EUROPEAN RESPIRATORY *journal*

FLAGSHIP SCIENTIFIC JOURNAL OF ERS

Early View

Research letter

Active tuberculosis, sequelae and COVID-19 co-infection: first cohort of 49 cases

Marina Tadolini, Luigi Ruffo Codecasa, José-María García-García, François-Xavier Blanc, Sergey Borisov, Jan-Willem Alffenaar, Claire Andréjak, Pierre Bachez, Pierre-Alexandre Bart, Evgeny Belilovski, José Cardoso-Landivar, Rosella Centis, Lia D'Ambrosio, María-Luiza De Souza-Galvão, Angel Dominguez-Castellano, Samir Dourmane, Mathilde Fréchet Jachym, Antoine Froissart, Vania Giacomet, Delia Goletti, Soazic Grard, Gina Gualano, Armine Izadifar, Damien Le Du, Margarita Marín Royo, Jesica Mazza-Stalder, Ilaria Motta, Catherine Wei Min Ong, Fabrizio Palmieri, Frédéric Rivière, Teresa Rodrigo, Denise Rossato Silva, Adrián Sánchez-Montalvá, Matteo Saporiti, Paolo Scarpellini, Frédéric Schlemmer, Antonio Spanevello, Elena Sumarokova, Eva Tabernero, Paul Anantharajah Tambyah, Simon Tiberi, Alessandro Torre, Dina Visca, Miguel Zabaleta Murguiondo, Giovanni Sotgiu, Giovanni Battista Migliori

Please cite this article as: Tadolini M, Codecasa LR, García-García Jé-Mía, *et al*. Active tuberculosis, sequelae and COVID-19 co-infection: first cohort of 49 cases. *Eur Respir J* 2020; in press (https://doi.org/10.1183/13993003.01398-2020).

Active tuberculosis, sequelae and COVID-19 co-infection: first cohort of 49 cases

Marina Tadolini[1*], Luigi Ruffo Codecasa[2*], José-María García-García[3], François-Xavier Blanc[4], Sergey Borisov[5], Jan-Willem Alffenaar[6,7,8], Claire Andréjak[9], Pierre Bachez[10], Pierre-Alexandre Bart[11], Evgeny Belilovski[5], José Cardoso-Landivar[12], Rosella Centis[13], Lia D'Ambrosio[14], María-Luiza De Souza-Galvão[12], Angel Dominguez-Castellano[15], Samir Dourmane[16], Mathilde Fréchet Jachym[17], Antoine Froissart[18], Vania Giacomet[19], Delia Goletti[20], Soazic Grard[21], Gina Gualano[22], Armine Izadifar[23], Damien Le Du[17], Margarita Marín Royo[24], Jesica Mazza-Stalder[25], Ilaria Motta[26], Catherine Wei Min Ong[27,28], Fabrizio Palmieri[22], Frédéric Rivière[29], Teresa Rodrigo[3], Denise Rossato Silva[30], Adrián Sánchez-Montalvá[31,32,33], Matteo Saporiti[2], Paolo Scarpellini[34], Frédéric Schlemmer[35], Antonio Spanevello[36,37], Elena Sumarokova[5], Eva Tabernero[38], Paul Anantharajah Tambyah[27,28], Simon Tiberi[39,40], Alessandro Torre[41], Dina Visca[36,37], Miguel Zabaleta Murguiondo[42], Giovanni Sotgiu[43], Giovanni Battista Migliori[13].

***Co-first authors**

Affiliations

1. Unit of Infectious Diseases, Department of Medical and Surgical Sciences, Alma Mater Studiorum University of Bologna, Bologna, Italy
2. TB Reference Centre, Villa Marelli Institute, Niguarda Hospital, Milan, Italy
3. Tuberculosis Research Programme (PII-TB), SEPAR, Barcelona, Spain
4. Centre Hospitalier Universitaire, Nantes, France
5. Moscow Research and Clinical Center for TB Control, Moscow, Russian Federation
6. The University of Sydney, Sydney Pharmacy School, Sydney, New South Wales, Australia
7. Westmead Hospital, Sydney, Australia
8. Marie Bashir Institute of Infectious Diseases and Biosecurity, University of Sydney, Sydney, Australia
9. Service de Pneumologie CHU AMIENS PICARDIE, France AND UR Université de Picardie Jules Verne, Amiens, France
10. Service de Pneumologie, Clinique Saint Luc, Bouge, Belgium
11. Department of Internal Medicine, Lausanne University, Lausanne, Switzerland

