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Creutzfeldt-Jakob disease after COVID-19: infection-induced prion protein misfolding? A case report

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Abstract

Creutzfeldt-Jakob disease (CJD) is a rare, fatal disease presenting with rapidly progressive neurological deficits caused by the accumulation of a misfolded form (PrPSc) of prion protein (PrPc). Coronavirus disease 2019 (COVID-19) is a primarily respiratory syndrome caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2); many diverse neurological complications have been observed after COVID-19. We describe a young patient developing CJD two months after mild COVID-19. Presenting symptoms were visuospatial deficits and ataxia, evolving into a bedridden state with preserved consciousness and diffuse myoclonus. Diagnostic work-up was suggestive of CJD. The early age of onset and the short interval between respiratory and neurological symptoms might suggest a causal relationship: a COVID-19-related neuroinflammatory state may have induced the misfolding and subsequent aggregation of PrPSc. The present case emphasizes the link between neuroinflammation and protein misfolding. Further studies are needed to establish the role of SARS-CoV-2 as an initiator of neurodegeneration.

Keywords: COVID-19; Creutzfeldt-Jakob disease; neurodegeneration; neuroinflammation; prion; protein misfolding.

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Conflict of interest statement

No potential conflict of interest was reported by the author(s).