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Early View

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Impact of the SARS Coronavirus 2 epidemic on tuberculosis treatment outcome, Northern Italy

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Impact of the SARS Coronavirus 2 epidemic on tuberculosis treatment outcome, Northern Italy.

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Sir,

We read with interest the letters by Tadolini et al [1] and Stochino C. et al [2] in a recent issue of the ERJ, that summarize the first available evidence on tuberculosis (TB) and the Coronavirus disease 2019 (COVID-19) [3].

The COVID-19 pandemic poses dramatic challenges to the global healthcare system capacity. As of June 25th, 2020, Brescia Province, in Lombardy, reported 15,611 SARS-CoV-2 patients [4], accounting for 6.5% of all Italian cases, being one of the worst COVID-19 epicenter in Europe. The impact on healthcare delivery went far beyond the management of COVID-19 patients, as hospitals and health care facilities had to convert significant resources to its response.

Although overall reducing out-patient consultations, the Infectious and Tropical Diseases Department of the Spedali Civili of Brescia maintained unchanged all TB-services and did not interrupt the cascade of TB care. We performed a retrospective, observational cohort analysis of the TB cascade of care among patients followed at the TB Clinic in Brescia in the period March 1st - April 30th, 2020 during the COVID-19 epidemic (study period) and compared them with those of March - April 2019 (control period). Data were censored at June 30th, 2020 and 2019, respectively. All patients who received a diagnosis of TB and who were receiving treatment for TB, either followed in the out-patients TB clinic or admitted to the wards, were included in the analysis. Demographic, clinical and treatment outcome information were retrieved from paper and electronic (NetCare v 1.05.12 – Abeni Alba Software) clinical charts. Outcome indicators were the number of new TB diagnoses, TB treatment outcome, and adherence to the scheduled medical visits. Categorical variables were described using frequencies and percentages and chi square test or exact Fischer test were applied. Statistical analysis was performed using one tailed test considered significant p-values <0.05.

Overall, 65 patients entered TB care during the study period, compared to 76 in the control period. The diagnosis was based on microbiological criteria in 52 (80%) and 69 (79%) patients, respectively. There were no differences in age, gender, and proportion of foreign-born people during the two periods. In both periods there were three cases of MDR TB, one pre-XDR TB and one XDR TB. Of the three persons who died with TB during the COVID-19 period one had a negative virologic test, and two were not tested.

Our study outcome indicators presented important statistical differences. First, during the study period six new TB diagnoses were made (9.2%), significantly fewer than the 15 new diagnoses (19.7%) in the control period (p= 0.04). Second, the proportion of patients lost to follow-up was significantly higher in the study period compared to the control (10.8% vs. 2.6%, p= 0.03). Third, three deaths occurred during the study (4.6%), compared to none in the control period (p= 0.04).

In details, in the 2020 cohort 7 of 65 patients (10.8%) patients were lost to follow-up, 3 (4.6%) had died, 10 had completed treatment (15.4%) and 45 (69.2%) were still engaged in care. In the control cohort, out of 76 patients, two patients were lost to follow-up (2.6%), none had died, 11 had completed treatment (14.5%) and 62 (81.5%) were still on TB treatment.

These data show that during the peak of COVID-19 epidemic our TB center experienced a significant reduction of the number of TB diagnoses and an increase in the proportion of patients who were lost to follow-up or died, despite our efforts to keep TB services fully functional.

Although the potential negative impact of COVID-19 on TB services is fully recognized, data on TB treatment outcome are still limited. Some studies reported an increase in TB fatality rate associated with COVID-19 co-infection [1,2,3]. One study performed in Sierra Leone [5] showed trends in TB diagnosis similar to the one observed in Brescia. Besides, viral infections may have a detrimental impact on access to TB diagnosis and care, as recently summarized by Min Ong et al [6]. Reasons for the reduction in TB diagnosis may include decreased attention to TB by healthcare systems,

difficulties in accessing health services, lockdown measures, fear of stigma and contagion. The same reasons may justify the increase in the proportion of cases who are lost to follow-up.

Our report has limitations, mainly the small sample size and the short observation period. However, this is the first report showing significant worsening in TB treatment outcome during the COVID-19 epidemic, supporting the hypothesis that the pandemic may seriously jeopardize TB diagnosis, care and management [7;8;9].

TB services have an urgent need to identify novel strategies to ensure the continuum of TB care at the time of the coronavirus pandemic. The implementation of Video Observation Therapy (VOT) [10] may be a useful tool to ensure engagement to treatment during emergency periods. Furthermore, awareness campaign targeting the whole health sector on the possible overlap of the clinical picture between COVID-19 and TB should be implemented to avoid diagnostic delays.

To conclude, it is important to recognize the impact of COVID-19 on TB care to mitigate its consequences. Essential health services should be maintained at their higher capacity level even during exceptional events. Developing and strengthening policies to rapidly adapt TB control measures to the new challenge is a high and immediate priority.

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Fig 1. Treatment outcome during the COVID-19 (March-April 2020) and control (March-April 2019) periods