12. Servicio Neumología, Vall D´Hebron University Hospital, Barcelona, Spain
13. Servizio di Epidemiologia Clinica delle Malattie Respiratorie, Istituti Clinici Scientifici Maugeri IRCCS, Tradate, Italy
14. Public Health Consulting Group, Lugano, Switzerland
15. Servicio de Enfermedades Infecciosas y Microbiología, Hospital Virgen Macarena, Sevilla, Spain
16. Service de Pneumologie, Groupe hospitalier sud île de France (GHSIF), Melun, France.
17. Centre Hospitalier de Bligny, Briis Sous Forges, France
18. Service de Médecine interne, CHI de Créteil, France
19. Pediatric Infectious Diseases Unit, Department of Biomedical and Clinical Sciences, L. Sacco Hospital, University of Milan, Italy
20. Translational Research Unit, National Institute for Infectious Diseases 'L. Spallanzani', IRCCS, Rome, Italy
21. Centre de Lutte Antituberculeuse (CLAT 38), Grenoble, France
22. Respiratory Infectious Diseases Unit, National Institute for Infectious Diseases 'L. Spallanzani', IRCCS, Rome, Italy
23. Hôpital Européen de Paris La Roseraie, Aubervilliers, France
24. Servicio Neumología, Hospital General Universitario de Castellón, Spain
25. Pulmonary Division, Lausanne University Hospital CHUV, Centre Hospitalier Universitaire Vaudois, Lausanne, Switzerland
26. Dipartimento di Scienze Mediche, Clinica Universitaria Malattie Infettive, Ospedale Amedeo di Savoia, Torino, Italia
27. Department of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
28. Institute for Health Innovation & Technology (iHealthtech), National University of Singapore, Singapore
29. Hôpital d'Instruction des Armées (HIA) Percy, Clamart, France
30. Faculdade de Medicina, Universidade Federal do Rio Grande do Sul - UFRGS - Porto Alegre (RS) Brasil
31. Infectious Diseases Department. International Health and Tuberculosis Unit, Vall d'Hebron University Hospital, Spain
32. Vall d'Hebron Institute of Research (VHIR), Barcelona, Spain

33. Grupo de Estudio de Infecciones por Micobacterias (GEIM), Spanish Society of Infectious Diseases (SEIMC), Spain
34. Unit of Infectious Diseases, Università Vita e Salute, San Raffaele Hospital, Milan, Italy
35. Hôpitaux Universitaires Henri Mondor, AP-HP, Créteil, France
36. Division of Pulmonary Rehabilitation, Istituti Clinici Scientifici Maugeri, IRCCS, Tradate, Italy
37. Department of Medicine and Surgery, Respiratory Diseases, University of Insubria, Tradate, Varese-Como, Italy
38. Servicio Neumología, Hospital de Cruces. Bilbao, Spain
39. Blizard Institute, Barts and The London School of Medicine and Dentistry, Queen Mary University of London, London, United Kingdom
40. Division of Infection, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom
41. Department of Infectious Diseases, University of Milan, L. Sacco Hospital, Milan, Italy
42. Servicio Neumología Hospital Universitario Marqués de Valdecilla, Santander, Spain
43. Clinical Epidemiology and Medical Statistics Unit, Department of Medical, Surgical and Experimental Sciences, University of Sassari, Sassari, Italy

Address for correspondence: Giovanni Battista Migliori, Servizio di Epidemiologia Clinica delle Malattie Respiratorie, Istituti Clinici Scientifici Maugeri IRCCS, Via Roncaccio 16, Tradate, Varese, 21049, Italy. E-mail: giovannibattista.migliori@icsmaugeri.it

Key words: TB, COVID-19; diagnosis, treatment, prevention, sequelae

Running title: Tuberculosis and COVID-19

Take home message:

Diagnostic, treatment and outcome details of 49 COVID-19 patients with concurrent or previous tuberculosis from 8 countries show varied clinical profiles.

word count 1,329

Dear Editor,

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) disease (COVID-19) pandemic has attracted interest because of its global rapid spread, clinical severity, high mortality rate, and capacity to overwhelm healthcare systems [1,2]. SARS-CoV-2 transmission occurs mainly through droplets, although surface contamination contributes and debate continues on aerosol transmission [3-5].

