What the neuroradiologist should additionally consider in SARS-CoV-2 infection

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Letter to the Editor

With interest, we read the review article by Goldberg et al. about the neuro-radiological implications of COVID-19/SARS-CoV-2 infection [1]. It was concluded that the emergency radiologist plays a critical role not only in the detection and management of COVID-19 but also in the safety of other patients and hospital staff, as neuroradiologic findings may provide the first evidence of COVID-19 [1]. We have the following comments and concerns.

Several neurological conditions associated with SARS-CoV-2 were not addressed. Cerebrovascular disease occurs in 1.4% of patients hospitalized for COVID-19 [2]. One of the causes of cerebrovascular events is vasculitis, which may affect small and large arteries [3]. In a study of 125 patients with neuropsychiatric manifestations from the UK, 1% had cerebral vasculitis [4]. At least in some of these cases, the underlying pathophysiology may be endotheliitis [5]. Thus,

the emergency neuroradiologist should consider cerebral vasculitis as an early manifestation of COVID-19.

Another cerebral disease occasionally occurring in SARS-CoV-2-infected patients is cerebellitis [6]. Cerebellitis was reported in a 47-year-old male from Wuhan in whom cerebral MRI showed edema of the cerebellar hemispheres associated with leptomeningeal enhancement [6]. SARS-CoV-2-associated cerebellitis manifests on FDG-PET as hypometabolism [7].

A third cerebral SARS-CoV-2-associated condition is acute cerebral demyelination, as has been reported in a 54-year-old female [8].

Among spinal cord manifestations of SARS-CoV-2, neuroradiologists should consider myelitis. Though myelitis has been reported in only single patients, it should not be missed, as delayed treatment may have strong implications on the outcome. In a 61-year-old female with COVID-19, spinal MRI revealed longitudinally extensive transverse myelitis [9]. The patient profited from repeated rounds of plasma exchange [9]. In addition to several other cases with SARS-CoV-2-associated myelitis in adults [10, 11], SARS-CoV-2-associated myelitis has been also reported in children [12].

A fifth neurological manifestation of SARS-CoV-2 not mentioned in the review is polyradiculitis (Guillain-Barre syndrome (GBS)). Though not necessarily diagnosed upon neuroradiological investigations, but rather upon cerebro-spinal fluid investigations, and nerve conduction studies, GBS should be considered by neuroradiologists not only because it is increasingly recognized [13] but it may show up on spinal MRI as thickening and enhancement of anterior and dorsal nerve roots [14].

Overall, the spectrum of neurological disorders that are associated with SARS-CoV-2 infection and that require neuroradiological work-up is broader than presented in this review. Not only cerebral manifestations but also spinal cord manifestations should be considered as early neurological manifestations of SARS-CoV-2.

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Compliance with ethical standards

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