Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Coinfection by SARS-CoV-2 and dengue virus in a dual viral circulation setting

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Dear Editor,

COVID-19 pandemic has affected about 5.4 million people, from which 349,000 died until May 27, 2020 [1]. Concomitantly, approximately 3.7 billion people in about 67% of the countries live under the risk of acquiring dengue fever [2]. Here we report an RT-PCR-confirmed coinfection by dengue virus (DENV) and SARS-CoV-2, which occurred in a patient from northeastern Brazil.

A 39-year-old man, with no relevant medical history, living in a small city with no previous report of SARS-CoV-2 circulation, who had a day trip by car to a city with two suspected COVID-19 cases, presented to the emergency room of a hospital three days later, on May 10, 2020, with 2 days of fever and 1-day onset myalgia, diarrhea, and ageusia. A presumptive diagnosis of dengue fever was established and painkillers and antipyretics were prescribed. No symptoms improvement was reported by the patient, which returned to the hospital five days later. The prescription of the symptomatic treatment was adjusted and he was sent home. One day later, a blood sample was collected for detection of DENV, zika virus (ZIKV), and chikungunya virus (CHIKV) by RT-PCR, and a positive result was obtained for DENV. On the following day, according to the patient, his mother, an elderly diabetic woman, died after being hospitalized due to a sudden decompensation. On that same day, he was called up by an epidemiological surveillance center to undergo a rapid test for COVID-19 that showed positive IgM and IgG, and a RT-PCR from nasopharyngeal swab was also positive. The patient was kept under strict social isolation at home and, one day later, he reported a worsening of the myalgia and the onset of mild dyspnea. Another adjustment of analgesic prescription was made and the patient had a satisfactory recovery. Fig. 1 provides a timeline diagram showing the diagnoses and incidents reported here.

The possibility of a dual epidemic by COVID-19 and arboviruses evidenced by this case worried the local government, which sent us field-collected larvae of *Aedes* mosquitoes, vectors of arboviruses, (6 pools with 15 specimens) from the case county for detection of DENV, ZIKV, and CHIKV by RT-PCR. Interestingly, positive results for DENV were observed in four pools, showing that this virus is, indeed, naturally circulating in that county, which is under risk of a dual epidemic.

This correspondence shows the occurrence of COVID-19 and dengue coinfection and it may precede further studies evaluating the impacts of this phenomenon on the clinical outcomes of patients as well as mechanisms regarding immunologic responses, evaluating possible harms and benefits of this interaction. It has to be emphasized that, although no laboratory tests evaluating blood counts were performed, they are crucial for the proper evaluation of dengue fever patients, as

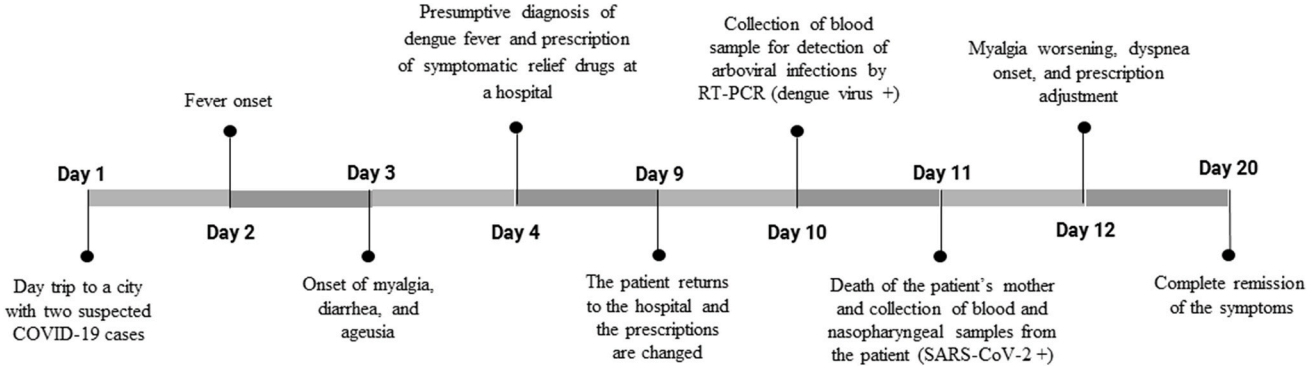

Fig. 1. Timeline of the events related to the reported case over the days.

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recommended by the Ministry of Health of Brazil, and it is important to the adequate documentation of the clinical parameters of the coinfection [3]. Finally, the phenomenon observed in our study endorse the concern highlighted by Lorenz et al. (2020) [4] in a prior publication in this journal about the threatening concomitant circulation of these viruses for the Brazilian health system, since dengue fever may cover up COVID-19, delaying the proper social isolation measures to control SARS-CoV-2 dissemination.

This study was approved by the National Commission of Research Ethics, Brazil, and signed informed consent was obtained.

Declaration of competing interest

All authors declare no conflict of interests.

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