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Unchanged trend in mortality from systemic lupus erythematosus during the 2020 COVID-19 pandemic: A nationwide population-based study

Sir,

Patients with connective tissue diseases (CTDs) have increased morbidity and mortality due to infectious diseases.[1] However, data regarding the impact of coronavirus disease 2019 (COVID-19) on the mortality of people with CTDs are limited.[2–4] To address this knowledge gap, we aimed to estimate the overall mortality rate from systemic lupus erythematosus (SLE) at the population level in recent years and to compare the SLE-related mortality profile in 2019 to that in 2020, respectively, pre-pandemic and pandemic years in Brazil.

Demographic and raw mortality data for the Brazilian general population from 2015 to 2020 were extracted from the Brazilian Ministry of Health Web site.[5] We selected all records where SLE was reported either as the primary/underlying cause of death (UCD) or a non-underlying cause of death (i.e. multiple cause of death analysis). The number of SLE-related deaths each year, stratified by age brackets, is available in the Supplemental spreadsheet. Trend analysis of annual age-standardised mortality rates were performed using the National Cancer Institute Joinpoint Regression Programme.[6] In brief, by using mortality rates as inputs, this method identifies the time point(s) when a trend change is produced (i.e. joinpoint(s)) and determines the magnitude of the change. Lastly, assessment of the mortality profile took into account only the UCD, according to the chapters of the International Classification of Diseases (ICD, 10th revision).[7] Frequencies were compared using chi-square or Fisher`s exact test.

On average, mortality from SLE and from all causes (box sexes combined) had an annual increase of 4% (95% confidence interval [95% CI], 1.0–7.1%) and 0.2% (95% CI, −2.8–3.2%), respectively, from 2015 to 2020. Of note, no joinpoints were identified during the analysed period in both settings, which means no changing trend in the mortality rates (Figure 1).

Females accounted for 2.213/2.527 (87.6%) of SLE-related deaths in 2019 and 2.396/2.735 (87.6%) in 2020. Similar proportions were observed for deaths occurring at <20 years old (5.81% vs. 5.66%, $p = .8$), 20–59 years old (69.96% vs. 68.33%, $p = .2$) and ≥ 60 years old (24.21% vs. 25.99%, $p = .1$). Mortality statistics for Brazil in 2019 and 2020 (both sexes combined), tabulated by UCD, are shown in Supplemental Table 1 and Supplemental Figure 1. Interestingly, the mortality burden from infections (ICD-10 chapter I) significantly increased among SLE cases (4.0–17.4%; $p < .0001$) and the general population (4.2–17%; $p < .0001$). Death certificate reporting of 'Other viral diseases' (ICD-10 codes B25-B34), which includes the code used for COVID-19 (B34.2), rose sharply ($p < .05$) among SLE cases from 2/2.527 (0.08%) to 382/2.735 (14%), and from 173/1.349.801 (0.01%) to 210.466/1.552.739 (13.5%; $p > .05$ vs. SLE) in the general population. On the other hand, the proportion of SLE-related deaths having diseases of the musculoskeletal system and connective tissue (ICD-10 chapter XIII) as the UCD reduced ($p < .0001$) between 2019 (71.7%) and 2020 (60.7%).

In summary, our data from a developing country showed no change in the contemporary trends in overall mortality from SLE. A significant increase in the mortality burden from infections, likely driven by COVID-19, was observed in both SLE cases and the general population. In support of our findings, the current literature does not strongly suggest that having an immune-mediated inflammatory disease increases patients' risk of developing severe COVID-19.[8] A limitation of our study was that we had no information regarding patients' comorbidities, SLE disease and treatment characteristics. Of note, the COVID-19 mass vaccination programme in the country began in January 2021 and therefore did not influence the results.

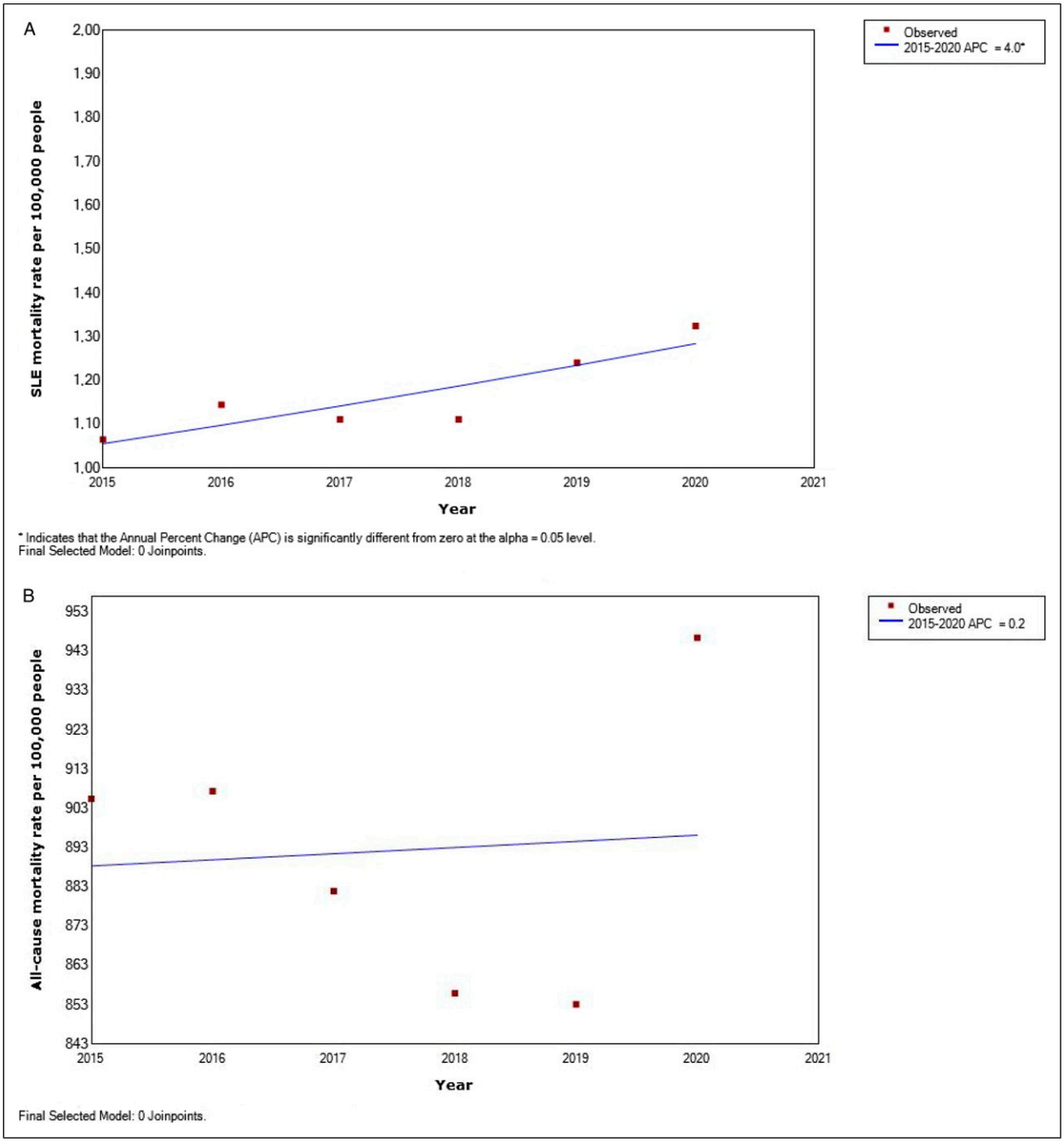

Figure 1. Age-standardised mortality rates from SLE (1A) and from all causes (1B), Brazilian general population (2015–2020). The 2000 US population (census P25-1130) was used as the standard population for age-adjustment. Joinpoint regression identifies the year when the trend in mortality rate (i.e. slope of the increase or decrease) changes significantly and determines the magnitude of the change. No joinpoints were found in both settings. Abbreviation: SLE, systemic lupus erythematosus.

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Supplemental Material

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