

A Brief Overview of Neurological Ramifications Observed in Patients with Coronavirus COVID-19 Infection

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Quotation: "Physicians and neurologist must always be aware of possible neurological consequences resulting from infections with COVID-19".

Coronavirus COVID-19 "is an infectious disease caused by severe acute respiratory syndrome 2 (SARS Coronavirus 2, or SARS-CoV-2), a virus closely related to the SARS virus" [1]. Coronavirus COVID-19 is a respiratory infection that is spread from person to person by respiratory droplets during periods of coughing, sneezing or speaking [1-3].

The COVID-19 was first identified in Wuhan China during the 2020 outbreak [1-3]. The hallmarks of this infection can be fever, dry cough, fatigue and shortness of breath [1,2]. The symptoms begin to appear at about 2 to 14 days from the time of exposure [1]. The majority of cases that are associated with this pathogen can be associated with mild symptoms, however, this infection can also develop into pneumonia, and can also progress into multi-organ failure [1-4].

The recent literature has now started to mention the appearance neurological ramifications associated with COVID-19 infections [4-8].

In China, Mao and his co-investigators noted that Coronavirus COVID-19 infections also were found to have neurological ramifications [5]. Mao, *et al.* noted the presence of such neurological manifestations as: acute cerebrovascular diseases, impaired consciousness, and skeletal muscular injury [5]. Mao, *et al.* stated that during this era of COVID-19, patients displaying neurological manifestations should be also considered as possible cases of Coronavirus COVID-19 [5].

Physicians at the Henry Ford Health System observed one of the first cases of Acute Necrotizing Encephalitis (ANE) in a 58 year female patient that had been found to test positive of Coronavirus COVID-19 [6]. ANE is most commonly seen in young children [6]. These physicians cited the fact that this case was the first one of its kind in the published literature which revealed a link between encephalitis and Coronavirus COVID-19 [6].

Fields mentioned that virologists had pointed out that the COVID-19 virus could be reaching the brain by means of the olfactory nerve in the nasal cavity, and thus bringing about damage to those neurons that control breathing [7].

An article in Web MD noted the occurrence of acute large vessel strokes among young adult patients who were infected with COVID-19 [8]. This Web MD further cited the fact that these cases of large vessel strokes were also found among COVID-19 patients who were less than 50 years of age [8]. The Web MD article further noted that in these aforementioned cases the virus was able to be a causative agent of disease by bringing about blood clotting [8]. The final point that was put forth in the Web MD article was that investigators in the Netherlands observed that in about 31% of their Coronavirus COVID-19 in the Critical Care Unit suffered from thrombotic complications [8].

A local doctor of internal medicine who practices in Northern New Jersey and also in Northeastern Pennsylvania in the US, communicated to this author, two interesting cases of patients who subsequently developed neurological manifestations.

These individuals were treated at a small rural hospital located in Northern New Jersey (9). The two patients had initially tested positive for viral carriage via Nasal swab/RT-PCR Assay. The first of these patients, had come to the hospital for "respiratory failure". This first individual had then improved and went home. This first patient then returned to the hospital "hallucinating two weeks later" (9).

The second patient was twenty three years of age, and had tested positive for viral pathogen carriage. This individual initially came to the hospital because of "flu like symptoms". This individual then returned home. The patient remained at home for a period of two weeks.

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The individual felt fine, and returned to work (9). This individual, however, manifested seizures on the first day back at work.

What is most important in this “personal communication” is that both of these patients had developed these neurological manifestations “later in their disease course”. This communication ended on a happy note, as both of these individuals “are now fine”.

This “*personal communication*” echoes the findings of other investigators in other parts of the world, namely, that COVID-19 does have neurological ramifications.

Thus, physicians and neurologist must always be aware of the appearance of possible neurological consequences resulting from infections with COVID-19.

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