

## CORRESPONDENCE

## Detection of Covid-19 in Children in Early January 2020 in Wuhan, China

**TO THE EDITOR:** A small number of cases of coronavirus disease 2019 (Covid-19) have been described in children,<sup>1,2</sup> and our understanding of the spectrum of illness is limited.<sup>3</sup> We conducted a retrospective analysis involving hospitalized children in Wuhan, China.

From January 7 to January 15, 2020, a total of 366 hospitalized children ( $\leq 16$  years of age) were enrolled in a retrospective study of respiratory infections at three branches of Tongji Hospital, which are located 14 km to 34 km from one another in central Wuhan (Fig. S1 in the Supplementary Appendix, available with the full text of this letter at NEJM.org). The study was approved by the ethics committee of Tongji Hospital. Among the 366 children, the most frequently detected pathogens were influenza A virus (in 23 patients [6.3%]) and influenza B virus (in 20 [5.5%]).

SARS-CoV-2, the virus that causes Covid-19, was detected in 6 patients (1.6%). Informed consent was obtained from the parents or guardians of the patients with Covid-19 for the publication of their clinical data. The dates of illness onset in the six patients with Covid-19 were between January 2 and January 8, 2020, and the patients were hospitalized between January 7 and January 13 (Fig. S2). Details of the study methods are provided in the Supplementary Appendix.

The median age of the six patients was 3 years (range, 1 to 7) (Table 1). All six children had previously been completely healthy. Common clinical characteristics included high fever ( $>39^{\circ}\text{C}$ ) (in all six patients), cough (in all six), and vomiting (in four). Laboratory investigations showed that the levels of lymphocytes, white cells, and neutrophils were below the normal range in six, four, and

**Table 1. Summary of the Clinical Characteristics of Six Children with Covid-19.\***

Characteristic	Patient 1	Patient 2	Patient 3	Patient 4	Patient 5	Patient 6
Age (yr)	3	7	3	1	3	4
Sex	Female	Female	Female	Male	Female	Male
CT findings	Patchy ground-glass opacities in both lungs	NA	Patchy shadows in both lungs	Patchy shadows in both lungs	Patchy shadows in both lungs	Normal
Treatments						
Ribavirin	Yes	No	No	No	No	Yes
Oseltamivir	Yes	Yes	Yes	Yes	Yes	Yes
Glucocorticoids	Yes	No	Yes	Yes	Yes	No
Supplemental oxygen	Yes	No	No	No	No	No
Intravenous immune globulin	Yes	No	No	No	No	No
Clinical course						
ICU admission	Yes	No	No	No	No	No
Duration of fever (days)	11	3	7	6	4	6
Duration of hospitalization (days)	13	7	7	5	10	8
City of residence	Wuhan	Wuhan	Huangshi	Wuhan	Wuhan	Wuhan

\* Covid-19 denotes coronavirus disease 2019, CT computed tomography, ICU intensive care unit, and NA not available.

three patients, respectively. Four of the six patients had pneumonia, as assessed radiographically, with computed tomographic scans of the chest showing typical viral pneumonia patterns (Fig. S3). One child was admitted to the pediatric intensive care unit (ICU) and received pooled immune globulin from healthy donors. All the patients were treated empirically with antiviral agents, antibiotic agents, and supportive therapies. All the patients recovered after hospitalization for a median of 7.5 days (range, 5 to 13).

This study showed that Covid-19 occurred in children, causing moderate-to-severe respiratory illness, in the early phase of the SARS-CoV-2 outbreak in Wuhan and was associated with ICU admission in one patient. None of the patients or their family members had had direct exposure to Huanan Seafood Wholesale Market (the initial location to which cases of Covid-19 were linked) or to one another. It is worth mentioning that we unexpectedly found a case of Covid-19 in one patient (Patient 3) who resided outside Wuhan; this patient had illness onset on January 2, 2020. The patient and her family were residents of the Yangxin area of Huangshi and had not traveled outside the city in the month before illness onset. We have not identified the source of infection for this patient. Our findings indicate that SARS-CoV-2 infections in children were occurring early in the epidemic.<sup>4</sup>

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