

LETTER TO THE EDITOR

Pediatric hematology oncology during SARS-CoV-2: A brief communication of 28 patients and changes in clinical practice from a single institute in Pakistan

It has been 5 months since “social distancing” and “staying at home” became the key defense tactics against an invisible enemy, declared as a global pandemic by the World Health Organization (WHO).¹ With a rapid increase in SARS-CoV-2 cases and a limitation of resources, such as critical care units and staff, ventilators, and isolation rooms, health care delivery had to undertake a paradigm shift. Elective surgeries were put on hold, inpatient admissions were restricted, and teleclinics were introduced to limit exposure.

This is a case-control study that assesses all the hematology/oncology patients who underwent SARS-CoV-2 nasopharyngeal swab reverse transcriptase polymerase chain reaction (RT-PCR) testing at our institute. This included those patients who were characterized as medium to high risk on the SARS-CoV-2 screening tool, and all patients who were electively admitted in the inpatient services and prior to a bone marrow transplant. The patients were then classified into two groups, group A (patients who tested positive) and group B (patients who tested negative). Clinical presentations of these patients and the reasons warranting testing were evaluated.

In accordance with the policies of the Department of Infection Prevention and Hospital Epidemiology, universal screening of all patients who visit the daycare facility or are admitted to the hospital is done before and on arrival to the hospitals. A SARS-CoV-2 screening tool classifying patients into low-, medium-, and high-risk categories is used for all elective and emergency room admissions during this period. Febrile patients regardless of neutropenia are declared as medium risk and undergo RT-PCR testing for SARS-CoV-2. Due to the low sensitivity of the test, any patient who remained with high suspicion was retested and was not admitted into the oncology ward unless tested negative on both occasions.

A total of 28 patients were tested, the details of which can be found in Table 1. The demographics of patients in both groups can be visualized in Table S1. The bullet bar chart of the patient's hematological/oncological diagnosis can be visualized in Figure S1.

All patients with any febrile illness, including febrile neutropenia, were isolated and tested for SARS-CoV-2 and managed in consultation by the pediatric infectious diseases service according to WHO and Center for Disease Control (CDC) guidelines, until testing results were negative. All suspected SARS-CoV-2 patients were kept in a designated ward space to minimize nosocomial exposure. Symptoms warranting testing of the patients can be visualized in the range plot shown in Figure S2.

A majority of pediatric cancers have an aggressive course if untreated and require immediate multidrug chemotherapy, which may require a prolonged hospital stay. Yang and colleagues² recommend screening of every child who gets admitted to the hospital. In the setting of fever or suspicion of SARS-CoV-2, it is advisable to isolate the child and perform a lung computed tomography (CT) examination and a nasopharyngeal/oropharyngeal swab RT-PCR to confirm the diagnosis. If the results are negative, the anticancer regimen can be delivered and isolation removed. The health care team coming in contact with the child has to wear the appropriate personal protective equipment (PPE) and maintain recommended hand hygiene and infection control measures to prevent cross-contamination. For chemotherapy, if the patient remains stable, considerations can be put forward to moderately reduce the intensity of the drug regimen and/or prolonging the interval between successive cycles. Radiotherapy can continue as usual because of the lesser degree of immune modulation than chemotherapy. Surgical management warrants strict isolation, and CDC recommended infection prevention guidelines for the surgical anesthesia teams. When dealing with blood cancers such as acute lymphoblastic leukemia, Sullivan and colleagues³ recommend SARS-CoV-2-positive children with hyperleukocytosis be shifted to treatment with supportive care and steroid prophylaxis and resumption of disease-oriented therapy once RT-PCR is negative.

Practicing pediatric oncology in the lower middle-income setting amidst a pandemic is a major setback to any progress made thus far.

