

# COVID-19 and tuberculosis coinfection: outcomes depend on severity of COVID-19 and comorbid conditions

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To the Editor,

We read with interest the article by Canetti et al., published in a recent issue of the journal [1]. They reported a high incidence of COVID-19 and tuberculosis (TB) co-infection among patients being treated for TB including latent TB, 29.1% (n=32/110), and complications related to coinfection were relatively low (n=3/32, 9.4%). One death was recorded (3.1%). This online survey study was done during the first wave of the pandemic that affected Italy and was associated with high mortality rate, mainly the elderly and patients with significant comorbid conditions [2].

We like to share our experience with COVID-19 and TB coinfection. In Brunei Darussalam, all patients with COVID-19, regardless of disease severity were admitted to the National Isolation Centre (NIC) during the first wave (started 9<sup>th</sup> March 2020) and earlier part of the second wave (started 7<sup>th</sup> August 2021) for isolation and treatment [3]. At that time, the NIC was the only designated hospital for isolation and treatment of COVID-19 cases in the country. This policy was adopted to control disease spread and was successful in the first waves with a total of only 340 recorded cases, but not so in the second wave due to the highly contagious Delta variant. In our management protocol, all influenza like illness (ILI) and pneumonia cases including PTB were screened for COVID-19, and

similarly, patients with COVID-19 who had chest radiological changes, reported respiratory symptoms (like chronic cough, hemoptysis, weight loss, loss of appetite) consistent with PTB or known TB on treatments, were screened for active PTB coinfection [4]. In the second wave, between 7<sup>th</sup> August and 6<sup>th</sup> November 2021, we screened all 35 patients (n=2, 5.7% screened positive) with PTB admitted to two non-COVID-19 hospitals for COVID-19. We also screened 34 (n=3 screened positive) of 1,490 COVID-19 patients admitted to the NIC for active PTB. Overall, our screening processes yielded 13 cases of coinfections; 3 new cases PTB, 3 known cases of PTB on treatment, 6 cases of latent TB on treatment and 1 known case of extra PTB on treatment. Our screening gave an incidence rate coinfection of 5.7% among TB patients screened for COVID-19, and overall, 0.87% (n=13/1490) of coinfection among COVID-19 patients admitted to the NIC.

All our patients with latent TB with COVID-19 coinfection were well, had negative CXR findings, and none screened positive for active PTB. This group was not expected to be different from patients with COVID-19 infection alone, and were managed as such. When we compared patients with PTB (latent TB excluded) and COVID-19 coinfection to patients with only COVID-19 infection, we did not find any significant difference between the two groups apart from high proportion of patients with chronic kidney disease (CKD) in patients with coinfection (Table 1). There was one death during their COVID-19 illness. This patient had advanced CKD and needed initiation of renal

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**Table 1** - Comparison between patients admitted to the NIC with TB and COVID-19 coinfections with COVID-19 infections only.

Variables	TB and COVID-19 coinfection (n=7)	COVID-19 only (n=1,483)	P value
Gender			
Male	4 (57.1)	863 (58.3)	0.952
Female	3 (42.9)	619 (41.7)	
Age (years)	43.9 ± 17.6	39.5 ± 15.6	0.463
Comorbid (yes)	5 (71.4)	561 (37.8)	0.068
Diabetes mellitus	3 (42.9)	237 (16.0)	0.054
Hypertension	4 (57.1)	388 (26.2)	0.063
Dyslipidemia	3 (42.9)	245 (16.5)	0.062
Other respiratory disorders	1 (14.3)	72 (4.9)	0.249
Cardiac and cardiovascular disorders	0 (0)	97 (6.5)	0.553
Chronic kidney disease	3 (42.9)	54 (3.6)	<0.001
Cycle threshold value (CTv) at admission	21.3 ± 8.7	21.1 ± 6.6	0.937
Highest COVID-19 disease category during hospitalization	2.9 ± 0.9	2.4 ± 1.0	0.266
Outcomes			
Death	1 (14.3)	41 (2.8)	0.066

replacement therapy. His death was due to a cardiac event as a result of his comorbidities. All the other patients recovered from COVID-19, and completed their TB treatment without any other recorded complications.

Our experience reported a lower incidence of coinfection among patients with COVID-19, but a higher mortality rate (14.3%). However, the positive rate for COVID-19 among PTB patients was 5.7%, lower than the rate reported by Canetti et al. Apart from this, all patients with coinfection recovered without any problem. We agree with Canetti et al. that coinfection is generally mild and does not affect the outcomes. However, we must still be cognizant that COVID-19 and TB infection even on their own, especially COVID-19 can cause significant morbidity and mortality, especially in the elderly and patients with significant comorbid conditions. This was most evident during the first and second waves of the COVID-19 pandemic [2, 5]. In addition, the COVID-19 pandemic had caused major disruptions to services catering to other diseases including TB [5]. This resulted in delay in both diagnosis and initiation of treatment for TB, leading to consequences that will continue to be seen long after the pandemic is over. As the pandemic progresses with more contagious but milder Omicron strain and sub-strains, elderly persons and patients with significant comorbid

conditions including those with PTB especially those with significant pulmonary damages, remain at higher risk for complications including death [6-8]. Therefore, we must continue to screen for coinfections, not just COVID-19 but also other respiratory infections in patients being treated or suspected for PTB and vice versa.

#### Conflict of interest

None from all authors.

#### Financial declaration

None for all authors.

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