

Coronavirus infection and its causation to Neurological disorders

By Sahastranshu Pandey



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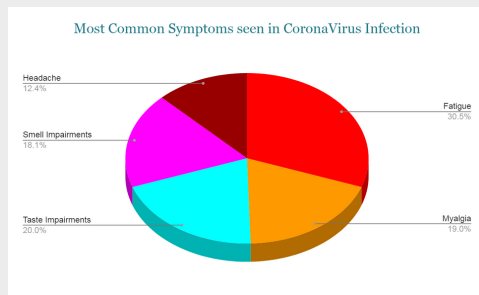
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Introduction

Right from the start of 2020, the whole world suffered because of the spread of dangerous diseases caused by Coronavirus, which resulted in widespread deaths and ailments. The Covid-19 pandemic caused by Coronavirus gripped the whole of humanity with its high rate of infectivity. Patients suffering from the Covid-19 showed a broad spectrum of symptoms that resulted in physical and mental health deterioration. Cardiovascular and neurological ailments post-Corona virus infection resulted in significant death worldwide. In a recent study, 27% of the patients who suffered from one or more neurological disorders died [9]. Researchers also detected many brain diseases associated with Coronavirus infection. In addition to lungs and gut cells, these Viral Entry Receptors are also found in the brain and lungs and gut cells, kidney endothelial cells, testis, and skin cells [1]. The ACE receptor present on the surface of neurons provides a site of attachment and hence results in the enhanced chance of brain infection and neurological manifestations. Let us have a look:

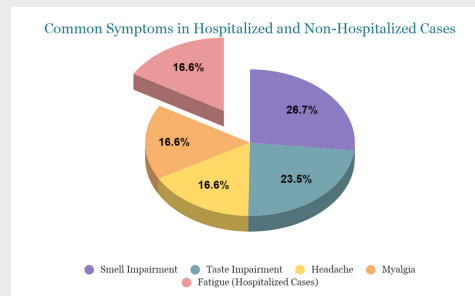
Neurological Ailments of Coronavirus infection

Pieces of evidence and findings obtained from hospitals reported a wide variety of neurological ailments in Covid-19 patients. The most common symptoms include Fatigue (32%), Myalgia (20%), Taste Impairments (21%), Smell Impairments (19%), and Headache (13%).

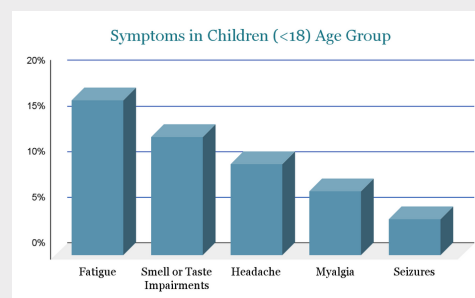


In a recent study that included 13 studies, 129,825 hospitalized and 9,188 non-hospitalized cases, it was reported that Smell Impairment (50%), Taste Impairment (44%),

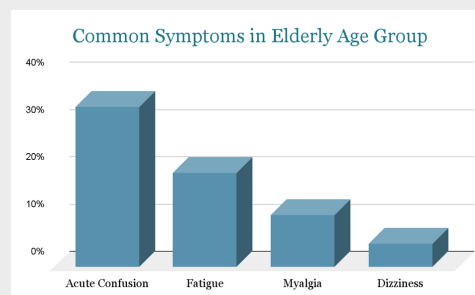
Headache (31%), and Myalgia (31%) are common in non-hospitalized cases whereas Fatigue (31%) was the most common in hospitalized cases [9].



In the children age group, 20 studies studied 3051 hospitalized patients and concluded that Fatigue (17%) is the most common symptom followed by Smell or Taste impairments (13%), Headache (10%), Fatigue (9%), Myalgia (7%), and Seizures (4%) [9].



Also, in the elderly age group, Acute confusion is the most common (34%) followed by Fatigue (20%), Myalgia (11%), and Dizziness (5%) [9].



Also, in the elderly age group, Acute confusion is the most common (34%) followed by Fatigue (20%), Myalgia (11%), and Dizziness (5%) [9]. The ailments vary depending on which brain area is being affected. For example:[2]

1.For CNS (Central Nervous System)

Coronavirus infection affects the CNS of patients, i.e. the brain and the spinal cord, resulting in typical

symptoms like headaches and dizziness, etc. Inflammation in the meninges, which covers the brain and the spinal cord i.e. Meningoencephalitis is also observed in some patients.