1. Testing every febrile neutropenic patient for COVID-19 led to an additional cost, which was burdensome for most self-paying families.
2. Due to shared inpatient space, any child suspected of being exposed to a health care provider suspected of COVID-19 would lead to a cascade of exposed contacts with multiple children requiring isolation and testing.
3. Despite aggressive testing, the rate of children testing positive has been low; this is reflective of the slow surge in Pakistan.
4. Individual families withheld chemotherapy due to concern or fear of neutropenia and a visit to the emergency room, and some refused to come even with fever.
5. Some families did not have access to smartphones or Internet facilities; thus, teleconsultation payment and receiving prescriptions

TABLE 1 Patient metadata

Serial number	Gender	Age (years)	Primary diagnosis*	Symptoms warranting testing	RT-PCR test results
1	Female	10	B-cell ALL	F, N	Negative
2	Female	17	B-cell ALL	F, C, M	Negative
3	Male	6	B-cell ALL	F, N, C	Negative
4	Male	7	B-cell ALL	F, N, C	Negative
5	Female	10	B-cell ALL relapse	Pre-CR	Negative
6	Female	6	B-cell ALL	F	Negative
7	Female	8	B-cell ALL	F, V	Negative
8	Male	5	B-cell ALL	F	Negative
9	Male	16	B-cell ALL	C	Negative
10	Male	3	B-cell ALL	F, N	Negative
11	Male	3	B-cell ALL	F	Negative
12	Female	14	B-cell ALL relapse	F, pre-CR	Positive
13	Female	8	B-cell ALL	Pre-HSCT	Negative
14	Male	9	AML	F, D	Negative
15	Male	14	AML relapse	F, A	Negative
16	Male	8	AML	E	Negative
17	Male	17	Aplastic anemia	F, R, S	Negative
18	Female	15	Aplastic anemia	Pre-HSCT	Negative
19	Male	17	Thalassemia major	FS	Negative
20	Male	10	Thalassemia major	F, C	Positive
21	Male	5	Wilms tumor	T	Negative
22	Male	2.5	Rhabdomyosarcoma	B	Negative
23	Male	10	Medulloblastoma	C	Negative
24	Female	8	Hodgkins lymphoma	C	Negative
25	Female	8	Pineoblastoma	F, C	Negative
26	Male	8	Postbone marrow transplant	F, E	Negative
27	Male	14	Bone marrow transplant donor	MPD	Negative
28	Male	16	Bone marrow transplant donor	MPD	Negative

*Arranged according to the prevalent primary diagnosis. Bold font indicates positive tests for SARS-CoV-2.

Abbreviations: A, abdominal pain; ALL, acute lymphoblastic leukemia; AML, acute myeloid leukemia; B, preoperative biopsy; C, cough; D, diarrhea; E, exposure to known positive patient; F, fever; FS, facial swelling posttransfusion; M, myalgia; MPD, modified procedural demand; N, neutropenia; pre-CR, prechemotherapy relapse; pre-HSCT, prehematopoietic stem cell transplantation; R, respiratory difficulties; S, septic shock; T, travel history; V, vomiting.

were challenging. They were called without charge and accommodated.

Zehra Fadoo²

6. Families from out of the city were most affected because of lack of transport and access.

¹ Medical College, Aga Khan University, Karachi, Pakistan

² Section of Pediatric Oncology & Hematology, Department of Oncology, Aga Khan University Hospital, Karachi, Pakistan

Mir Ibrahim Sajid¹ 

Sadaf Altaf²

Naureen Mushtaq²

Asim Belgaumi² 

Correspondence

Mir Ibrahim Sajid, Medical College, Aga Khan University, Stadium Road, Karachi, Pakistan.

Email: ibisajid@gmail.com

ORCID

Mir Ibrahim Sajid  <https://orcid.org/0000-0001-5871-4741>

Asim Belgaumi  <https://orcid.org/0000-0002-0135-7509>

REFERENCES

1. Wang C, Horby P, Hayden F, Gao G. A novel coronavirus outbreak of global health concern. *Lancet*. 2020;395(10223):470-473.
2. Yang C, Li C, Wang S. Clinical strategies for treating pediatric cancer during the outbreak of 2019 novel coronavirus infection. *Pediatr Blood Cancer*. 2020;67(5):e28248.

3. Sullivan M, Bouffet E, Rodriguez-Galindo C, et al. The COVID-19 pandemic: a rapid global response for children with cancer from SIOP, COG, SIOP-E, SIOP-PODC, ISPO, PROS, CCI, and St Jude Global. *Pediatr Blood Cancer*. 2020;67(7):e28409.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.