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LETTER TO THE EDITOR

Delivering pediatric oncology services during a COVID-19 pandemic in India

To the Editor:

The global pandemic of the novel coronavirus disease, COVID-19, is having a serious impact on pediatric patients, making it difficult for them to continue treatment.[1,2]

Providing medical care to children with cancer is challenging during the COVID-19 pandemic, given the risks of death from cancer versus death or serious complications from COVID-19 infection in immunocompromised hosts.[3-8] There is shortage of personal protective equipment (PPE) for health personnel, restricted inpatient and intensive care facilities, and limited blood bank supplies and diagnostic services.[4] In this correspondence, we describe the strategy used in our unit to deliver optimum oncology services during COVID-19 pandemic best suited to our system.

In the initial phases of the COVID-19 pandemic, the main focus was on staying at home, hand/respiratory hygiene, and social distancing. The patients were asked to stay indoors and continue oral chemotherapy wherever feasible and defer the intensive chemotherapy, which would require hospital visits and possible subsequent admission for febrile neutropenia.[3,5]

Preventive measures during hospital visits: Strict implementation of protective measures, including mask use by patients and their caregivers, hand hygiene, appropriate respiratory etiquette, and social distancing, was enforced. Health education regarding the pandemic was imparted to patients by telephone and during day care visits. Patients with suspected COVID-19 were screened. Testing/quarantine/admission was advised on a case-by-case basis. The protocol followed in the unit for evaluation of patients with febrile neutropenia was modified: throat examination and aerosol generating procedures were withdrawn. Children may act as asymptomatic carriers leading to community spread. Strict crowd control for patients' attendants was implemented. The hospital had temporarily withdrawn outpatient and specialty clinic services, hence new patients were not registered. Patients presenting with oncologic emergencies and those requiring high-dose chemotherapy were admitted. Those requiring inpatient admissions for intensive chemotherapy adhered to a strict appointment system.

The lockdown: By the third week of COVID-19 pandemic, a nationwide lockdown had been declared. We set a system of triage for our patients that helped the oncology team to make decisions for our patients (Table 1).

Patient tracking/teleconsultations was done by our nurses and social workers, and assisted by the doctors (Table 1).

Revisiting the treatment plan: Triage was done for patients on chemotherapy. Patients were allocated to a risk zone and relevant treatment advice was given. Treatment protocols requiring surgery/radiation/hematopoietic stem cell transplantation needed modification, as these therapeutic modalities were temporarily suspended due to COVID-19 concerns. Occasionally, patients were switched to low-dose/less toxic chemotherapy to tide over this critical period (Table 1).

Reorganization of day care services was done to facilitate treatment (Table 2).

Resource utilization: Ours is a premier tertiary medical institute in India and has been designated a COVID-19 center. Understanding the nature of the COVID-19 disease and requirements of the pandemic, the team of doctors and nurses was split into two. This splitting of resources keeps a reserve pool of medical staff, should one team inadvertently be exposed to a COVID-19 case.

Role of telehealth: Patients were contacted and helped by telephone, helplines, and emails and using a support group called "Sambhav." More than 170 exchanges were done.

NGO interface: Our NGO partners helped with antibiotic administrations, transport within the city and across states, accommodation, and coordination with local hospitals. They also helped transfer medicines to distant patients.

Blood donation: The lockdown had drastically reduced the number of voluntary blood donations and donations from relatives, resulting in a shortage of blood components in the blood bank. Travel documents were issued by the treating team to permit donors to come for voluntary blood donation.

The pandemic caused by SARS-CoV-2 (COVID-19) has greatly affected the delivery of care for children with cancer worldwide. Information on COVID 19 infection in pediatric cancer patients is scarce.[9] In our unit, we conducted COVID-19 testing for seven patients, of which one tested positive. All patients were febrile, had cough and tachypnoea (of these two were hypoxic), shock was present in two, and pneumothorax was present in one patient. One patient came from a hotspot area. The one patient who was COVID-19 positive in addition had features of meningoencephalitis.

