VOLUME - 11, ISSUE - 02, FEBRUARY - 2022 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Dentistry

HEALTH CONSEQUENCES OF COVID-19 INFECTION :- UPDATE.

Dr. Sujith Anand	Public Health Dentistry Assistant Professor, ANIDS, Andhra Pradesh.
Dr D Thirumal Rao	MDS Senior Lecturer Adhiparasakthi Dental College And Hospital
Dr. Arif Mohiddin*	Clinical Tutor/Demonstrator,Department of Dentistry IPGMER/SSKM Hospital, Kolkata, West Bengal. *Corresponding Author

ABSTRACT

With more than 375 million documented infections and 5.6 million deaths till now world wide, due to the coronavirus disease (COVID-19) pandemic continues unabated. The clinical spectrum of severe acute respiratory syndrome coronavirus (SARS-CoV) 2 infection ranges from asymptomatic infection to life-threatening and fatal disease. Current estimates are that approximately 296 million people globally have "recovered"; and In India more than 41 million people infected and 0.5 million death till now noted. around 38 million cases recovered.

however, clinicians are observing and reading reports of patients with persistent severe symptoms and even substantial end-organ dysfunction after SARS-CoV-2 infection. Because COVID-19 is a new disease, much about the clinical course remains uncertain—in particular, the possible long-term health consequences, if any.

KEYWORDS :

EPIDEMIOLOGY

The coronavirus belongs to a family of viruses that may cause various symptoms such as pneumonia, fever, breathing difficulty, and lung infection. These viruses are common in animals worldwide, but very few cases have been known to affect humans. The WHO announced that the official name of the 2019 novel coronavirus is coronavirus disease (COVID-19). And the current reference name for the virus is severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It was reported that a cluster of patients with pneumonia of unknown cause was linked to a local Huanan South China Seafood Market in Wuhan, Hubei Province, China in December 2019.[1,2,3,4]

Currently, there is no consensus definition of postacute COVID-19. Based on the COVID Symptom Study, in which more than 4 million people in the US, UK and Sweden have entered their symptoms after a COVID-19 diagnosis, postacute COVID-19 is defined as the presence ofsymptoms extending beyond 3weeks from the initial onset of symptoms and chronic COVID-19 as extending beyond 12 weeks.[5] It is possible that individuals with symptoms were more likely to participate in this study than those without them.

Previously described, a postacute syndrome is well recognized in patients who are recovering from a serious illness, in particular an illness that required hospitalization and admission to the intensive care unit. In a 2016 study among 43 patients who had been discharged after intensive care unit stay (46% required mechanical ventilation), 36 (84%) reported impairment in cognition, mental health, or physical function that persisted for 6 to 12months beyond hospital discharge, collectively known as post–intensive care syndrome.[6] In a study from Italy that assessed COVID-19 symptom persistence among 143 patients discharged from the hospital, only 18 patients (12.6%) were completely free of anyCOVID-19–related symptomsafteramean of 60 days after initial symptom onset.[7]

However, postacute COVID-19 syndrome is not just observed among patients who had severe illness and were hospitalized. In a telemedicine survey conducted by the Centers for Disease Control and Prevention among a random sample of 292 adults (-18 years) who had a positive outpatient test result for SARS-CoV-2 by reverse transcriptase–polymerase chain reaction, 35% of 274 symptomatic respondents reported not having returned to their usual state of health 2 weeks or more after testing, including 26% among those aged 18-34 years (n = 85), 32% among those aged 35-49 years (n = 96), and 47% among those aged 50 years or older (n = 89).[8] Older than 50 years and the presence of 3 or more chronic medical conditions were associated with not returning to usual health within 14 to 21 days after receiving a positive test result. Not with standing, 1 in 5 individuals aged 18-34 years without chronic medical conditions had not yet achieved baseline healthwhen interviewed at amedian of 16 days from the testing date.

Symptoms and transmission

Like previous coronaviruses, the novel coronavirus causes respiratory disease, and the symptoms affect respiratory health. According to the Centers for Disease Control and Prevention (CDC), the main symptoms of COVID-19 symptoms can be very mild to severe and include a fever, cough, and shortness of breath. Many people are asymptomatic. Symptoms may appear two to 14 days after exposure. Current information suggests that the virus can cause mild, flu-like symptoms, as well as more severe disease. Most patients seem to have mild disease, and about 20% appear to progress to more severe disease, including pneumonia, respiratory failure, and, in some cases, death.[9,10]

Manifestations

The most commonly reported symptoms after acute COVID-19 are fatigueand dyspnea.Other common symptoms include joint pain and chest pain.3 In addition to these general symptoms, specific organ dysfunction has been reported, involving primarily the heart, lungs, and brain. From a pathogenesis standpoint, these complications could be the consequence of direct tissue invasion by the virus (possiblymediated by the presence of angiotensin-converting enzyme 2 receptor), profound inflammation and cytokine storm, related immune system damage, the hypercoagulable state described in associationvwith severe COVID-19, or a combination of these factors.

