

Post Acute Corona Virus (Covid-19) Syndrome

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Abstract: *Extreme intense respiratory disorder coronavirus 2 (SARS-CoV-2) is the pathogen capable for the coronavirus illness 2019 (COVID-19) widespread, which has brought about in worldwide healthcare emergencies and strained wellbeing assets. As the populace of patients recuperating from COVID-19 develops, it is foremost to set up an understanding of the healthcare issues surrounding them. COVID-19 is presently recognized as a multi-organ illness with a wide range of signs. So also to post-acute viral disorders portrayed in survivors of other destructive coronavirus scourges, there are expanding reports of diligent and prolonged impacts after intense COVID-19. Persistent promotion bunches, numerous individuals of which distinguish themselves as long haulers, have made a difference contribute to the acknowledgment of post-acute COVID-19, a disorder characterized by determined indications and/or delayed or long-term complications past 4 weeks from the onset of side effects. Here, we offer a comprehensive survey of the current literature.*

Keywords: Syndrome, Sequelae, SAR-COVID-2, Empirical, Etiology

I. INTRODUCTION

Severe acute respiratory syndrome corona virus 2 are the pathogen responsible for covid 19 are accrue in first Wuhan China in December 2019 the Covid 19 symptom are fever, dry cough, shortness of breath headache, weakness, and many abnormalities in part of body. Other Critical complication of covid 19 function are Included such as heart, brain, lungs, liver kidney etc. most of the infected Patents completely recovered after Covid 19 infection but some people affecting covid-19 disease. are not recovered properly there are show symptoms and side effect of Infection of viruses tong term effect of covid 19 pathogen SARS-COV-2 Infection but do not recover completely over a period of few weeks they are show the symptom in more than 4 to 12 weeks The clinical symptom in long covid are dyspnea, fatigue, headache, fever dizziness, muscle pain & Joint pain. Long term effects of covid 19 treatments or hospitalizataion they Musculoskeletal pain that affects bones, joints, ligament muscle Tendons.

II. ETHIOLOGY

The predominant pathophysiologic mechanisms of acute COVID19 include the following: direct viral toxicity; endothelial damage and microvascular injury immune system deregulation and stimulation of a hyperinflammatory state; hypercoagulability with resultant in situ thrombosis and macro thrombosis and maladaptation of the angiotensin-converting enzyme 2 (ACE2) pathways. The overlap of sequelae of post-acute COVID-19 with those of SARS and MERS may be explained by phylogenetic similarities between the responsible pathogenic corona viruses.

III. PATHOLOGY

Post-acute COVID-19 syndrome is a multisystem disorder that commonly affects the respiratory, cardiovascular, and hematopoietic systems. In addition, neuropsychiatric, renal, and endocrine systems are also involved to a lesser extent. Significant organ-specific histopathologic findings are described below.

Lung: COVID-19 lung autopsy has shown all phases of diffuse alveolar damage with focal and COVID-19 lung autopsy has shown all phases of diffuse alveolar damage with focal and organized fibro proliferative diffuse alveolar damage similar to ARDS. Rarely microcystic honeycombing, my fibroblastic proliferation, and mural fibrosis were also noted. Covid 19

Directly impacts the lungs and damages the alveoli. The function of the alveolus is to transfer oxygen to the blood vessels these blood vessels or capillaries carry the oxygen to the RBCS. Lung tissue analysis (autopsy and explanted

lungs of lung transplant recipients) with severe COVID-19 pneumonia showed histopathology like end-stage pulmonary fibrosis without active SARS-CoV-2 infection, suggesting that some people may develop lung fibrosis following resolution of active infection. The severity of endothelial damage, microthrombi seen on lung autopsy is significantly more in SARS-CoV-2 infection compared to ARDS from influenza

3.1 Heart

There is much variability in COVID-19 myocardial insult in the histopathologic examination. 62% of Autopsy findings of acute COVID-19 showed the presence of virus genome in the heart tissue. Corona virus infection also affects the inner surfaces of veins and arteries which can cause blood vessels inflammation, damage to very small vessels and blood, clots all of which can compromise blood flow to the heart or other parts of the body.

Symptoms of heart problem after covid are as – Chest pain, shortness of breath, feelings of having a fast breathing.

Treatment, Quit smoking, maintain healthy weight, and increase activities.

Immunohistochemical analysis of endomyocardial biopsy showed severe intra-myocardial inflammation with increased perforin-positive cells. There are increased numbers of macrophages, T lymphocytes, and CD45RO T memory cells. There is an increased number of cell adhesion molecules (CAM) like CD 54/ICAM-1.