The disease is usually characterized by initial signs and symptoms [4-9] similar to those of related viral infections (e.g., influenza, SARS, Middle East Respiratory Syndrome [MERS]) and tuberculosis (TB), although prognosis and complications sometimes differ. Experience with concomitant TB and COVID-19 is extremely limited.

One case-control study of COVID-19 patients with IGRA-confirmed TB infection [10] and a single case of TB with COVID-19 were submitted but not yet published in peer-reviewed journals [11]. In a recent analysis of 1,217 consecutive respiratory specimens collected from COVID-19 patients *Mycobacterium tuberculosis* was not detected [12].

The present study describes the first-ever global cohort of current or former TB patients (post-TB treatment sequelae) with COVID-19, recruited by the Global Tuberculosis Network (GTN) in 8 countries and 3 continents. No analysis for determinants of outcome was attempted.

The study is nested within the GTN project monitoring adverse drug reactions [13,14] for which the coordinating centre has an ethics committee approval, alongside ethics clearance from participating centres according to the respective national regulation [13,14]. A specific nested database was created in collaboration with the 8 countries reporting patients with TB and COVID; the remaining countries did not observe COVID-19 yet in their patients at the moment this manuscript was written.

Continuous variables, if not otherwise specified, are presented as medians (IQR-Interquartile ranges).

Overall, 49 consecutive patients with current or former TB and COVID-19 from 26 centres in Belgium (1), Brazil (Porto Alegre, Rio Grande do Sul State; 1), France (12), Italy (17),

Russia (Moscow Region; 6), Singapore (1), Spain (10) and Switzerland (Vaud Canton; 1) were recruited (dataset updated as of April 25th, 2020, Table 1).

The first onset of COVID-19 in the cohort was observed in an Italian patient with TB sequelae on March 12th, 2020 (symptoms from March 6th).

Of 49 patients, 26 (53.0%) had TB before COVID-19, 14 (28.5%) had COVID-19 first and 9 (18.3%) had both diseases diagnosed within the same week (4 on the same day).

Forty-two (85.7%) patients had active TB [median age 45.5 (28.0-63.0) years] and 7 (14.3%) had post-TB treatment sequelae [median age: 69.0 (66.0-70.0) years; p-value= 0.01]; the patients with TB sequelae (from 5 centres in Italy, Singapore, Spain and Switzerland) were cured 8.2 (2.7-44.3) years earlier.

Overall, 26/49 (53.1%) patients were migrants, 15/48 (31.3%) unemployed, and 2/48 (4.1%) health care workers (medical doctor and radiology technician).

Forty-six (93.9%) patients had confirmed SARS-CoV-2 infection and 3 other patients (6.1%) had chest High Resolution Computerized Tomography (HRCT) highly suggestive of COVID-19 related pneumonia (bilateral ground glass opacities) [15].

Forty-eight patients had pulmonary TB (one caused by *Mycobacterium bovis*).

Thirty-seven patients had drug-susceptible (or were treated with the standard first-line regimen for new cases) and eight had drug-resistant TB (and were treated with second-line drugs).

Of the 14 non-clustered patients with COVID-19 diagnosis preceding TB, a child of Gambian origin (3 months old) had SARS-CoV-2 identified 3 days before TB diagnosis although TB was probably pre-existing (pulmonary and extra-pulmonary TB, meningitis). The child is continuing anti-TB treatment and has now recovered from COVID-19. Altogether the diagnosis of COVID-19 preceded that of TB by a median (range) time of 4 (2-10) days.

Those 14 patients, managed in 9 centres (in France, Italy, Russia, Spain) were young [median age 33 (26.0-46.0) years]; 11/14 (78.5%) were migrants.

Of the 19 patients undergoing anti-TB treatment, the diagnosis of COVID-19 was made during month 1-2 for 10 (52.6%), month 3-4 for 3 (15.7%), month 4- 6 for 3 (15.7%) and after 6 months for 3 (15.7%) patients.

Signs and symptoms attributed to COVID-19 included (in different combinations) fever (32/48, 81.2%), dry cough (27/48, 56.2%) and dyspnoea (17/48, 35.4%).

Radiological information was available for 48/49 (98.0%) patients: 23 (47.9%) presented cavities (Table 1).