Cardiovascular

Myocardial injury, as defined by an increased troponin level, has been described in patients with severe acute COVID-19, along with thromboembolic disease. Myocardial inflammation and myocarditis, as well as cardiac arrhythmias, have been described after SARS-CoV-2 infection. In a German study of 100 patients who recently recovered from COVID-19, cardiac magnetic resonance imaging (performed a median of 71 days after COVID-19 diagnosis) revealed cardiac involvement in 78% and ongoing myocardial inflammation in 60%.. Nevertheless, among 26 competitive college athletes who

received a diagnosis of COVID-19 by reverse transcriptase polymerase chain reaction, none of whom required hospitalization and the majority without reported symptoms, 12 (46%) had evidence of myocarditis or prior myocardial injury by cardiac magnetic resonance imaging routinely performed for positive testing results (range, 12-53 days later).6The durability and consequences of such imaging findings are not yet known and longer follow-up is needed. However, an increased incidence of heart failure as a major sequela of COVID-19 is of concern, with considerable potential implications for the general population of older adults with multimorbidity, as well as for younger previously healthy patients, including athletes.[11,12]

Pulmonary

In a study of 55 patients with COVID-19, at 3 months after discharge, 35 (64%) had persistent symptoms and 39 (71%) had radiologic abnormalities consistent with pulmonary dysfunction such as interstitial thickening and evidence of fibrosis.7Three months after discharge, 25% of patients had decreased diffusion capacity for carbon monoxide. In another study of 57 patients, abnormalities in pulmonary function test results obtained 30 days after discharge, including decreased diffusion capacity for carbon monoxide and diminished respiratory muscle strength, were common and occurred in 30 patients (53%) and 28 patients (49%), If compounded on cardiovascular comorbidity, either preexisting or incident from COVID-19, persistent decline in lung function could have major adverse cardiopulmonary consequences.[13,14]

Neurologic

SARS-CoV-2 can penetrate brain tissue via viremia and also by direct invasion of the olfactory nerve, leading to anosmia. To date, the most common long-term neurologic symptoms after COVID-19 are headache, vertigo, and chemosensory dysfunction (eg, anosmia and ageusia). Although stroke is a serious albeit uncommon consequence of acute COVID-19, encephalitis, seizures, and other conditions such as major mood swings and "brain fog" have been reported up to 2 to 3 months after initial illness onset.[15] Past pandemics involving viral pathogens (such as SARS-CoV-1, Middle East espiratory syndrome coronavirus [MERS], and influenza) have involved neuropsychiatric sequelae that could linger for months in "recovered" patients, which can seriously threaten cognitive health, overall well-being, and day-to-day functional status

Emotional Health And Well-beingin

addition to symptom persistence and clinical sequelae that may last far beyond the initial COVID-19 illness, the extent of emotional and behavioral concerns and general distress for those affected has yet to be determined.A diagnosis of COVID-19, and subsequent need for physical distancing, has been associated with feelings of isolation and loneliness.[16] COVID-19–related stigma has also become pervasive and can result in a sense of hopelessness. Increasing reports of lingering malaise and exhaustion akin to chronic fatigue syndrome may leave patients with physical debility and emotional disturbance. Compounded by the psychological toll of the pandemic experienced population wide, individuals recovering from COVID-19 may be at even greater risk of depression, anxiety, posttraumatic stress disorder, and substance use disorder. These combined effects have the potential to result in a global health crisis, considering the sheer number of COVID-19 cases worldwide.

Diagnostic tests

Rapid diagnostic test (RDT) :-15-40 minutes. The presence or absence (qualitative) of antibodies against the virus present in patient serum.[17-25.]

Enzyme linked immunosorbent assay(ELISA). 2-4 hours. The presence or absence (quantitative) of antibodies against the virus present in patient serum.Neutralization assay 3 to 4 days The presence of active antibodies in patient serum that are able to inhibit virus growth ex vivo, in a cell culture system. Indicates if the patient is protected against future infection.

CONCLUSIONS

Granted that no long-term data of substantial numbers of patients with various presenting symptomsexistandwith comparison groups, and that it is still early in the COVID-19 pandemic, it is possible that large numbers of patients will experience long-term sequelae. Out patient post–COVID-19 clinics are opening in many localities where large outbreaks have occurred, and the term "long-haulers" has been suggested to refer to these patients. Longer-ranging longitudinal observational studies and clinical trials will be critical to elucidate the durability and depth of health consequences attributable to COVID-19 and how these may compare with other serious illnesses.

REFERENCES

[1] Zu, Z.Y., et al., Coronavirus disease 2019 (COVID-19): a perspective from China. Radiology, 2020: p. 200490.

[2] Sohrabi, C., et al., World Health Organization declares global emergency: A review of the 2019 novel coronavirus (COVID-19). International Journal of Surgery, 2020.