Musculoskeletal:

Musculoskeletal (MSK) Manifestation are commonly among the earliest presenting symptoms of covid 19 acute MSK symptom which occurs within 4 weeks of infection, including fatigue and myalgia.

Symptoms - Fatigue muscle weakness, muscular pain, aching stiffness pain that worsens with movement sleep disturbances. Musculoskeletal pain that affects bones, joints, ligament muscle Tendons

Treatment- Common treatment includes occupational therapy pain relievers, physical therapy, splints, and steroid injections, increases the physical activities, regular exercise & uses the medical uses of ointment etc...

3.2 Brain

A single-center pathologically study of brain specimens obtained from eighteen patients who succumbed to COVID-19 demonstrated acute hypoxic injury in the cerebrum and cerebellum of all patients. Notably, no features of encephalitis or other specific brain changes were seen. Additionally, immune histochemical analysis of brain tissue did not show cytoplasmic viral stain.

Symptom-There was increased risk of an array of incident neurologic sequelae including its chemical hemorrhagic stroke, cognitions memory disorder, peripheral migraine & seizures etc. in brain memory problem- Strokes headaches and migraines and inflammation of brain part are accrues.

Treatment-Exercise, activity of any sort, including walking for 20 minutes per day will increase blood flow and encourage maximal brain hearing & improve your diet get plenty of sleep play an important role in your brain health.

IV. POST ACUTE COVID – 19 SYNDROME SYMPTOMS

Body pain, headache, joints pain, high blood sugar, fever, loss of taste or smell, lack of energy, shortness of breath or difficulty breath breathing chest pain, coughing rapid or fast heartbeat anxiety disorders or depression dizziness, symptom that get worse after mental or physical activity.

Definition

Post acute covid-19- It symptoms from 3 to 12 weeks

Cronic covid -19 symptoms extending by yond 12 weeks

Long covid syndrome (12 weeks or more)

Post acute covid 19 : long term complication of SARS-COV2 infection beyond 4 weeks from the onset of symptoms further divided into two categories 1) sub acute or ongoing symptomatic covid -19 symptom abnormalities present from 4-12 weeks by young acute covid -19

V. PHTHOPHYSIOLOGIC CHANGES AND INFLAMMATORY DAMAGE BY ORGAN PULMONARY MANIFESTATION

A decrease in diffusion capacity is the most reported physiologic derangement in post acute covid-19 and directly correlates with the severity of acute illness the most common high resolution lung CT findings of post acute covid -19 are the persistence of ground glass opacities. It including invasion of alveolar epithelial cell by SARS-COV-2 and viral independent mechanism such as immunological damage including perivascular inflammation contribute to the breakdown of the endothelial epithelial barrier with invasion of monocytes and neutrophils and extravasations of a consistent with other forms of acute respiratory distress syndrome after the acute infection lungs fibrosis is may be developed.

CARDIORESPIRATORY

Covid 19 affect the inner surface of veins and arteries which can cause blood vessel inflammation damage to very small vessels and blood clot. Cardiovascular symptom such as chest pain and palpitation covid 19 cause myocarditis which can lead to heart failure and arrhythmias in covid -19 patients cardiac damage accurse in many ways infection inflammation and fever make the blood moseprone to clotting and interfere with body's ability to dissolve clots autoimmune dysfunction after viral illness resulting in postural orthostatic tachycardia syndrome and inappropriate sinus tachycardia.

HISTOPATHOLOGICAL

Covid 19 is systemic infection are affected hematopoietic system & homeostasis covid -19 is a respiratory infection with a significant impact on the homeostasis leading to several cardiovascular complications hematologic disorder are condition found in blood & floming organ. Anemia is most common hematological disorder of blood pathways and hypoxia similar to the pathophysiology of thrombotic microangiopathy syndromes.

NEUROPHYSIOLOGY

Post acute covid 19 syndrome is a multisystem disorder that also affecting neurosystem of brain neurological illness including chronic fatigue syndrome and functional neurological disorder neurological symptom include depression anxiety and cognitive deficits. Headache and Ansonia are common neurological manifestation of SARS-COV-2. In digestive system symptoms of post acute covid -19 are include irritable bowel syndrome heartburn trouble swallowing, constipation, diarrhea bloating and incontinence, anorexia, nausea, vomiting, abdominal pain and discomfort the appearance of digestive sequelae like acid reflux abdominal distension, lever damage this are long covid symptom.

