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NEUROPSYCHOLOGICAL EFFECT ON COVID-19 PATIENTS: SYSTEMATIC REVIEW

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ABSTRACT

Background: The COVID-19 Pandemic is the biggest Pandemic in Last 100 years. In initial stage, it was treated as respiratory disease caused by severs acute respiratory acute respiratory syndrome Corona virus 2(SARS-2 CoV-2) only. But later on, its neurological and neuropsychological manifestations are being recognized increasingly. **Material and Method:** Limited literature and information (data) have been published about neurophysiological effect of COVID-19. Though lots of information on social media and media without any confirmation. Author also try hard to find literature regarding long term neuropsychological effect of COVID-19 on COVID-19patients Author also consider distinguish Doctor's and professor's talks on the Subjects we also consider Webinars discussion on the subject. **Results:** We have to Summarised all the evidence base reports to date COVID-19.Working mechanism, patient's complain and diseases have been reviewed.COVID-19, short term and long term neurological and neuropsychological symptoms have been reported .Studies and treatment plans are also reviewed. **Conclusions:** There is an evidence of neurological and neuropsychological manifestations. The key recommendations from this paper are for more evidence to be collected and analysed at the country and international level. Second wave of COVID-19 is going on, may have strong evidence.

Keywords: Neuropsychological effects, respiratory diseases, long-term, short-term.

INTRODUCTION

Virus can be classified by having neuroinvasive properties or not. If virus has abilities to directly enter in the nervous system1, can cause disease with in nervous system. In Comparison with SARS-CoV, 34% of patients hospitalized due to COVID-19illness were noted to experience neurological problem2.

Neuropsychological Symptoms reflects in two parts

1. Patient's hospital isolation or home isolation .(Purely psychiatric)
2. Effect of corona virus on nervous system (neuropsychological or neurological)

SARS-CoV-2 is generally similar to SARS-CoV and MERS CoV. Since we had very less information about neurological effect of SARS-CoV-2, one can predict and take precautionary steps to treat such patient and to prevent spreading of this virus. Almost all data are available for the hospitalized patients who had covid-19. Even those who were admitted to hospital, we haven't data for long term neurological effect. One of the biggest challenges of treating COVID-19patient, is lack of information about the virus. Number of studies was conducted during first wave of COVID-19. Some of the results are living more questions about the characteristic of virus with mutation of virus too. As COVID-19 continues to spread and number of patient increase, patients with neurological problem are seen increasingly .COVID-19 patients with agitation or changed consciousness, and all causes of encephalophalathy must be considered17.

DISCUSSION:

New York City study report shows 13.5% of COVID-19 Patients were hospitalized, developed a new neurological disorder, as diagnosed by a neurologist ,out of which, 51% has confused state, stroke 14%, seizures in 12% and brain injury due to lack of oxygen or blood flow in the brain 11% 5. Most common complaint from COVID-19 patients is Toxic-metabolic Encephalopathy .toxins, electrolyte imbalances results in confession. During critical illness like COVID-19 brain cells are not working properly and can misfire. Multiplicity causes large electrical forms in brain which is known as seizures, once the patient recover the seizures will stop. Anosmia (loss of smell) and/or ageusia (loss of taste) is/are common symptoms in COVID-19 patients. Many patients have treated a test for COVID-19 themselves .These Symptoms could be minor neurological manifestations3. Damage of cells surrounding olfactory neurons causes Anosmia. If so virus could be enter to brain. In two Chinese retrospective series, approximately 6% of COVID-19 patients developed stroke11-12. From mainland china, it has been reported that 85% of the people were feeling "extremely" or "highly" or "very nervous "about the COVID-19 at break. A new Study by John Hopkins University and Harvard medical school doctor may be found Megakaryocytic (make platelets) in brain capillaries of Rh patients who died from COVID-19. This cells could be related strokes observed in COVID-19 patient.

What is next?

Clinical Observation, reports and epidemiological studies could be needed. These will help to define neurological disease caused by SARC-CoV-2. Accurate Report of neurological disease must shows direct or indirect effect of SARC-CoV-2patient of mild SARC-CoV-2infection have neurological disease associated with SARC-CoV-2 are difficult and challenging. In most of such a case have not been reported because of home isolation and immediate discharge after hospitalization. Government corporate hospitals and healthcare planners must take in account ongoing studies and investigation of effect of COVID-19 on neurological health of patients. There were lots of cases of neuropsychological effect on patient due to fear of COVID-19 second wave, it is subject of research and investigation.

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Latest development:

Because second wave of COVID-19 is going on and mutation of COVID-19 viruses are reported frequently, continuous observation and reporting is badly needed. Encephalopathy has been reported from china (7%), France (69%) and Finland (8%). Unexpectedly acute cerebrovascular disease is also important disease to watch carefully. A study report shows 2-6% hospitalized patients were suffering from stroke.

Points to be noted:

1. Many COVID-19 patients with neurological conditions are "At Risk". Continuous monitoring and treatment of these patients must3.
2. COVID-19 is respiratory viruses, several reports show their ability to infect central nervous system4.
3. Report from Wuhan china, patients with COVID-19 had neurological problem manifested as acute cerebrovascular disease 11.
4. Covid-19 patients have same common to complain like unstable blood pressure and difficulty with breathing. Critically sick patient needs extra care and required nursing care along with multiple specialist5.
5. Severe acute respiratory syndrome corona virus 2 SARS-CoV-2 is a corona virus. This RNA virus targets the anglofens converting enzyme (ACE)-2 to enter in to host cells. The (ACE)-2 is mostly present in respiratory and nervous system.
6. Post-mortem studies have indicated presence of SARC-Cov in brain but no evidence in the case of COVID-19.
7. SARC-Cov-2 can impact platelet function, results in platelet hyper reactivity and risk of thrombosis.
8. In USA some case of Encephalopathy have been identified in patients with positive COVID-19. Though this cases are rare, it would weaken the blood-brain barrier. Toxic substance must prevent to enter brain3.
9. According WHO. 89% of the associate (member) countries reported that (MHPSS)
10. Mental health and psychosocial support response is part of their nation COVID-19 response plans14.
11. In New York City hospital, COVID-19 Patient who were admitted to ICU have experience respiratory failure resulting in invasive mechanical ventilation.

Common Point and Complains:

1. May be Longer-term headaches it had not before.
2. Brain Fog and concentration issues.
3. Most Common neurological disease as at long live is encephalopathy.
4. May be too early to say any thin about long term neurological disease (or disorder) ofCOVID-19
5. Kids have less immunological resistance and can be easily target .many have high probability of neurological symptoms.
6. Development of MS-C in children must be evaluated for neurological symptoms 18.
7. For COVID-19 neurological effect in children more studies needed.
8. Pneumonia is common clinical future of COVID-19 infection. However, the systematic hypoxemia. Occurring due to pneumonia cause damage to the damage to the brain cells other nerve cells19.
9. Pre-existing neurological problems like stroke, Parkinson's disease patient have greater risk of ICU admission and poor discharge rate 20.

Conclusions

There is an evidence of neurological and neuropsychological manifestations. The key recommendations from this paper are for more evidence to be collected and analysed at the country and international level. Second wave of COVID-19 is going on, may have strong evidence.

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