



Early View

Correspondence

A profile of a retrospective cohort of 22 patients of COVID-19 with active/treated tuberculosis

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TITLE PAGE

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A profile of a retrospective cohort of 22 patients of COVID-19 with active/treated tuberculosis

Dear Editor,

We read with interest the two articles by Tadolini *et al.* [1] and Stochino *et al.* [2] which described recent cohorts of either current or former TB patients with COVID-19 and studied their clinical course. India has the majority of global burden of tuberculosis (TB) along with highest rising number of daily COVID-19 cases in the world [3,4]. Though the information about COVID-19 and active/former TB co-infection reported so far is sparse but it can be assumed that person with TB, when co-infected with COVID-19 may be at more risk of poor outcomes [1,5]. The present study describes the first-ever cohort of current or treated TB patients co-infected with COVID-19 from a high TB burden country, recruited by a tertiary care hospital in India.

This was a retrospective observational study from 1st February 2020 to 14th June 2020 during which total of 1073 consecutive COVID-19 patients were admitted. Out of these, 22 cases with a diagnosis of active/treated TB and COVID-19 co-infection were included in the study.

Among 22 patients of COVID-19 with TB co-infection, 13 (59.1%) patients had active TB [median age (IQR): 36 (27-59.5) years] and 9 (40.9%) patients had treated TB [median age (IQR): 44 (28-51) years] in past. Among active TB group, 11 (84.6%) were females and among treated TB group all patients were females. Out of the 13 active TB patients, 12 patients were already receiving anti-TB treatment (ATT) for [median duration (IQR) 2 (1-3) months] at the time of admission while one patient was newly diagnosed with PTB within a week of admission.

The demographic, clinical, radiological, and laboratory investigation details, and outcomes of each of the 22 patients are described in table 1.

All patients, except one, were symptomatic at the time of presentation. All 12 patients with active TB, who were already receiving ATT at the time of admission, had become almost asymptomatic for TB symptoms. Among them, signs and symptoms attributed to COVID-19 included fever (100%), dry cough (53.8%) and dyspnoea (30.8%) [median (range) duration 2 (2-30) days]. Nine treated TB patients were also almost asymptomatic for TB prior to the development of current COVID-19 infection. Among them fever (88.9%), dry cough (44.4%) and dyspnoea (33.3%), respectively were present with [median (range) duration of 5 (2-30) days] which could be attributed to COVID-19 disease. Radiological examination, conducted at admission, revealed pulmonary parenchymal fibrosis in all patients in treated TB group with 3 (33.3%) patients having accompanying residual cavitation as well. Among the 13 active TB patients, 9 (69.2%) had pulmonary TB (PTB) and 4 (30.8%) had extra-pulmonary TB. Among nine active PTB patients, 3 (33.3%) had cavity and 6 (66.7%) had parenchymal infiltrates/consolidation in chest x-ray but no cavity. Among four active extra pulmonary TB patients one had cerebral tuberculoma, two had pleural effusion, and one patient had only cervical lymphadenopathy. One active PTB patient had multi-drug resistant (MDR) tuberculosis (Isoniazid and Rifampicin resistant) receiving conventional MDR treatment regimen as per national guidelines. All treated TB cases had had PTB.

Lymphopenia was found in only one patient. In all, seven patients (31.8%) required critical care, 4/13 (30.7%) in active TB group and 3/9 (33.3%) in treated TB group. All but one patients who required critical care, also required invasive mechanical ventilation. Among these, 3/13 (23.1%) patients were from the active TB group and 3/9 (33.3) patients were form the treated TB group required invasive mechanical ventilation. All these six patients died. It also included one MDR-TB patient.

All six patients who died had hypoxemia and a Glasgow Coma Scale (GCS) score of 3-4 on admission. Quick sepsis related organ failure (qSOFA) scores were 3 in four patients, and 2 and 1 in one patient each. The death in all died patients was attributed to COVID-19 co-infection as all were otherwise responding clinically and radiologically to ATT in active TB group or were clinically stable in treated TB group. Comorbid diabetes mellitus (DM) was observed in 3/22 (13.6%) patients and two (66.7%) among them died. None of the patients had HIV. Among 22

patients 16 patients (72.7%) were discharged. During the study period 14 days of admission was mandatory for COVID-19 patient as per national guidelines [6]. Among those discharged, the mean (SD) duration of stay was 13.3 ± 5.3 days.

In the present series, among 22 patients with TB and COVID-19 coinfection, an overall mortality rate was 27.3%. This, mortality rate, though preliminary, is higher as compared to other studies by Tadolini *et al.* [1] (12.3%), Motta *et al.* [7] (11.6%) in TB-COVID-19 co-infected patients. A review by Ong *et al* also found a higher mortality in TB with COVID-19 [8]. In India mortality rate of around 2.3% has been observed among COVID-19 patients including patients with comorbid conditions such as diabetes, hypertension, malignancy and tuberculosis etc. [4]. This higher mortality in TB and COVID-19 coinfection could be explained by damage to the lungs by fibrosis or cavitation in treated TB cases or by active TB disease with superimposed insult of COVID-19 co-infection leading to further deterioration of already compromised lung function.

In the initial cohort of 40 COVID-19 patients who had been admitted in the authors' center up to 31st March 2020, no patient had active or previously treated TB, however, over the subsequent six weeks, the incidence of active and treated TB went up to 1.21 and 0.83 per 100 hospital admissions of COVID-19, respectively [9].

The limitations of the study were that the role of pathological and biochemical factors like D-dimer, C reactive protein, IL-6 and ferritin etc., and use of investigational drugs such as tocilizumab, remdesivir, favipiravir and steroids for patient management were not studied as both of these were not a component of national treatment guidelines during the study period [6]. Also, because of small sample size, analysis of various risk factors was not done.

In conclusion, patients with treated or active TB may be considered another vulnerable group for COVID-19 and may require special attention and appropriate preventive measures for development of COVID-19. Further, a high mortality along with a greater need for critical care, was found in active as well as treated TB patients co-infected with COVID-19.

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