

## TO THE EDITOR:

## A report of clustered COVID-19 in a hematology ward

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A novel coronavirus resulted in an outbreak of COVID-19 in China and has rapidly become a global pandemic due to its very high infectivity. Patients with hematologic diseases, especially malignancies, are more susceptible to infection than the general population because of their systemic immunosuppressed state caused by the underlying disease with neutropenia, lymphopenia, and impaired innate and adaptive immunity, as well as the impact of chemotherapy and other immunosuppressive therapies.<sup>1,2</sup> Patients with hematologic malignancies may therefore be at increased risk of COVID-19 infection and have a poorer prognosis. These patients may also spread the virus more efficiently due to increased viral loads and slow clearance of infection. We report here a cluster of COVID-19 infections within a hematology ward in Wuhan, China, the initial center of the epidemic, that involved 2 rooms, 6 patients, 5 nurses, and 1 doctor.

Between 16 January and 23 January 2020, we investigated 14 persons, including 6 patients, 6 nurses, and 2 doctors with fever or respiratory symptoms in 1 hematology ward of Union Hospital, Wuhan, China. COVID-19 was diagnosed on the basis of the World Health Organization interim guidance.<sup>3</sup> A confirmed case of COVID-19 was defined as a positive result on severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) reverse transcription polymerase chain reaction (RT-PCR) assay of nasal and pharyngeal swab specimens. Laboratory confirmation of COVID-19 was performed at the Wuhan Center for Disease Prevention and Control. Only laboratory-confirmed cases were included in the analysis. Although all symptomatic individuals had multi-focal ground-glass opacities on chest computed tomography scan, 1 doctor and 1 nurse were not included because of negative results on SARS-CoV-2 RT-PCR assay.

The health-care providers with COVID-19 included 1 doctor and 5 nurses, aged 23 to 37 years. One nurse had Hashimoto's thyroiditis (treated with thyroxine); the others had no preexisting conditions. The 6 patients with COVID-19 ranged in age from 14 to 54 years; 4 had acute lymphoblastic leukemia, 1 severe aplastic anemia, and 1 multiple myeloma. All hematology patients had received recent chemotherapy or immunosuppressive therapy. Four of 6 patients had neutropenia during the week before initial symptoms of COVID-19 appeared. Initial symptoms of all cases, including patients, the doctor, and nurses, occurred within an 8-day time span. The 6 hematology patients were all housed within 2 rooms in the same ward. The infected doctor and 5 nurses were the medical staff responsible for these patients.

The initial symptoms of the health-care providers were similar to those in the general population, including fever (mild to moderate), dry cough, diarrhea, and muscle aches. The patient group had higher fevers and dry cough. Participants with COVID-19 did not receive steroids or anti-inflammatory drugs to treat other symptoms, except for temperature control with anti-inflammatory drugs. Four of 6 patients developed dyspnea within 1 week and required oxygen. None of the health-care providers developed dyspnea. C-reactive protein levels were increased in all 6 hematology patients and 2 nurses with COVID-19. All the health-care providers had complete recovery and, other than bacterial super-infection in one, there were no other complications. In the patient group, 5 of 6 developed bacterial infections, and 2 developed liver dysfunction. Three of 6 patients survived, and 3 died, all of respiratory failure, hypotensive shock, and disseminated intravascular coagulation (Table 1). Of the 3 patients who died, patient 2, patient 4, and patient 5 died on day 23, day 21, and day 14 from illness onset, respectively. Secondary bacterial infections mainly occurred in the patient group. *Klebsiella pneumoniae* isolates were obtained from blood samples, and *Pseudomonas aeruginosa*, *Acinetobacter baumannii*, and *Stenotrophomonas maltophilia* isolates were obtained from sputum samples.



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