NON-CONTACT AND SAFE WAY OF ASSESING LUNG FUNCTIONS AROUND COVID-19 PANDEMIC

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Abstract

Coronavirus disease 2019 (COVID-19) is a potentially severe acute respiratory infection caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV).

The clinical presentation is that of a respiratory infection with a symptom severity ranging from a mild common cold-like illness, to a severe viral pneumonia leading to acute respiratory distress syndrome that is potentially fatal.

The extent of respiratory compromise following a COVID-19 depends on any pre-existing respiratory illness and the aetiology. Acquired respiratory infection in subsequent days may alter respiratory function. Patient with COVID-19 disease can develop progressive respiratory muscles weakness and pulmonary restriction. Pulmonary function monitoring of the decline in lung function allows for timely intervention with cough assist techniques and nocturnal non-invasive ventilation (NIV).

By the ventilated patients on intensive care it is difficult to measure the lung function using current techniques. Structured Light Plethysmography (SLP) [@PneumaCare Limited] has been proposed as a novel, non-contact, self-calibrating, non-invasive method of assessing lung function and can highlight differences according to the disease which is causing abnormalities on chest X rays or CT scans.

This technology can be used to measure respiratory status in patients with a wide range of respiratory conditions, including asthma, chronic obstructive pulmonary disease (COPD), pneumonia and lung failure and also in patient with COVID-19 on intensive care.

Considering shortage of personal protection equipment and airborne and droplet nature of this disease the measuring the lung function test with spirometer will be very challenging.

Our aim is to measure the change in breathing patterns by SLP in patient whose lungs are effected with this disease particularly those who are on ventilator. We assume that this technique can facilitate the safely weaning of the patients from ventilator as well as their progress following the infection.

Biography:

Professor Shyam Kolvekar is one of the leading cardiothoracic surgeons in London, currently working at St. Bartholomew's Hospital. He is honorary Associate Professor at University College London and involved in several research projects. He is visiting Professor at Manipal Medical College in India. He has a special interest in mitral valve repairs, beating-heart surgery, cardiac arrhythmias and minimally-invasive cardiac surgery and is concerned with ischaemic pre-conditioning of the heart. He also has a thoracic practice dealing with lung cancer, pneumothorax and pleural effusion.

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