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Tuberculosis and COVID-19: An Overview

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Commentary

The World Health Organization (WHO) predicted 10 million tuberculosis (TB) cases and 1.6 million deaths in 2019. The most common TB location is the lungs; however any organ can be affected. Corona Virus Disease-2019 (COVID-19), which is caused by the Severe Acute Respiratory Syndrome–CoronaVirus-2 (SARS-CoV-2) virus, has been spreading internationally since 2020, with around 111 million cases documented. There is evidence that the COVID-19 pandemic exacerbated the worldwide TB epidemic by fragmenting TB services and putting additional strains on health systems, resulting in the weakening of national TB programmes.

COVID-19 has a variety of clinical manifestations, ranging from asymptomatic to severe immunological dysregulation that can lead to immune disease. When it comes to tuberculosis, the most common site of infection is the lungs, which can lead to a sudden death in a small percentage of patients. COVID-19 infection may develop independently of TB disease before, during, or after TB disease, according to current research. However, it is yet unknown whether COVID-19 can reactivate or aggravate TB illness. The impact of the sequelae and the need for additional therapy must be assessed further. To regulate COVID-19, broad and coordinated SARS-CoV-2 antigen-specific adaptive immune responses are required, with Th1-responses driving the M. tuberculosis (Mtb)-specific response. CD4 T-cells produce the most interferon (IFN), whereas antigen presenting cells produce IL-12 and TNF. IFN production boosts macrophage microbicidal processes, regulates Th17 cells, and reduces tissue damage, whereas TNF is linked to granuloma integrity.

India has one of the world's highest rates of COVID-19 infection. The sickness manifests itself in a variety of ways. One of the top 10 causes of death, tuberculosis, has a symptom pattern that is strikingly similar to the current SARS-CoV-2 illness. Tuberculosis co-infections with previous coronavirus epidemics such as SARS and MERS-CoV constituted a substantial threat to disease spread. We recommend tuberculosis testing and patient seclusion.

The following are some practical strategies for overcoming the twin burden of tuberculosis and COVID-19:

I. The lack of cases of COVID-19 in developing countries could be due to TB immunity. Although the demographic profile, quantity of samples analysed, and socio-demographic variables may be substantial sources of worry, more research is needed

II. Few measures can be taken in the ongoing pandemic to improve effective screening of patients for TB. History of the patient regarding duration of symptoms and past history or family history of active TB can be taken to categorise potential suspects for TB and provide remedial measures as needed.

III. Patients who seem to be strong suspects (with classical symptoms of TB) ought to be tested for corona virus and mycobacterium tuberculosis to avoid unforeseen burden in the coming times.

IV. Practices like segregation of cases if symptomatic for TB have to be followed without fail to avoid spread to other suspected patients of COVID-19.

V. Cohorting of patients co-infected with COVID-19 and TB has to be done with utmost care in isolation wards to protect patients of COVID-19 from contracting TB as was seen in the past with SARS and MERS-CoV infections.

VI. Newly registered patients of TB should be tested for corona virus to avoid potential mis-diagnosis.

Patients with tuberculosis (TB) can become infected with COVID-19, which can lead to a worsening of their illness. TB patients who are at least 65 years old, have respiratory compromise from their TB infection or other medical diseases, such as HIV, and are immune compromised are at higher risk for severe COVID-19 infection, according to the Centers for Disease Control and Prevention. The host-expression association with SARS-CoV-2 and the interaction of 26 SARS-CoV-2 proteins with 332 human proteins were investigated in a study. It was shown that Mycobacterium tuberculosis and SARSCoV-2 share the majority of host protein interaction partners (same interactome), which is critical because both diseases have a strong affinity for lung tissue.

Essential TB services should be supported by health authorities at all times, even during situations like COVID-19. In line with the COVID-19 response, people-centered TB prevention, diagnosis, treatment, and care services should be ensured. According to WHO guidelines, measures must be put in place to reduce TB and COVID-19 transmission in communal settings and health care facilities. Despite the fact that the means of transmission of the two diseases differ slightly, administrative and personal protection measures are the same for both (e.g. basic infection prevention and control, cough etiquette, segregation of people suspected to be affected). The provision of TB preventative medication should be maintained to the greatest extent possible, since it benefits patients and the TB epidemic is likely to mitigate any bad effects of the Covid-19 pandemic [1-5].

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