News and Views

Functional Small Airway Disease in Patients with Long COVID

Functional small airway disease with air trapping may explain the persistence of respiratory symptoms in patients with long COVID, suggests a new study published in the journal *Radiology*.[1]

This prospective single center study recruited 100 COVID-19 adult patients who had symptoms more than a month after their initial diagnosis and were attending the post-acute sequelae of COVID-19 (PASC) between June and December 2020; 100 matched healthy participants, nonsmokers with no past history of cardiac or lung disease, were selected between March and August 2018 to act as controls.

Based on the level of care administered during the acute infection, the patients were categorized as ambulatory (67%), hospitalized (17%) or those requiring intensive care (16%). Compared to the ambulatory group, hospitalized or ICU patients were likely to be older; 44 vs. 64 vs. 60 years, respectively. Seventy-six percent of patients with post-COVID symptoms had at least one comorbid condition; of these 59 were obese, 27 were hypertensive, 26 had asthma, 6 had chronic obstructive pulmonary disease (COPD), while 4 had interstitial lung disease. Hospitalized patients were also more likely to be current or past smokers than the ambulatory patients; 53% vs. 15%, respectively.

Patients underwent quantitative CT analysis using supervised machine-learning to estimate the regional ground-glass opacities (GGOs); air trapping was assessed via inspiratory and expiratory image-matching. The findings on CT were compared with the controls.

Analysis shows air trapping (58%) to be the most common feature on qualitative analysis of chest CT and GGOs were present in 51% of patients. The total lung affected by air trapping was 25.4% among ambulatory patients, 34.6% in hospitalized patients, 27.3% in those requiring intensive care, while it was detected in only 7.2% of controls. Air trapping persisted beyond 200 days in 8 of 9 participants who underwent imaging. Regional GGOs were present in 13.2% of hospitalized patients, 28.7% of those admitted to ICU, 3.7% of ambulatory patients and just 0.06% in healthy controls. A correlation between air trapping and ratio of residual volume to total lung capacity was noted. None of the study participants had obstruction in airways on spirometry.

This study has shown high prevalence of air trapping in patients who had recovered from acute COVID-19 but continued to have symptoms post-COVID. The severity of infection did not affect the percentage of lung affected by air trapping. Since no airflow obstruction was noted in any patient, the authors suggest that air trapping does not involve large airways; instead, small airways, which are noncartilaginous airways with an internal diameter <2 mm, are affected. Any pathology affecting small airways is usually not detected on spirometry until more than 75% of them are involved. Spirometry may often miss air trapping, which can be detected using inspiratory and expiratory CT imaging and plethysmography. Further long-term studies are required to study the course of functional small airway disease in these patients.

***Reference*:** [1]Cho JL, et al. Quantitative chest CT assessment of small airways disease in post-acute SARS-CoV-2 infection. *Radiology.* 2022 March 15:12170.

Pfizer-BioNTech Seek EUA for Second Booster for 65 *plus*

On 15th March, Pfizer Inc and BioNTech SE applied for emergency use authorization (EUA) with US regulators for a second booster dose of their COVID-19 vaccine for people aged 65 years and above. The companies said that a much lower rate of confirmed infections and severe disease was seen in an analysis of data from over a million adults, aged 60 years and older, who received an additional booster dose of the vaccine at least 4 months after the third dose compared to those who were given just one booster shot. The data also suggested that a fourth dose led to a considerable improvement in protection against the Omicron variant compared to the third dose after 3-to-6 months.

The submission to the US Food and Drug Administration (FDA) included data from Israel, where a second booster shot is authorized for many people over age 18 years. In late January, based on health ministry data, Israel said that a fourth dose enhanced the protection against infection 2 times, and 3-5 times against severe disease, compared to people who had received three shots. Pfizer was now designing its study on around 600 people to evaluate the efficacy of the fourth dose. (*Reuters, March 16, 2022*)

Viral Clearance in COVID Patients: Potential Role of Povidone-iodine Gargle

As the third wave of COVID-19, largely fuelled by the Omicron variant of coronavirus, shows a decline in the country, the weekly cases for the week from February 21 to 27 witnessed a drop to below the 1-lakh mark.[1]

Even though the current wave shows signs of ebbing, this is no time to be complacent. Infected people can continue to spread the virus through respiratory droplets via sneezing or coughing, and infect others. People can even get infected through contaminated surfaces.[2]

Therefore, taking adequate precautions and practicing COVID-appropriate behavior still remain key approaches to contain the spread of COVID-19. The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) viral load is high in the nasopharynx, saliva and throat.[2] Additionally, angiotensin-converting enzyme 2 (ACE2), the SARS-CoV-2 cell receptor, has been shown to be expressed on the oral mucosa and the epithelial cells of the tongue.[3]

Considering all this, maintaining optimum oral hygiene and reducing the viral load in the body's reservoirs with high viral load becomes important to limit transmission. Gargling with a virucidal solution appears to be a potential intervention to attain viral clearance. Povidone-iodine (PVP-I) is a broad-spectrum antimicrobial agent which also has virucidal properties.[4]

Reports have shown that PVP-I can block the attachment of SARS-CoV-2 to oral and nasopharyngeal tissues. It can also reduce the viral particles in saliva and respiratory droplets.[4] A randomized, four-arm study by Mohamed et al sought to determine the potential of regular gargling in eliminating SARS-CoV-2 in the oropharynx and nasopharynx.[2] The investigators looked at the effects of gargling 3 times a day for 30 seconds, using PVP-I, essential oils and tap water, on viral clearance among COVID-19 patients. Five Stage 1 COVID-19 patients (asymptomatic state during the first 2 days of infection) were included in each group. Investigators noted that in the PVP-I group, SARS-CoV-2 was not detected in any of the participants on Day 4, Day 6 and Day 12. Among participants in the essential oils group, there were 4 negative samples and 1 either positive or indeterminate result all through Day 4, Day 6 and Day 12. In the tap water group, 2 samples were negative and the other 3 were either positive or indeterminate on Day 4, Day 6 and Day 12. Among participants in the control group, one sample was negative on Day 4 and Day 12; other samples yielded either positive or indeterminate result. Viral clearance was attained in 100%, 80%, 20% and 0% of the patients in PVP-I, essential oils, tap water and control group, respectively. There was high viral clearance rate for PVP-I as early as 4 days following the intervention. The study thus showed that regular gargling with PVP-I could achieve early viral clearance among Stage 1 patients.

Use of PVP-I gargle or mouthrinse could thus play a vital role in limiting transmission of SARS-CoV-2 and help contain the spread of COVID-19.

References: [1]Weekly Covid cases fall below 1 lakh, lower than tally in 1st wk of 3rd wave. Available from: https://health.economictimes.indiatimes.com/news/industry/weekly-covid-cases-fall-below-1-lakh-lower-than-tally-in-1st-wk-of-3rd-wave/89881284. Accessed February 28, 2022. [2]Mohamed NA, Baharom N, Sulaiman WSW, et al. Early viral clearance among COVID-19 patients when gargling with povidone-iodine and essential oils - A clinical trial. Available from: https://www.medrxiv.org/content/10.1101/2020.09.07.20180448v1.full.pdf. Accessed February 28, 2022. [3]Elzein R, Abdel-Sater F, Fakhreddine S, et al. In vivo evaluation of the virucidal efficacy of chlorhexidine and povidone-iodine mouthwashes against salivary SARS-CoV-2. A randomized-controlled clinical trial. *J Evid Based Dent Pract*. 2021;21(3):101584. [4]Chopra A, Sivaraman K, Radhakrishnan R, et al. Can povidone iodine gargle/mouthrinse inactivate SARS-CoV-2 and decrease the risk of nosocomial and community transmission during the COVID-19 pandemic? An evidence-based update. *Jpn Dent Sci Rev.* 2021;57:39-45.

Post-COVID Changes in Cognition, EEG Seen up to 10 Months

A study published in the *Journal of Neurology* stated that interrelated cognitive, electroencephalography (EEG), magnetic resonance imaging (MRI) abnormalities were observed among COVID-19 survivors 2 months after discharge from the hospital. Some disturbances persisted for as long as 10 months. In patients admitted to the emergency department (ED) with COVID-19, who underwent follow-up neuropsychological assessment and an EEG, over half of them had cognitive disturbances affecting memory and attention after 2 months of discharge.

After 10 months of follow-up, a significant improvement was seen in the cognitive impairment, but some cognitive deficits and disturbances in mood persisted in slightly more than one-third of the patients. A partial improvement was seen in the EEG findings, which showed a slowing of cortical activity.

The researchers also stated that more studies were needed to confirm whether these alterations were directly linked with the infection itself or with its related consequences and if these alterations could be completely reversible or were part of a neurodegenerative process.

EEG alterations could be a useful tool to assess early cerebral involvement in COVID-19. (*Medscape, March 15, 2022*)

Government States More Than 656 Tons of Biomedical Waste was Generated Daily During COVID

On 15th March, the Parliament was informed that around 656 tons per day (TPD) of biomedical waste was generated across the country in 2020, of which 590 TPD was collected and treated by common biomedical waste treatment facilities.

Minister of State for Environment, Ashwini Kumar Choubey, further added that there was a generation of about 84.61 TPD of incremental COVID-19 biomedical waste from May 2020 to February 2022 from different healthcare, quarantine, sample collection and home isolation centers and labs, involved in diagnosis, treatment and quarantine of COVID patients. He further added that the Central Pollution Control Board (CPCB) had issued guidelines for proper management of the COVID-waste and had developed an application, COVID19BWM, to track the generation and treatment of the COVID waste in the treatment facilities.

No cases of violation of the CPCB guidelines were reported, but notices had been issued to 33 facilities across the country for not reporting data on COVID19BWM. Currently, the data from State Pollution Control Boards/ Pollution Control Committees (SPCBs/PCCs) for 2020 stated that 208 common biomedical waste treatment facilities were operating in the country. Nine states/Union Territories had no such facility, so captive treatment facilities operated by the healthcare facilities themselves were treating and disposing of the biomedical waste in these areas. (*ET Healthworld – IANS, March 15, 2022*)

Could Genes be Linked with Oral Health?

A study conducted by the American Dental Association has stated that genetic factors were involved in about 60% of cases of tooth decay. Diseases such as oral cancer, gum disease, misaligned teeth or genetic oral abnormalities could all be attributed to genetic factors.

Another study has shown that poor oral hygiene was responsible for the increase in gum-disease bacteria and incidences of oral microbiome aging. A study from the Chinese Academy of Sciences revealed a sharp decline in the good oral bacteria and the beneficial anti-inflammatory chemicals within 24 to 72 hours of disruption in maintenance of adequate oral hygiene. It was also observed that patients with periodontitis showed an increase in the 'bad bacteria', which lead to tooth damage or loss.

The good news is that oral health issues could be easily prevented. Two minutes of daily brushing and maintaining proper hydration were important for healthy teeth and body. Dr Mohender Narula, Dental expert and Co-founder, MyDentalPlan Healthcare, said that diseases like gingivitis can be transferred genetically and call for extra attention if there is positive family history. (*ET Healthworld – IANS, March 15, 2022*)

Preventive Health Checkups Increased Twofold among Women During Pandemic

The life expectancy of Indians has increased from 42.27 years in 1960 to 69.66 years in 2019, with women outliving men. But, it must be noted that around 17.4 and 3.5 per 100 women aged 15 to 49 years suffer from at least one morbidity and multi-morbidity, respectively, with the most common morbidities being hypertension, diabetes and thyroid disorders.

Home diagnostics has become a good option and encouraged women across India to take the preventive health screenings and tests, necessary for the prevention of several chronic ailments, reported *Healthians*.

A report from the Gurugram-based health tech startup stated that there was a rise of 234% between the start and the end of the second pandemic wave in preventive health checkups among women. The trend was maintained at 202% growth between January 2021 and 2022. Several factors, such as sedentary lifestyle, unhealthy eating habits, rise in obesity and stress levels and nuclear families, have increased the risks of chronic ailments like diabetes and thyroid problems in women. This is in line with a 244% increase in diabetes tests and a 213% increase in thyroid profile conducted between January 2021 and 2022. A rise of 189% was observed in tests for vitamin B12 and vitamin D profiles.

Deepak Sahni, CEO and Founder, Healthians, said that the pandemic has taught us the importance of health and wellness in our lives and to take preventive measures as lifestyle disorders could account for around 74% of total deaths by 2030. (*ET HealthWorld, March 16, 2022*)

■■■■