Introduction

- Status epilepticus (SE) is a life-threatening neurologic emergency with significant morbidity and mortality, defined as continuous or intermittent seizures with incomplete recovery of consciousness. SE may be refractory (RSE) to first- and second-line therapies in ~25% of patients. Approximately 41% of RSE patients suffer from super-refractory SE (SRSE), defined as SE that continues or recurs 24 hours or more after the onset of anesthetic therapy1.
- There are no published estimates of the prevalence of SE and its subtypes; all available epidemiological data are for disease incidence.

Objective

- The objective of this study is to calculate the prevalence of SE, RSE, and SRSE using an incidence-survival model.

Materials and Methods

- Age-adjusted incidence rates were obtained for each SE etiology2-4: acute symptomatic, progressive symptomatic, remote symptomatic, and idiopathic/cryptogenic. Incident cases were calculated for each etiology beginning with 1995. Each yearly total was reduced by 16% to account for patients that die within 30 days of their first SE episode.
- Yearly survival data were extrapolated for each SE etiology from a Kaplan-Meier survival curve by Ristić et al (2010)4 (Fig 1).
- Prevalence for each etiology was calculated by multiplying the year-specific survival proportion by the age-adjusted incident cases, repeated in an overlapping method from 1995 to 2015, where each year’s incident cases are added to prevalent cases carried over from prior years. This was repeated until 2015 in the model, when all year-specific survival proportions were accounted for, and 2015 to 2024 represent a complete estimate of the prevalent population.
- Total SE prevalence was calculated as the sum of each individual etiology prevalence. RSE and SRSE prevalent cases were assessed as proportions of the total number of prevalent SE cases, based on published values.

Results

- The prevalence of SE was calculated to be 18.4 cases per 10,000 population in the EU5, resulting in 590,264 cases in 2015 and increasing to 603,951 cases in 2024.
- The calculated prevalence ranged from 17.2 cases per 10,000 (Germany) to 19.7 cases per 10,000 (Italy).
- Remote symptomatic SE had the highest prevalence, 8.3 cases per 10,000 population, resulting in 266,673 cases in 2015 and increasing to 272,850 cases in 2024. Acute symptomatic SE prevalent cases represented 45.2% of the total prevalent SE cases.
- The prevalence of RSE was 4.5 cases per 10,000 population, resulting in 145,572 cases in 2015 and increasing to 148,572 cases in 2024. SRSE prevalence was 1.8 per 10,000 population, resulting in 59,027 cases in 2015 and increasing to 60,395 cases in 2024.

Conclusions

- To our knowledge, this is the first attempt to calculate the prevalence of SE and its subtypes for all ages in Europe.
- Estimating the prevalence of SE, RSE, and SRSE using population-based epidemiological methods is challenging because of the variability of SE disease definitions and the unpredictable nature of mortality due to SE. This incidence-survival model provides an alternate and effective method to assess the prevalent population.
- Considering the high costs associated with treatment and hospitalization of SE, RSE, and SRSE patients, these estimates are necessary to quantify the burden of disease in Europe.

Table 1. Prevalent cases of SE by etiology in the EU in 2015 and 2024.

<table>
<thead>
<tr>
<th>Etiology</th>
<th>2015</th>
<th>2024</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total SE</td>
<td>123,380</td>
<td>126,420</td>
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<tr>
<td>France</td>
<td>139,408</td>
<td>142,948</td>
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<td>Germany</td>
<td>136,961</td>
<td>139,978</td>
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<tr>
<td>Italy</td>
<td>121,978</td>
<td>125,383</td>
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<td>Spain</td>
<td>87,377</td>
<td>92,960</td>
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<tr>
<td>UK</td>
<td>118,120</td>
<td>120,428</td>
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<tr>
<td>EUS</td>
<td>590,264</td>
<td>603,951</td>
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</tbody>
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References: