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Letter to the Editor

Computation of antiepileptic drug retention rates in the presence of a competing risk

To the Editor,

A thorough study has been carried out by Larsson et al. [1] based on nation-wide registers, which provides valuable information on the long-term retention rates of the most often prescribed antiepileptic drugs (AEDs) in post-stroke epilepsy. Computation of the retention rates was estimated by using the Kaplan-Meier (KM) methodology. The authors excluded a priori patients who died during the first two months after stroke, while patients who died during the study period (> 2 months post-stroke) were censored [1]. This calls for some methodological discussion. The KM estimator is based on the assumption of non-informative censoring, which means that censored patients have the same probability of experiencing the event of interest as people in the population who are still at risk. In other words, time to event and censoring time are independent. One situation in which censoring is informative, is when there is a competing event. This means that patients who experienced the competing event (i.e. death) at time *t*, do no longer have the same chance of developing the event of interest (i.e. AED non-retention) after time *t*, as the patients who are continued to be followed-up [2,3]. Indeed, it is impossible that AED non-retention occurs after death. Given that the estimated 2- and 5-year survival after the first seizure diagnosis in post-stroke epilepsy was 66% and 45% respectively [4], a substantial number of patients were censored due to death in the study by Larsson et al. [1]. Censoring these patients leads to an overestimation of the KM survival curve [3].

Ignoring potential competing risks is common. Walraven & McAlister [5] showed that 46/100 randomly selected studies from prominent medical journals did not consider competing risks. Sixteen of the 46 studies (16/46, 35%) susceptible to competing risk bias cited both the number of events of interest and competing events, allowing to calculate whether the event of interest was overestimated. In 6 of these studies (6/16, 38%) it was indeed found that KM overestimated the event of interest by at least 10% [5]. Therefore, we strongly advise to use a competing risk model to estimate AED non-retention rates, which is available in statistical packages including ***R***, ***STATA*** and ***SAS***. Scrucca et al. [6] and de Wreede et al. [7] published easy guides for clinicians on how to perform such a competing risk analysis, including a dataset to practice the instructions [6,7]. We hope this letter will help researchers in the field of epilepsy to use the appropriate methodology to address the research question.

Yours sincerely,

The authors

Declarations of interest

None.

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