[3] Novel, C.P.E.R.E., The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China. Zhonghua liu xing bing xue za zhi= Zhonghua liuxingbingxue zazhi, 2020. 41(2): p. 145.

[4] van der Hoek, L., et al., Identification of a new human coronavirus. Nature medicine, 2004. 10(4): p. 368-373.

[5]. Greenhalgh T, Knight M, A'Court C, Buxton M,Husain L. Management of post-acute Covid-19 in primary care. BMJ. 2020;370:m3026. doi:10.1136/ bmj. m3026.

[6] Maley JH, Brewster I, Mayoral I, et al. Resilience in survivors of critical illness in the context of the survivors' experience and recovery. Ann Am Thorac Soc. 2016; 13(8):1351-1360. doi:10.1513/AnnalsATS. 201511-782OC.

[7] Carfì A, Bernabei R, Landi F; Gemelli Against COVID-19 Post-Acute Care Study Group. Persistent symptoms in patients after acute COVID-19.JAMA. 2020; 324(6):603-605. doi:10.1001/jama.2020.12603.

[8] Tenforde MW, Kim SS, Lindsell CJ, et al;IVY Network Investigators; CDC COVID-19 Response Team; IVY Network Investigators. Symptom duration and risk factors for delayed return to usual health among outpatients with COVID-19 in a multistate health care systems network: United States, March-June 2020. MMWR Morb Mortal Wkly Rep. 2020;69(30):993-998. doi:10.15585/mmwr.mm6930e.

[9] Gu, J., B. Han, and J. Wang, COVID-19: Gastrointestinal Manifestations and Potential Fecal–Oral Transmission. Gastroenterology, 2020.

[10] Kooraki, S., et al., Coronavirus (COVID-19) outbreak: what the department of radiology should know. Journal of the American college of radiology, 2020.

[11]. Puntmann VO, Carerj ML, Wieters I, et al.Outcomes of cardiovascular magnetic resonance imaging in patients recently recovered from coronavirus disease 2019 (COVID-19).JAMA Cardiol.Published online July 27, 2020. doi: 10. 1001/jamacardio.2020.3557

[12] Rajpal S, Tong MS, Borchers J, et al. Cardiovascular magnetic resonance findings in competitive athletes recovering from COVID-19 infection.JAMA Cardiol. Published online September 11, 2020. doi: 10. 1001/jamacardio. 2020. 4916

[13] Shang YM, Song WB, et al. Follow-up study of the pulmonary function and relatedphysiological characteristics of COVID-19 survivors three months after recovery. EClinicalMedicine. 2020;25:100463. doi: 10. 1016/j. eclinm. 2020. 100463

[14] Tan C, Wu J, et al. Impact of coronavirus disease 2019 on pulmonary function in early convalescence phase. Respir Res. 2020;21(1):163. doi: 10. 1186/ s12931- 020-01429-6

[15]. Zubair AS, McAlpine LS, Gardin T, Farhadian S, Kuruvilla DE, Spudich S. Neuropathogenesis and neurologic manifestations of the coronaviruses in the age of coronavirus disease 2019: a review. JAMA Neurol. 2020;77(8):1018-1027. doi:10.1001/jamaneurol.2020.2065

[16]. Galea S, Merchant RM, Lurie N. The mental health consequences of COVID-19 and physical distancing: the need for prevention and early intervention.JAMA Intern Med. 2020;180(6):817- 818. doi: 10. 1001/ jamainternmed. 2020.1562.

[17] Xu M, Wang D, Wang H,et al. COVID-19 diagnostic testing: Technology perspective. Clin Transl Med. 2020;10:e158

[18] Organization, W.H., Advice on the use of point-of-care immunodiagnostic tests for COVID-19: scientific brief, 8 April 2020. 2020, World Health Organization.

[19] Djalante, R., et al., Review and analysis of current responses to COVID-19 in Indonesia: Period of January to March 2020. Progress in Disaster Science, 2020: p. 100091.

[20] http://www.centerforhealthsecurity.org/resources/COVID-19/serology/RDT-figure.pdf.

[21] Xiang, J., et al., Evaluation of Enzyme-Linked Immunoassay and Colloidal Gold-Immunochromatographic Assay Kit for Detection of Novel Coronavirus (SARS-Cov-2) Causing an Outbreak of Pneumonia (COVID-19). medRxiv, 2020.

[22] Shen, C., et al., Treatment of 5 critically ill patients with COVID-19 with convalescent plasma. Jama, 2020.

[23] Li, X., et al., Molecular immune pathogenesis and diagnosis of COVID-19. Journal of Pharmaceutical Analysis, 2020.[24] http:// www. center for health security.org/resources/COVID-19/serology/ELISA-diagram.pdf.[25] Poh, C.M., et al., Potent neutralizing antibodies in the sera of convalescent COVID-19 patients are directed against conserved linear epitopes on the SARS-CoV-2 spike protein. bioRxiv, 2020.