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POSTER PRESENTATION

Association of COVID-19 with Disability Progression and Disease Exacerbation in People with Relapsing-Remitting Multiple Sclerosis: Evidence from a Year-Long Observational Study

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Background

Population-based evidence regarding the post-COVID-19 course of relapsing-remitting multiple sclerosis (RRMS) was limited when this study was initiated.

AIM

To provide evidence regarding the post-COVID-19 course of RRMS.

METHODS

We conducted an observational study from July 2020 until July 2021 in the Isfahan MS clinic, comparing the trends of disability progression and relapses before and after definitive COVID-19 diagnosis in a cohort of people with RRMS (pwRRMS). We used logistic regression and survival models for this cause.

RESULTS

We included 53 pwRRMS in the final analysis. The probable disability progression (PDP) – defined as a three-month sustained increase in expanded disability status scale (EDSS) score – rate was significantly (0.06 vs 0.19, P = 0.04), and the relapse rate was insignificantly (0.21 vs 0.30, P = 0.30) lower post-COVID-19, compared to the pre-COVID-19 period. The results were maintained after offsetting by follow-up period in the matched binary logistic model.

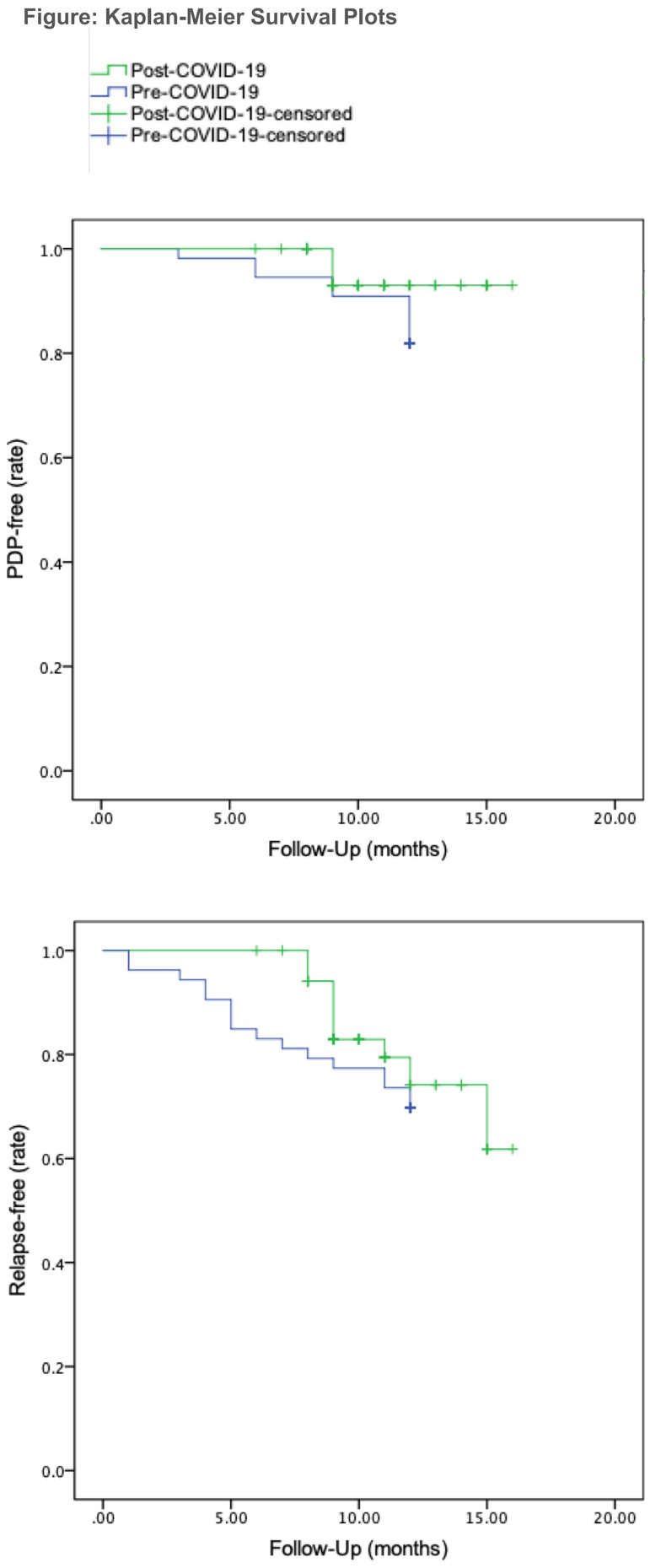
Survival analysis did not indicate significant difference between hazard trends of PDP (Hazard Ratio [HR] [95% CI]: 0.46 [0.12, 1.73], P = 0.25) and relapse (HR [95% CI]: 0.69 [0.31, 1.53], P = 0.36) between the pre- and post-COVID-19 periods. The statistically-significant result regarding the PDP rate was not maintained in the sensitivity analysis.

Table: Descriptive data of participants

Variable	Final participants (n = 53)		
Mean age (SD) [years]	38.42 (8.77)		
Sex (female:male)	45:8		
Comorbidity (%)	None: 43 (81.13) HTN/CV: 3 (5.66) Hypothyroidism: 2 (3.77) DM: 4 (7.55)		
Median MS duration (IQR) [years]	10 (13)		
DMT (%)	No DMT: 3 (5.66) IFNs: 4 (7.54) DMF: 21 (39.62) TFN: 1 (1.89) GA: 1 (1.89) FNG: 12 (22.64) RTX: 9 (16.98) AZA: 2 (3.77)		
COVID-19 diagnosis type (%)	RT-PCR: 30 (56.60) CT: 14 (26.42) Both: 9 (16.98)		
COVID-19 severity (%)	No hospitalization: 47 (88.68) Hospitalization: 6 (11.32)		
Mean post-COVID-19 follow-up (SD) [months]	10.58 (2.48)		
Outcome	Pre-COVID-19 period endpoint	Post-COVID-19 period endpoint	P value
Median EDSS (IQR)	1.5 (1)	1.5 (1)	0.08*
Number of patients with probable disability progression (%)	10 (18.87)	3 (5.66)	0.04**
Number of patients experiencing relapses (%)	16 (30.19)	11 (20.75)	0.30**

*Wilcoxon signed-rank test
**McNemar test
Abbreviations: SD, standard deviation; HTN, hypertension; CV, cardiovascular; DM, diabetes mellitus; MS, multiple sclerosis; IQR, interquartile range; DMT, disease-modifying therapy; IFN, interferon; DMF, dimethyl fumarate; TFN, teriflunomide; GA, glatiramer acetate; FNG, fingolimod; RTX, rituximab; AZA, azathioprine; RT-PCR, reverse transcription polymerase chain reaction; CT, computed tomography; EDSS, expanded disability status scale;

Figure: Kaplan-Meier Survival Plots



CONCLUSIONS

While subject to replication in future research settings, our results did not suggest any increase in rates of disability progression and relapses after COVID-19 contraction among pwRRMS.

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