Twenty-one patients manifested a typical HRCT COVID-19 pattern (bilateral ground glass opacities), whereas 23 had different patterns at HRCT or chest radiography essentially reporting TB-related lesions (e.g., infiltrates, consolidations, cavities, etc.) and 5 were not studied during the course of COVID-19 disease.

Forty- three (87.8%) patients were hospitalized and, provisionally, the overall median (IQR) number of hospital admission days was 15 (8-27). Six patients needed non-invasive ventilation and 14 oxygen supply.

Medication for COVID-19 was reported for 28 patients in all countries except Belgium and Brazil (which had a single case each): 22 (78.6%) received, in different combinations, hydroxychloroquine, 12 (42.9%) received an anti-HIV protease inhibitor (i.e. lopinavir/ritonavir, darunavir/cobicistat), 7 (25.0%) patients received azithromycin, and 1 (3.6%) patient received other drugs (i.e. enoxaparin and N-acetyl-cysteine, NAC). Seventeen (60.8%) patients received a monotherapy (i.e. 11 hydroxychloroquine, 5 lopinavir/ritonavir, and 1 azithromycin), 9 (32.1%) received a combination of two drugs (i.e. 5 hydroxychloroquine and protease inhibitor; 4 hydroxychloroquine plus azithromycin), 2 (7.1%) received ≥3 drugs (i.e. 1 hydroxychloroquine, lopinavir/ritonavir and azithromycin; 1 hydroxychloroquine, lopinavir/ritonavir and azithromycin, enoxaparine and NAC).

The case fatality rate was high (6/49, 12.3%); 5/6 were >60 years old and all of them had ≥1 co-morbidities. Given the small number of deaths, larger studies are necessary.

This preliminary analysis suggests that:

1) In 19/49 (38.8%) patients COVID-19 appeared during anti-TB treatment and limited or no protection against COVID-19 might have favoured SARS-CoV-2 infection (which affected two healthcare workers).
2) The diagnosis of TB and COVID-19 was done simultaneously or within 7 days in 9 patients, posing differential diagnosis challenges, suggesting that clinical assessments to investigate COVID-19 (e.g. clinical picture, HRCT) facilitated the identification of

(a probably pre-existing) TB. Any contribution of COVID-19 to TB pathogenesis cannot be excluded or confirmed.

3) Although the diagnosis of COVID-19 preceded that of TB in 14 patients, larger studies are needed to understand any role played by SARS-CoV-2 in the progression of TB infection to disease. Given that up to a quarter of the population in some regions of the work are latently infected, SARS-CoV-2 infection might boost the development of active TB in the coming months [10]. As we do not include individuals with latent TB infection followed-up over time, we cannot report on the potential contribution of COVID-19 towards development of active disease. Probably, an overlap of signs/symptoms of COVID-19 and TB occurred and COVID-19 was diagnosed earlier because of a higher index of suspicion while TB may have been there since before. Or, differently, COVID brought to clinical evaluation/diagnostic assessment TB patients at an earlier stage of disease before the occurrence of TB-related symptoms.
4) In 7 cases COVID-19 occurred in patients with TB sequelae. They were older than patients under anti-TB treatment and presented higher (although not statistically significant) mortality. All but one had co-morbidities (4 Chronic Obstructive Pulmonary Disease; 1 HIV co-infection plus liver and kidney diseases, hypertension and cancer present in different combinations). They presented unilateral or bilateral radiological sequelae of previous infiltrates (4 patients) or cavities (3 patients). Larger numbers are necessary to further understand the role played by TB sequelae.
5) The impact on the healthcare system (e.g., days of admission, intensive care unit beds, etc.) was relevant, and will deserve further evaluation.
6) The information on BCG (Bacillus Calmette-Guérin) vaccination is modest (30 patients with information, 19 previously vaccinated in all 8 countries) and no significant elements can be provided to the ongoing debate on its protective role.
7) We presently have no data on drug-drug interactions.

This is, to our knowledge, the first published cohort of patients with active TB and COVID-19. Our study represents a ‘snapshot’ of a cohort of patients at different stages of disease. No attempt was made to obtain representation of the larger universe of patients with both diseases and the small sample size precludes an analysis of risk factors. We cannot exclude that some findings have a casual origin.