VI. MULTISYSTEM INFLAMMATION SYNDROME IN CHILDREN

MIS-C is a condition where different body parts can become inflamed including the heart lungs kidneys brain skin, eyes or gastrointestinal organs. These are symptoms including skin rash, Red, eyes, Fast heartbeat, headache, dizziness, Rapid breathing, pain in the stomach MIS-C Can lead to severe problem with vital organ such as the heart lungs or kidneys most children affected above 3 to 12 years old. With an average age of 8 years old.

Prevention – 1) keep hands clean, avoid people who are sick, avoid touching you nose, eyes and mouth.

Symptom-Long-COVID refers to symptoms that persist of appear beyond 4 weeks after infection, and which may be permanent. Recurrent of progressively improve. The Sequelae refers to irreversible damage to organs 12 weeks after the infection, leading to different grades of permanent dysfunction and symptoms.

A clear definition of post-acute COVID-19 syndrome is key to establishing prospective pa-tient registries and conduction research projects. The mechanisms underlying PACS are not clearly understood, but could involve cytopathic damage, immune dysregulation, and inflammatory damage to organs. A great variety of PACS symptoms have been reported, but the most frequent are fatigue, respiratory symp toms and neurological alterations. Clear circuits to derive these patients from primary care to hospital care need to be agreed.

Given the projected health, economic and societal impact of PACS, health authorities must allocate sufficient resources to address this issue and optimize health and research out-comes.

VII. POST ACUTE COVID -19 IN PREGNANCEY

The pregnant women affected in corona virus symptom first up all they do not panic in this condition. They are hospitalization on that can conduct fetal monitoring pregnant women increased risk of sever disease from SARS-COV-2 infection this complicated condition the fetal and uterine contraction monitoring based on gestational age when it appropriate. In pregnant and lactating women and when making decision about treatment and safety of specific medication for infant fetus , or lactating individual the patient and team of doctors should discuss the potential benefits and evaluate the potential risk of pausing lactation on the future of breast milk delivery to the infant.

Prevention: Pregnant women should be increase risk and affecting severe disease from covid -19 they can take to protect themselves and their families from infection. It also including they are washing hands regularly and maintain physical distancing and under the proper guidance and caring &protecting from infection.

Management of covid 19 in the pregnant patient may include:

Multispecialty team they are consultation with obstetric, pediatric doctors and after post covid infection which medicine for treatment and protection of fetus & infant. And also individualized delivery planning. The pregnant women increase risk of SAR COV-2 infection there are increase risk of miscarriage and also most complication in the placenta losses its spongy, texture, become much harder and is damaged to the point that in some patient it causes fetal death. If pregnant women are infected with mild infection of covid 19 they have no symptom or mild illness from which you will make a full recovery for mild symptom it is safe to take several over-counter medication in pregnancy for symptom of fever or body aches it is safe to take acetaminophen if have a coughs syrups are safe in pregnancy.

Post covid – gastrointestinal (GIT) symptoms & treatment:

GI symptoms in patient which are loss of appetite, dyspepsia, irritable bowel syndrome, loss of taste , and abdominal pain they are five most common symptom of long covid19 and also show the diseases like diarrhea, anorexia and nausea or vomiting and also gaslrointestinal damages causes by respiratory, lung infection and also caused by drug side effects

Treatment-Immunomodulatory therapies including glucocorticoids , plasma and anticytokine therapy for covid-19 patient with gastrointestinal tract symptom to identify the causes of disease then improve diarrhea symptom and maintain intestinal micro flora homeostasis.

Ear, Nose & Throat (ENT) infection by covid -19:

The symptom in upper respiratory tract included which are smell dysfunction, sore throat and nasal congestion etc and some people suffer long covid which face in the lower respiratory system. This can lead to symptom likes breathing difficulties cough and chest tightness. And also common symptom like loss of smell (anosmia) reduced sense patient these symptom are some weeks. But if they are continue for 3 to 4 weeks it is important to consulting to medicinal practitioner and also consult an ENT specialist for hearing loss. And smell dysfunction such as hyposmia and anosmia are self limiting condition usually four weeks covid-19 infection doesn't causes any damage to the olfactory neuron but affect supporting cell. Once covid-19 is out returns to normal.

