their analysis. This would make examination difficult, and would not add important data to the study.

We agree that the clinical outcomes of this innovative intervention are crucial. Our research is still being conducted, and a follow-up period of at least 5 years will be necessary to show consistency in the clinical changes already previewed by the SSEP examinations. The final patient was included in our study in 2003, and we are concluding the evaluations for statistical analysis. These results will soon be sent for publication.

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