A number of studies from around the world[3,5,8,10,11] have suggested dose reductions, increasing intervals between cycles depending on the physical status of patient, disease status, and risk of chemotherapy. It seems desirable to postpone high-intensity treatments where feasible and to prepare to triage according to prognosis.[5,8,10] A recent

TABLE 1 Triage system during COVID-19 pandemic

Zones and risk	Patient category	Plan
Green Very low risk	Patients who completed treatment recently Awaiting end treatment assessment/review of reports Long-term survivors	Patients were asked to stay at home. The focus was on adhering to hand/respiratory hygiene and social distancing Teleconsultation was continued
Blue Low risk	Patients on follow up and not on intensive chemotherapy cycles like ALL maintenance, RB intraocular disease/HL/LCH/RMS mid-treatment showing good response	No need to travel from home town to Delhi ALL patients may continue maintenance and send CBC/LFT via email Chemotherapy including ITM may be given ata nearby hospital equipped to give chemotherapy after contacting primary treating team Chemotherapy for RB/HL/LCH/RMS may be given as prescribed. If not possible, it may be delayed by a few (2-3) weeks CML patients must continue taking imatinib
Orange Intermediate risk	Patients requiring surgery/radiation/HSCT Interdepartmental consultation (multimodal management)	Deferred as elective surgery/radiation had been postponed Support staff and facility of admission affected hence transplants also postponed Patients switched to alternative/oral metronomic chemotherapy to bridge the gap Done by telephonewith respective departments with limitations
Red High risk	Delay in chemotherapy is likely to affect outcome (usually high-dose chemotherapy) Leukemia (induction/consolidation/interim maintenance) Non-Hodgkin lymphoma Initial cycles of solid tumors (Ewing sarcoma, RMS, hepatoblastoma, germ cell tumor)	Chemotherapy was administered via inhouse admission/day care facility
Yellow Risk not applicable	Patients with poor outcome (relapsed and progressive disease on chemotherapy, metastatic tumors with poor survival outcomes)	Counseling with advice on palliation was given and metronomic chemotherapy used wherever applicable

Abbreviations: ALL, acute lymphoblastic leukemia; CBC, complete blood count; CML, chronic myeloid leukemia; EUA, examination under anesthesia; HSCT, hematopoietic stem cell transplant; ITM, intrathecal methotrexate; LCH, Langerhans cell histiocytosis; LFT, liver function test; RB, retinoblastoma; RMS, rhabdomyosarcoma.

TABLE 2 Day care services

Infection control	Screening before entry for possible symptoms/residing in hotspot area Testing for COVID-19 infection on decision of treating team[a] Compulsory use of mask by child and caregiver Staggering appointment for chemotherapy/procedures
Social distancing	Distance of about 6 feet in between patients inside and waiting area outside day care Limited number of patients were admitted into day care (five at one time) Chemotherapy (intravenous pushes and intramuscular/subcutaneous injections) given later during the day when the day care is less crowded
Telehealth	Teleconsultation via phone Appointments for chemotherapy/procedures given via phone
Change in unit policy to manage febrile neutropenia patients	Patients were encouraged to take antimicrobials near their place of stay and avoid hospital visits Early switch to oral antimicrobials if the clinical condition of the child permitted on a case-to-case basis Teletracking of affected patients The evaluation protocol for febrile neutropenia patients was modified: detailed throat examination or aerosol generating interventions were deferred wherever possible or undertaken using PPE
Blood component therapy	Appointment system followed for planned transfusions

[a]Any child presenting with febrile neutropenia and respiratory systems was directed to the pediatric emergency where they went through a complete evaluation for need of testing for COVID-19 and admission as the pediatric emergency was a designated COVID-19 screening area with complete infrastructure for COVID-19 testing.

publication has focused on providing guiding principles for management of various childhood cancers, in particular the ones with best clinical outcomes (acute lymphoblastic leukemia, Hodgkin lymphoma, retinoblastoma, Wilms tumor, and low-grade glioma).[12]

A balance needs to be created keeping in mind risks associated with COVID-19 and the timely management of a child with cancer.[12] At the onset of the pandemic and lockdown where the focus was on social distancing, staying at home, and using a triage system to deliver oncology services, it was realized that this cannot go on indiscriminately. We are now tracking all our patients who received chemotherapy in the last 3 years and facilitating delivery of all pending chemotherapy that was postponed during the initial phases of the pandemic.

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ETHICAL STATEMENT

This is to certify that there are no ethical issues related to this paper and no human subject data are involved. Therefore, no patient consent was required either.

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