frontiers | Frontiers in Tropical Diseases

TYPE Editorial
PUBLISHED 03 January 2024
DOI 10.3389/fitd.2023.1337327

OPEN ACCESS

EDITED AND REVIEWED BY
Martial Ndeffo,
Texas A and M University, United States

*CORRESPONDENCE
Emanuele Nicastri
emanuele.nicastri@inmi.it

RECEIVED 12 November 2023
ACCEPTED 30 November 2023
PUBLISHED 03 January 2024

CITATION
Nicastri E, Michael E and Rodriguez-Morales AJ (2024) Editorial: The intersection of COVID-19 and tropical diseases.
Front. Trop. Dis 4:1337327.
doi: 10.3389/fitd.2023.1337327

Editorial: The intersection of COVID-19 and tropical diseases

Emanuele Nicastri[1]*, Edwin Michael[2] and Alfonso J. Rodriguez-Morales[3,4]

[1]National Institute for Infectious Diseases Lazzaro Spallanzani (IRCCS), Rome, Italy, [2]University of South Florida, Tampa, FL, United States, [3]Faculty of Health Sciences, Universidad Científica del Sur, Lima, Peru, [4]Gilbert and Rose-Marie Chagoury School of Medicine, Lebanese American University, Beirut, Lebanon

KEYWORDS

COVID - 19, tuberculosis, dengue, Chagas, SARS

Editorial on the Research Topic
The intersection of COVID-19 and tropical diseases

The endemicity of tropical diseases posed the emergence of an epidemiological scenario marked by overlaps with the progressive circulation of the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) and its Coronavirus Disease 2019 (COVID-19). With the spreading of SARS-CoV-2 in areas endemic to tropical pathogens during regional epidemics, the occurrence and detection of multiple types of coinfections are therefore anticipated. As has been seen with other diseases, communicable and non-communicable, such comorbidity and coinfection outcomes may represent a risk factor for worsening or modifying the evolution to severe and fatal COVID-19, as was already seen with diabetes, hypertension, HIV/AIDS, and tuberculosis, among other public health conditions.

This Research Topic collected articles that span the epidemiology, clinical, diagnostic and management aspects of any tropical disease in the context of infection with SARS-CoV-2/COVID-19.

Hesse et al. present a case of a 44-year-old female with COVID-19 with adult respiratory distress syndrome ARDS living in a region with high prevalence of hantavirus pulmonary syndrome due to Choclo Orthohantavirus (CHOV). Polymerase chain reaction (PCR) detected both viruses during the early stages of the disease with evidence of the two phylogenetic trees. Genomic sequences of SARS-CoV-2 and CHOV are available in GISAID and GeneBank, respectively. This case described the first coinfection by SARS-CoV-2 and CHOV worldwide. After a prolonged ICU stay, the patient was discharged in good clinical condition. The detection of the coinfection in this patient highlights the importance, during a pandemic, of complementing the testing and diagnosis of an emergent agent, SARS-CoV-2, with other common endemic respiratory pathogens and other zoonotic pathogens, like CHOV, in regions where they are a public health concern to better understand the outcomes of co-infections.

Fernandez et al. describe a cohort of COVID-19 inpatients with or without Chagas Disease (CD) admitted to Hospital de Infecciosas FJ Muñiz, Buenos Aires, Argentina, between March 2020 and February 2021. The patients, split on a 3:1 ratio (87:29), were matched by sex, age, presence of comorbidities, and

hospitalisation requirement in an intensive care unit (ICU). The CD/COVID-19 coinfected cohort had a median age of 55 (49.0, 66.0); 17 (59%) were male. There were no significant laboratory and clinical differences between both groups. In the CD cohort, three (10.3%) patients were admitted to the ICU, and two (6.9%) required mechanical ventilation with no death. In the control group, there were six deaths (6.6%), 13 required ICU (14.9%), and 11 required MV (12.6%), and six (6.6%). The results from this small case series of coinfected CD and COVID-19 patients align with previous data from Brazilian cohorts, indicating no clinical difference with CD/COVID-19. However, more information on coinfection of COVID-19/CD with cardiomyopathy could be of scientific interest to customise diagnostic pathways and therapeutic options.