2. For PNS (Peripheral Nervous System)

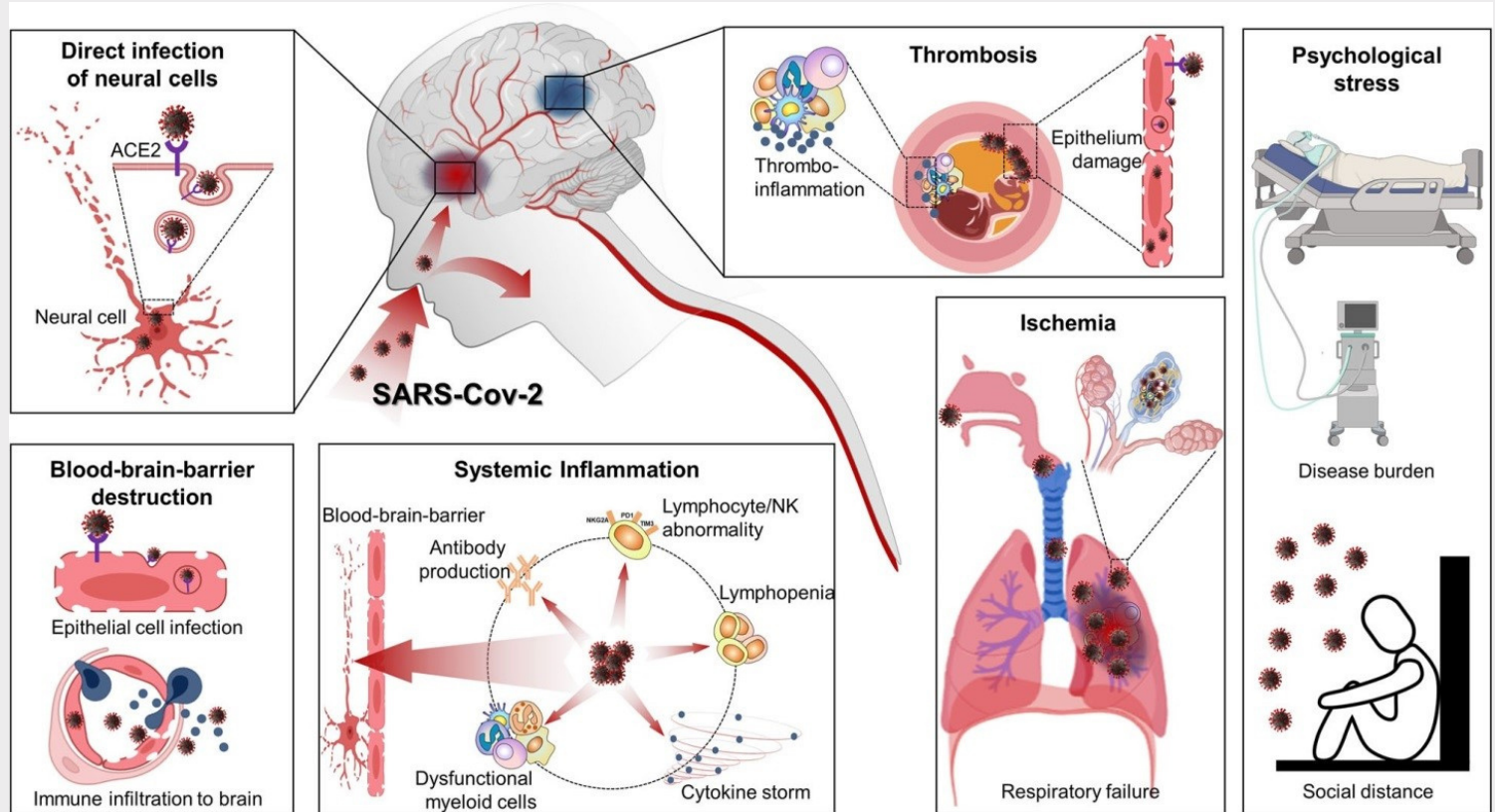
Smell (Olfactory) and Taste (Gustatory) dysfunctions and impairments are the most common symptoms observed among patients with the Coronavirus infection and are reported as the "Universal Common Symptoms". Apart from this, Guillain-Barre Syndrome (GBS) And fatigue are also observed in patients.

3. For ANS (Autonomic Nervous System)

The symptoms associated with the infection of ANS by Coronavirus are the most fatal, including impaired function of the cardiorespiratory centre (Centre of the brain which controls heart rate and breathing rate). This results in blood pressure fluctuations in the body, resulting in fluctuations of blood supply to the brain. This leads to Hemorrhagic Stroke in the brain and Encephalopathy i.e. Inflammation of the brain.

Neurodegenerative Disorders

Yet, one of the most recent three independent single case findings in neurological disorders associated with Coronavirus infection is detecting Parkinson's disease in 3 patients within one month of severe coronavirus infection [4] [8]. Parkinson's disease is a brain disorder that leads to shaking, stiffness, and difficulty walking, balance, and coordination [6]. These cases grabbed the attention of scientists worldwide and opened a new dimension of research at the junction of virology and neurodegenerative diseases (diseases that cause degeneration of brains) [7]. Reports have suggested that age is one of the major factors as it can cause a prolonged course of infection in the body, resulting in neurological disorders. Also, malignant pneumonia in infected patients can cause neurological disorders as it causes widespread



CoViD-19 and its possible connections to Neurological Disorders (On the courtesy of Verkhatsky A et.al. Biology Direct 2020 Nov 27;15(1):28)

*Science is the field
where the scope of
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hypoxia in the body, which directly damages brain structures that can result in neurodegenerative disorders. Psychological stress is also one of the major factors. Hospitalization induces Post Traumatic Stress Disorder (PTSD) and depression which can eventually lead to dementia and neurodegenerative diseases. Therefore, several factors, including age, stress, malignant pneumonia etc. can lead to the onset of neurodegenerative diseases in patients, although a direct link is still yet to be established [7].

Conclusion

With the advent of the 21st century, science grew leaps and bounds. Future holds endless possibilities and so does science. Science is the field where the scope of further research and development will always persist. With the spread of Coronavirus infection worldwide, many neurological diseases associated with the coronavirus infection have been uncovered by scientists. Researchers are working on this aspect of Coronavirus infection, but much more neurological ailments remain to come into the spotlight. Also, the neurodegenerative aspect of Coronavirus infection is under research. Still, there is a long way to go. We can hope to get a clear picture of these aspects of illness in the coming days.

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