The information available on the patients recently admitted was accurate, but some details on previous TB were incomplete, and some examinations were not performed either because the patients refused or the patients' condition was too severe. Although case reporting is comprehensive in the countries/regions covered by GTN, the study reflects the initial stages of the COVID-19 epidemic only, and representative longitudinal observations will be necessary to evaluate the interactions between COVID-19 and TB.

We believe that this descriptive research can motivate larger studies to enable analyses of interactions and determinants of outcomes in patients with both diseases. The study will continue to follow-up the patients and accrue more records. We therefore invite interested clinicians and programmes to contact the corresponding author and help improve the understanding of how to optimize care for these patients.

Acknowledgements

The article is part of the scientific activities of the Global Tuberculosis Network (GTN); GREPI (Groupe de Recherche et d'Enseignement en Pneumo-Infectiologie), a working group from SPLF (Société de Pneumologie de Langue Française); SEPAR (Sociedad Española de Neumología and Cirugía Torácica); Moscow Society of Phtisiology and of the WHO Collaborating Centre for Tuberculosis and Lung Diseases, Tradate, ITA-80, 2017-2020-GBM/RC/LDA).

The Authors wish to thank Dr. Enrico Girardi (National Institute for Infectious Diseases, L. Spallanzani, IRCCS, Rome, Italy) for the useful comments on the manuscript.

References

1. Worldometers. COVID-19 Coronavirus Pandemic. https://www.worldometers.info/coronavirus Last updated: April 23, 2020
2. Vitacca M, Nava S, Santus P, et al. Early consensus management for non-ICU ARF SARS-CoV-2 emergency in Italy: from ward to trenches. Eur Respir J 2020; in (https://doi.org/10.1183/13993003.00632-2020).
3. Lewis D. Is the coronavirus airborne? Experts can't agree. Nature 2020 Apr;580(7802):175. doi: 10.1038/d41586-020-00974-w.
4. Leung CC, Lam TH, Cheng KK. Let us not forget the mask in our attempts to stall the spread of COVID-19. Int J Tuberc Lung Dis. 2020 Apr 1;24(4):364-366. doi: 10.5588/ijtld.20.0124.
5. Esposito S, Principi N, CC Leung CC, et al. Universal use of face masks for success against COVID-19: evidence and implications for prevention policies. Eur Respir J 2020 in press.
6. Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med 2020; Feb 28. doi: 10.1056/NEJMoa2002032.
7. Xu XW, Wu XX, Jiang XG,et al. Clinical findings in a group of patients infected with the 2019 novel coronavirus (SARS-Cov-2) outside of Wuhan, China: retrospective case series. BMJ 2020; Feb 19;368:m606. doi: 10.1136/bmj.m606.
8. Zhou F, Yu T, Du R,et al. Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. Lancet 2020: 395(10229): 1054-1062.
9. Noia Maciel EL, Gonçalves Júnior E, Pretti Dalcolmo MM.Tuberculosis and coronavirus: what do we know? Epidemiol. Serv. Saúde vol.29 no.2 Brasília 2020 Epub Apr 09, 2020. https://doi.org/10.5123/s1679-49742020000200010. Last access 23 April 2020
10. Chen Y, Wang Y, Fleming J, et. al. Active or latent tuberculosis increases susceptibility to COVID-19 and disease severity. MedRxiv preprint 2020. doi: https://doi.org/10.1101/2020.03. https://www.medrxiv.org/content/10.1101/2020.03.10.20033795v1.full.pdf. Last access 23 April 2020

11. Singh A, Gupta A, Das K. Severe Acute Respiratory Syndrome Coronavirus-2 and Pulmonary Tuberculosis Coinfection: Double Trouble. DOI: 10.21203/rs.3.rs-22464/v1. https://www.researchsquare.com/article/rs-22464/v1. Last access 23 April 2020
12. Kim D, Quinn J, Pinsky B, et al. Rates of Co-infection Between SARS-CoV-2 and Other Respiratory Pathogens. JAMA. Published online April 15, 2020. doi:10.1001/jama.2020.6266
13. Borisov S, Danila E, Maryandyshev A, et al. Surveillance of adverse events in the treatment of drug-resistant tuberculosis: first global report. Eur Respir J. 2019;54(6). pii: 1901522. doi: 10.1183/13993003.01522-2019.
14. Akkerman O, Aleksa A, Alffenaar J.W, et al. Surveillance of adverse events in the treatment of drug-resistant tuberculosis: A global feasibility study. Int J Infect Dis. 2019 Jun;83:72-76. doi: 10.1016/j.ijid.2019.03.036.
15. Wen Z, Chi Y, Zhang L, et al. Coronavirus Disease 2019: Initial Detection on Chest CT in a Retrospective Multicenter Study of 103 Chinese Subjects. Radiology: Cardiothoracic Imaging 2020 2:2. https://doi.org/10.1148/ryct.2020200092. https://pubs.rsna.org/doi/pdf/10.1148/ryct.2020200092. Last access 23 April 2020