Adzic-Vukicevic et al. describe a retrospective cohort of 53 Tuberculosis (TB) and COVID-19 co-infected patients treated in COVID hospital "Batajnica" in Belgrade and the Special Hospital for Pulmonary Diseases "Ozren" Sokobanja between March 2020 and April 2022. All data were compared with a published global TB and COVID-19 cohort (1). The TB/COVID-19 cohort in Serbia included significantly fewer migrants and diabetes cases but more cases with chronic respiratory diseases compared to the global cohort. Fewer cases were diagnosed with sputum smear and molecular assay, and there were fewer extrapulmonary TB and mono-resistant cases. However, more cases were diagnosed with solid culture, and unilateral and bilateral pulmonary infiltrate compared to TB/COVID-19 cases worldwide. Serbian patients spent fewer days in the hospital and achieved higher PCR conversion and TB treatment success rates. The Serbian TB/COVID-19 cohort achieved a higher treatment success rate than the global cohort.

Rodrigues et al. assessed Brazil's Dengue Virus (DENV) and SARS-CoV-2 cocirculation. They described a cohort of 57 COVID-19 patients with 5 DENV (8.8%) coinfections enrolled at the Hospitals Rede Casa and Universitário Antônio Pedro in Rio de Janeiro from March to June 2020. COVID-19/DENV coinfected patients showed no clinical worsening of COVID-19, and cases in which COVID-19 patients had previous exposure to DENV did not influence the clinical severity of COVID-19. Lastly, C-C motif chemokine ligand 2 and chemokine ligand 8, CCL2 and CXCL8, appeared to be good markers of COVID-19 severity and did not show increased levels in COVID-19/dengue cases.

Finally, Yeh et al. describe the implementation of an earlier pan-Orthopox viral assay that detects smallpox variola and vaccinia strains and also discerns related strains, including mpox.

Significant reductions and increased inequalities in access to health care worldwide have marked international response to the COVID-19 pandemic. Given coinfection and comorbidity, the real-world impact of these policies on the prevention, epidemiology, surveillance and treatment of tropical diseases is a matter of current and future research. Encouraging vaccination against SARS-CoV-2 for people with a current or past TB disease, as well as rapid diagnosis and targeted treatment of TB in highly specialised pulmonology institutions, may present key points to avoid excessive morbidity and mortality. A greater understanding of these impacts will also provide essential insights into the transmission, potential changes in clinical outcomes, and prospects for controlling these diseases. It will also provide insights into the pandemic's ongoing transmission dynamics and health outcomes. For clinicians, it is critical and essential to consider the possibility of coinfections between COVID-19 and tropical pathogens, considering not only as a differential diagnosis but also the implications of the clinical overlap of them (2, 3).

Author contributions

EN: Writing – original draft. EM: Writing – review & editing. AR-M: Writing – original draft.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author(s) declared that they were an editorial board member of Frontiers, at the time of submission. This had no impact on the peer review process and the final decision.

Publisher's note

References

1. TB/COVID-19 Global Study Group. Tuberculosis and COVID-19 co-infection: description of the global cohort. *Eur Respir J* (2022) 59:2102538. doi: 10.1183/13993003.02538-2021

2. Silva-Ramos CR, Mejorano-Fonseca JA, Rodríguez-Morales AJ, Hidalgo M, Faccini-Martínez ÁA. Zoonotic febrile illnesses misdiagnosed as COVID-19: a review of reported clinical cases. *Infez Med* (2023) 31(2):151–62. doi: 10.53854/liim-3102-3

3. León-Figueroa DA, Abanto-Urbano S, Olarte-Durand M, Nuñez-Lupaca JN, Barboza JJ, Bonilla-Aldana DK, et al. COVID-19 and dengue coinfection in Latin America: A systematic review. *New Microbes New Infect* (2022) 49:101041. doi: 10.1016/j.nmni.2022.101041