Skin affected after COVID-19:

After post covid-19 infection on skin they are show symptoms like rashes, readiness, toes, hair losses red patches, redness of eyes and also these can affect hands or feet. Red-purple discolored skin can be painful and itchy. And also show water blisters like symptom on skin after covid-19 infection. To treat that infection. They are courting medicinal practiced and also more medicines and ointment uses for preventing and infection. They are the treat to themselves which are clean the hands , face regularly and washing hands detergent, soap for counting doctors to preventing skin complication after post covid-19 diseases.

VIII. KIDNEY COMPLICATION

Three have been recent reports of nonelderly adults infected with covid-19 who have -loped acute kid.ney injury (AKI) Sudden Toss of kidney function; these adults did not have underlying medical condition. With proper treatment including dialysis in severe cases. AKI can be reversible various corid-19 that are thought to contribute to AKI include kidney tubular injury with microorganism, increased blood clotting and probable direct infection of the kidney a renal function decline in the 6 to 12 month follow-up Period even in patient without any signs of AKI during the acute phase,

despite such Concerns there are no guidelines Regulation the follow-up period of therapeutic alternative For such patient population First Sign of kidney problem die Including such at Nausea, vomiting, loss of appetite, Fatigue and weakness. Sleep problem, urinating more or less decreased mental sharpness 'm cramps, etc. which age preventing infection by ACE inhibitors and ARBS are two types of blood pressure medicine that may show the loss of kidney function and delay kidney failure and also blood test age best option of checking the impotent in kidney function make healthy food choices, stop smoking "Limiting alcohol intake get enough sleep and expose stress - seducing activity and mange. diabetes, high blood pressure & heart diseases.

Liver complication:

The kidneys, endocrine organ eye and Livers age also affected by systemic covid-19 diseases covid-19. Related lives abnormalities, in patients remain limited liver injury in patient is associated with prolonged hospitality and elevated liver enzymes are usually generally distinguish whether the onset of abnormal in clinical practices liver function. Recover without threat we need 40 during treatment LFT abnormalities are very at diagnosis of common in SAPS-CON-2 positive patients. especially those with the severe form levels ESR, CRP Serum ferritin and D-dimer were higher in covid-19 patients with LPT abnormalities than Live s those with normal IFT complication age improved & Preventing the maintain a healthy diet balanced and excessive regularly. Avoid toxins, avoid the use of drugs a get medical -cage if you are exposed to blood

Hemoptysis Complecation:

Hemoptysis is seen in roughly 13% of pulmonary embolism. cases and in frequently reported among coved 19 infections. add tonally the presence of sight heart stain on electrocardiography (EKG) is a well described clinical presentation of pulmonary embolism not Reported commonly with covid-19 infection" Hemoptysis is easily reported as a Symptom of Covid-19 only. Heat endovascular was embolization is the safest & most effective method of managing bleeding in Recurrent hemoptysis indicated in all massive of imobilization is patient with tree of recurrent angiography show hemoptysis in MSCT angiography show artery disease.

Musculoskeletal System Manifestation:

MSK are commonly among the earliest Symptoms of coxide-19 but have less widely Reported and may b under recognized for several Reasons MSK symptoms, which occurs of Infection, including fatigue and myalgia are non specific. these effect on bone joint, tendons or muscles and common included aching and shiftiness burning sensation in the muscle, Fatigue muscle wither pain that worsens with movement -and sleep disturbance muscle and joint pain which may Problem in long covid experience painful Corona virus, especially if you were in hospital 02 less active than usual as a test of the Virus most pain should eventually go away, but sometimes it might care for longest. musculoskeletal disorder which are tendinitis, carpal tunnel Syndrome, osteoarthritis, fibromyalgia and bone fracture etc. and But musculoskeletal pain as physical therapy, exercise programs, anti- inflammatory drugs medicines.

IX. CONCLUSION

Around 10-15% of people are estimated to present persistent symptomatology during weeks or even months after an initial infection with SARS-CoV-2. In Catalonia, with a total of 669,150 cases diagnosed as of 15 May 2021, and excluding deaths, we estimate that at least 90,000 people are or have been affected by persistent symptoms. In this report, we highlight the need to establish a clear and common definition for Post-Acute COVID-19 syndrome, which englobes two non-mutually exclusive scenarios: i) Long-COVID refers to symptoms that persist or appear beyond 4 weeks after infection, and which may be permanent, recurrent or progressively improve ii) Sequelae refers to irreversible damage to organs 12 weeks after the infection, leading to different grades of permanent dysfunction and symptoms. A clear definition of Post-acute COVID-19 Syndrome is key to establishing prospective patient registries and conducting research projects.

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