Table 1. Demographic, epidemiological and clinical characteristics of a cohort of 49^ tuberculosis patients with COVID-19 disease.

Variable	**Number/total number (%); Denominator corresponds to total number of patients for whom data are available**
Age median [interquartile range]	48 [32-69]
Male	40/49 (81.6%)
Migrant status	26/49 (53.1%)
Occupation	
Employed	14/48 (29.2%)
Unemployed	15/48 (31.3%)
Retired	14/48 (29.2%)
Student	5/48 (10.4%)
BCG vaccination	19/30 (63.3%)
COPD/Asthma	8/47 (17.0%)
Diabetes Mellitus	8/49 (16.3%)
HIV infection	6/48 (12.5%)
Renal failure	5/49 (10.2%)
Liver disease	7/49 (14.3%)
Alcohol abuse[a]	10/49 (20.4%)
Smoking[b]	20/49 (40.8%)
Drug abuse	4/47 (8.5%)
TUBERCULOSIS	

Previous history of TB	13/46 (28.3%)
Site	
Pulmonary TB only	36/49 (73.5%)
Extrapulmonary TB only	1/49 (2.0%)
Pulmonary TB/ Extrapulmonary TB(>1 site possible)	12/49 (24.5%)
Site of extrapulmonary TB	
Bone	2/13 (15.4%)
Lymphadenitis	2/13 (15.4%)
Pleural	2/13 (15.4%)
Central Nervous System	1/13 (7.7%)
Laryngeal	1/13 (7.7%)
Gastrointestinal	1/13 (7.7%)
Peritonitis+ Lymphadenitis+ Pleural + Bone	1/13 (7.7%)
Genitourinary + Lymphadenitis	1/13 (7.7%)
Central Nervous System + Lymphadenitis	1/13 (7.7%)
Bone + Joint + Spondylodiscitis (T5-T11) + Paravertebral abscesses	1/13 (7.7%)
Radiological involvement	
Unilateral cavitary lesions	10/48 (20.8%)
Bilateral cavitary lesions	13/48 (27.1%)
Bilateral infiltrates (no cavities)	9/48 (18.8%)
Unilateral infiltrates	16/48 (33.3%)
Microbiology	
Sputum culture confirmation	22/49 (44.9%) (+ 8 sputum culture ongoing)
NAAT confirmation	13/49 (26.5%)
Sputum smear positive	9/49 (18.4%)
Not available	5/49 (10.2%)
Drug resistance	
Resistant	8/45 (17.8%) (4 MDR-TB)
Sensitive	37/45 (82.2%)
Treatment outcome	
Cured	6/49 (12.2%)
Completed	1/49 (2.0%)
On treatment	37/49 (75.5%)
Died*	5/49 (10.2%)
Lost to follow-up	0
Failure	0
COVID-19	
Symptoms	
Asymptomatic	5/48 (10.4%)
Symptomatic	43/48 (89.6%)
Imaging	
Typical (bilateral ground glass opacities) HRCT picture	21/44 (47.7%)
Treatment outcome	
Resolved	18/49 (36.7%)

Still on treatment	25/49 (51.0%)
Died (at any date)*	6/49 (12.3%)

Abbreviations: SARS-CoV-2=severe acute respiratory syndrome coronavirus 2 TB= tuberculosis; BCG=Bacillus Calmette-Guérin; COPD= chronic obstructive pulmonary disease; **a**: ≥14 drinks per week in men or ≥7 drinks per week in women; **b**: current or ex-smoker; NAAT= Nuclear Acid Amplification Test; MDR-TB= multidrug-resistant tuberculosis.

* According to the criteria for cohort analysis of treatment results the patients died during anti-TB treatment are 5 but the total number of deaths is 6 as one patient with post-TB treatment sequelae died after being cured for TB.