

## LETTER TO THE EDITOR

# Update: Clinical characteristics and outcomes of SARS-CoV-2 infection in pediatric oncology patients in the province of Quebec

To the Editor:

In a recent letter entitled "Clinical characteristics and outcomes of SARS-CoV-2 infection in pediatric oncology patients in the province of Quebec", we reported a benign disease course among 31 children with cancer who tested positive for SARS-CoV-2 in the four pediatric

oncology centers of the province of Quebec, Canada between March 1, 2020 and July 31, 2021.<sup>1</sup> Starting December 5, 2021, Quebec was faced with an unprecedented surge of COVID-19, which culminated in more than 18,000 new daily cases in late December 2021.<sup>2</sup> Herein, we describe the evolution of all 75 patients from three pediatric oncology

**TABLE 1** Baseline characteristics and outcomes of SARS-CoV-2 infection in 75 pediatric oncology patients from Quebec, Canada

Age, years		Clinical presentation	
Median (interquartile range)	5 (3–10)	Symptomatic	60 (82%)
		Asymptomatic	13 (18%)
		N/A	2 (3%)
Sex		Symptoms (most common)	
Male	50 (67%)	Fever <sup>a</sup>	32 (44%)
Female	25 (33%)	Cough	27 (37%)
		Rhinorrhea	25 (34%)
		Sore throat	14 (19%)
		Nasal congestion	10 (14%)
Race/ethnicity		Severity of infection	
White	38 (61%)	Outpatient care only	61 (81%)
Arab/Maghrebian	9 (15%)	Hospitalized, ward	14 (19%)
Asian	7 (11%)	Febrile neutropenia	9 (12%)
Black	2 (3%)	Pneumonia	1 (1%)
First Nations	2 (3%)	Hypotension	1 (1%)
Mixed	4 (6%)	Other	3 (4%)
N/A	13 (17%)	Hospitalized, ICU	0 (0%)
Institution		Neutrophils, cells/mm <sup>3</sup>	
Sainte-Justine UHC	35 (47%)	≤500	10 (18%)
Montreal Children's	27 (36%)	500–1000	13 (23%)
Laval UHC	13 (17%)	>1000	34 (60%)
		N/A	18 (24%)
Disease category		Morbidity and mortality	
Acute leukemia/lymphoma	44 (59%)	Recovered fully	75 (100%)
Central nervous system	14 (19%)	Persistent complications	0 (0%)
Extracranial solid tumors	11 (15%)	COVID-19-related death	0 (0%)
Post-HSCT	6 (8%)	Death from other causes	0 (0%)

Abbreviations: HSCT: hematopoietic stem cell transplant; ICU, intensive care unit; N/A: Not available; UHC: University Health Center.

<sup>a</sup>Numerous patients had multiple documented symptoms of COVID-19.

centers who tested positive for SARS-CoV-2 between December 5, 2021 and January 31, 2022.

A detailed description of the cohort is presented in Table 1. SARS-CoV-2 variant testing was performed in 3(4%) patients only, but we know that the Omicron variant first appeared in Quebec on November 29, 2021 and became largely dominant from December 21, 2021.<sup>3</sup> The clinical course of disease was generally benign, with 61(81%) patients requiring outpatient care only. Fourteen (19%) patients were hospitalized (mean hospitalization length: 4.4 days; range: 1–12 days). No patient needed supplemental oxygen nor intensive care, and all recovered from their infection without long-lasting complications.

Interestingly, nine of 14 hospitalizations in this cohort were secondary to febrile neutropenia, whereas only one case of febrile neutropenia was observed among the 31 patients of our previous cohort. Furthermore, 10 of 57 (18%) patients for whom laboratory results were available at the time of COVID-19 diagnosis presented with severe neutropenia, compared to only one of 21(5%) in our previous cohort (relative risk [RR]: 3.7; 95% confidence interval [CI]: 0.5–27.1; *p*-value: 0.28). Likewise, we noted a nonstatistically significant trend toward a higher rate of hospitalization due to febrile neutropenia in this second cohort (12.0% vs. 3.2%; RR: 3.7; 95% CI: 0.5–28.1; *p*-value: 0.30).

Although only 31 cases of SARS-CoV-2 infection had been reported from March 2020 to July 2021 among children with cancer in Quebec, we observed an impressive surge of COVID-19 cases within 2 months during the fifth wave of the epidemic in the province. The higher transmissibility of the Omicron variant, the increase in social contacts due to the holiday season and gradual lift of public health restrictions, and the unvaccinated status of children under the age of 12 in Quebec may explain the observed surge of cases in our patient population. Despite this striking spike in SARS-CoV-2 positivity, this follow-up cohort continues to describe a benign clinical course of infection in the pediatric oncology population. Although more hospitalizations were reported during this period compared to our original report, hospitalizations were predominantly driven by febrile neutropenia rather than by severe respiratory disease. In fact, none of the hospitalized patients required supplemental oxygen nor any form of assisted ventilation. Interestingly, severe neutropenia occurred more frequently in this cohort compared to our previous report, including in children not expected to develop severe myelosuppression from their therapy.

In summary, this report consolidates previous findings of a mild disease course of COVID-19 in children with cancer. Further research should assess whether hospitalizations may be reduced by appropriate immunization among children with cancer.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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