The SeLECT score is useful to predict post-stroke epilepsy

We read with interest Dr Finsterer's Comment[1] on our Article.[2] He does not take into account three major points[3] about prognostic modelling and the differences to aetiological research.[4] Firstly, for a prognostic model to be clinically useful, the entry data have to be routinely and widely available, and easily applicable in the clinical setting. Secondly, for a model to be relevant, it must provide outcome information satisfying the needs of the user at, or soon after, the event. For these purposes, it is thus extraneous whether other conditions or complications are present, what the seizure types and frequency would be, or how the epilepsy would be eventually treated. Lastly, for a model to be robust, it has to foretell outcomes with adequate accuracy and precision in different populations. The SeLECT score achieves these goals using only a few well-defined parameters from a "plethora of potentially relevant factors" and by being externally validated in three cohorts from different countries, minimising selection bias.

In response to Dr Finsterer's specific concerns: Firstly, most of the issues raised were addressed either in our manuscript or in the online supplemental material. Data on seizure types, frequency of recurrent attacks, and AED treatment after early seizures are provided in Table 1. We are puzzled by his notion of "unprecise inclusion and exclusion criteria" as these are given in detail in the Methods. This section also specifies the definition of white matter hyperintensities. The Appendix reports that antiepileptic drugs administered for indications other than epilepsy (eg, neuropathic pain or psychiatric conditions) did not influence our results as none of the stroke survivors included in the validation cohorts received such treatment (see Appendix, page 6). The Appendix also describes that there was no association of a positive family history for epilepsy with the risk of late seizures after stroke (see Appendix, page 11).

Secondly, seizures due to hyponatraemia would not have influenced results as we only considered spontaneous unprovoked seizures after stroke as 'late seizure' and excluded those potentially provoked by hyponatraemia. Similarly, we mitigated the risk that seizures would be caused by a pre-existing brain insult and not by the index stroke itself by excluding subjects with previous brain lesions or epileptogenic comorbidities.

Thirdly, only the German validation cohort (n=311) relied exclusively on telephonic follow-up. The other two validation cohorts (Austrian and Italian, n=858) conducted regular face-to-face follow-up interviews with a neurologist—ie, the gold-standard to diagnose seizures. The Swiss derivation cohort (n=1200) relied on a combined approach of screening participants with a validated telephonic questionnaire which, if answered positively, triggered a face-to-face neurological consultation. SeLECT performed well in all cohorts, including those with face-to-face follow-up, lending support to a good reliability and generalizability of this model.

Fourthly, we agree that distinguishing seizures from mimics can be difficult even for the experienced neurologist.[5] This limitation is inherent to most epilepsy studies, except, perhaps, those using continuous video-electroencephalographic monitoring to diagnose seizures. We did, however, not count indeterminate events as seizures in our study.

Lastly, we agree with Dr Finsterer that it would be interesting to have genetic and polysomnographic data in our subjects. This would, however, require instrumental testing in a large set of participants (n=2369), which was beyond the scope of our study.

Therefore, Dr Finsterer's critique is unsubstantiated. The strength of our prognostic model is that it can transform a person's complex individual characteristics into five easily ascertainable parameters which can be used to accurately predict the risk of post-stroke seizures. In other words, the SeLECT score is simple but not simplistic and there is a robust rationale for the variables included in the final model (see Appendix, page 13). Triple external validation showed that this model can be used to predict with adequate accuracy late seizures after stroke. The SeLECT score fills an urgent gap for an evidence-based prognostic tool that allows better prediction of new-onset epilepsy following an ischaemic stroke.

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