

LETTER

Legionella pneumophila and SARS-COV-2 co-infection: the importance of laboratory diagnosis

To the Editor

From the onset of the pandemic in Italy, February 2020 to 15 February 2021, over 2.6 million confirmed SARS-COV-2 infections were reported with a case fatality rate of 3.4% [1]. Legionnaires' disease (LD) is a mandatory notifiable disease in Italy and according to the national LD surveillance, in the same period, 25 cases of *Legionella pneumophila* and SARS-COV-2 co-infection, requiring hospitalization, were reported, seven of which have died. All cases were confirmed by urinary antigen test (UAT), except two cases, classified as probable LD cases according to EU case definition [2]. Median age was 72.1 years (range 37-93); male/female ratio 2.1:1.

According to epidemiological investigation and surveillance data, among the 25 LD cases, eight had underlying diseases, e.g., chronic heart and kidney diseases, chronic obstructive pulmonary disease, obesity and lung microcitoma. As for the possible setting of infection, four LD infections were of nosocomial origin in patients hospitalized for COVID-19; two LD cases, which were part of a 13-case community cluster detected in October 2020, acquired COVID-19 while hospitalized for LD; one case was travel-associated and one was associated with an elderly nursing home. For the remaining 17 cases who were admitted to hospital with pneumonia symptoms and tested positive for both infections, the possible setting was unknown, so it was impossible to ascertain which of the two infections was acquired first.

In 2019, in Italy, 3199 LD cases were reported (incidence rate 52.9 cases/million), with a case fatality rate of 11.2% [3], while in 2020, preliminary data show a 35% decrease in the number of reported cases. Travel associated LD usually represent 10% of the total annual cases. The substantial decreasing trend in LD cases is, therefore, not justified by the decreased number of travel-associated LD cases, due to travel limitations in response to the COVID-19 pandemic. Vice versa, the lockdown relaxation and the re-opening of buildings and other community facilities, after months of closure, could have allowed the growth of *Legionella* in plumbing systems and led to an increase in cases [4]. The significant decreased number of cases could rather be explained by under-diagnosis. Physicians may have repeatedly tested patients with pneumonia symptoms for SARS-CoV-2, neglecting to test them for *Legionella*.

From the ongoing COVID-19 pandemic we have learnt that LD and COVID-19 clinical manifestations may be indistinguishable and that the incubation period is similar in both diseases [5]. However, LD can be treated with targeted and effective antibiotics such as fluoroquinolones or macrolides, and, therefore, differential diagnosis is essential to prevent fatal or severe outcomes. UAT is a quick and relatively inexpensive test, based on easily collected specimens providing results even after starting antibiotic therapy. Testing hospitalized patients with severe pneumonia, especially vulnerable subgroups (e.g., elderly or those with co-morbidities), for *Legionella* and for SARS-COV-2 would allow to make both a differential diagnosis and the assessment of the impact of the two infections. The detection of LD or SARS-COV-2 co-infection is also extremely important from a public health perspective, as LD fatality rate is higher than COVID-19 fatality rate and LD prevention and control measures are available and can be effectively adopted.

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Key words

- *Legionella pneumophila*
- SARS-COV-2
- co-infections

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