

EDITORIAL

Facing the COVID-19 outbreak in children with cancer

Antonio Ruggiero MD, Alberto Romano MD, Giorgio Attinà MD

Pediatric Oncology Unit, Fondazione Policlinico Universitario A. Gemelli IRCCS, Università Cattolica del Sacro Cuore, Rome, Italy

Abstract

Europe is now the epicenter of the COVID-19 outbreak. Many concerns have arisen about the management and treatment of children with cancer while researchers are wondering how to deal with this devastating pandemic. In view of the epidemiological and clinical characteristics of the COVID-19 outbreak, it is fundamental to stress that the behavior and hygiene rules adopted by children with cancer must be

respected and implemented in order to continue to safeguard their health for the current pandemic.

Keywords: cancer, chemotherapy, children, COVID-19.

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The novel coronavirus disease (COVID-19) outbreak started at the beginning of December 2019 in Wuhan, China, and then spread to many countries around the world. Elderly people and patients with immune-deficit are at serious risk of developing severe COVID-19 symptoms, and these groups deserve special attention.

The age of distribution shows that severe cases of COVID-19 mainly concern elderly people over the age of 65 years.¹ Children, in contrast to adults, are not commonly affected by the infection and, if infected, usually have mild clinical pictures and rarely develop respiratory critical illness requiring intensive care admissions.²

Reports on the impact of the COVID-19 in adult cancer patients are limited. Liang and colleagues in their series of 18 adult cancer patients reported a higher risk of severe illness in contrast to adults without cancer.³

Patients receiving anticancer treatments can have a higher risk of developing infective complications when compared to healthy people due to their greater level of immunosuppression. Even after cessation of their antineoplastic treatment, immunosuppression is reported to last for several months although its duration is yet to be accurately determined. In addition, it is known that younger children have more persistent immune deficits following chemotherapy, and alterations of the immune system have been reported until 6–12 months following cessation of their antineoplastic treatment.^{4,5}

Therefore, many concerns have been raised on the potential risk that the current COVID-19 pandemic would behave in the same way as previous coronaviruses outbreaks when more

severe respiratory illnesses and higher rates of hospitalization were registered in immunosuppressed children than in healthy children.⁶

By comparison with adults, the number of confirmed COVID-19 children is very low. Moreover, children are generally asymptomatic or paucisymptomatic and their clinical course is shorter than adults. Therefore, children appear to be less susceptible to COVID-19 infection although the reasons are still little known. Hypotheses based on children's vaccines cross reactivity against COVID-19 or on the paucity of angiotensin-converting enzyme-2 (ACE2) cell receptors present on the respiratory mucosae of children as protective factors have not been confirmed.^{7,8}

We conducted a literature search of the MEDLINE PubMed database on the association of COVID-19 and children with cancer. We searched for papers dedicated to COVID-19 infection in children with cancer performing a PubMed-based retrieval of articles using the following search terms: 'tumor', 'cancer', 'leukemia', 'lymphoma', 'chemotherapy', and 'neoplasm' and matched with 'COVID-19' adopting the filter 'child: birth–18 years'. We found only two articles and it resulted from the search 'chemotherapy' matched with 'COVID-19'. The first article was a case report in Chinese of a child affected by acute lymphoblastic leukemia on maintenance therapy who developed a respiratory distress.⁹ The other article was a report of a flash survey using a web-based form sent to 89 pediatric hematology/oncology units of different countries. Data were collected by 32 centers: among children receiving treatment for their tumor, only nine children were reported as affected

by COVID-19 but eight of the nine confirmed cases were asymptomatic or with a mild illness.¹⁰

Therefore, we have observed that no relevant reports have yet been published on this topic and no fatal case has been yet described.

Recent data indicate that children with cancer have a risk of COVID-19 disease that is comparable to those of their otherwise healthy peers. To our best knowledge, children receiving prolonged periods of multiagent chemotherapy causing mild or moderate immunocompromise are not at high risk of severe infection.^{10–13}

Thus, current evidence indicates that it is not justified to interrupt or delay pediatric anticancer treatment; however, Cancer Research UK has recently proposed to stop recruiting patients in several cancer clinical trials because clinical staff are being redeployed to frontline COVID-19 care.¹⁴

However, it is of great importance that some preventive measures are adopted in order to preserve the state of health and guarantee the care of our children. Initiatives to prevent and control the transmission of COVID-19 can help reduce the impact of the pandemic on cancer diagnosis and treatment and ensure continuity of care.¹⁵ Chemotherapy and/or radiotherapy are fundamental parts of cancer treatment and healing. We also know, however, that cancer treatments increase the risks of infectious complications. We cannot, therefore, further increase the risk of compromising the lives of our children: treatment has to cope with the current COVID-19 pandemic. Based on our experience, some active strategies can be suggested for the management of children with cancer receiving treatments during this pandemic. These are as follows:

- (1) Establish a specific hospital admission process for children with elevated temperature and/or respiratory tract infection signs
- (2) Limit the number of medical staff in the ward

- (3) Suspend all activities held by external personnel
- (4) Limit access to pediatric wards to one parent or guardian
- (5) Physical isolation of children in a single hospital bedroom
- (6) Frequent hand washing and face masks for all caregivers
- (7) Appropriate protection equipment for the medical and non-medical staff
- (8) Adopt telehealth or teleconsult for children in follow up
- (9) Postpone, prudentially, intensive treatment with high-dose chemotherapy.

In most cases, children with cancer undergoing antineoplastic treatment and their relative families are well trained to avoid situations of infectious risk: frequent hand washing, use of face masks, and the avoidance of crowded places or contact with people with respiratory disorders are common indications suggested by any pediatric oncology community.¹⁶ In addition, there is a growing interest during this emergency in developing and adopting new technologies (such as mobiles, tablets, and personal computers) to facilitate communication between patients and their caregivers and to reduce the frequency of access to the hospital.

Conclusion

The COVID-19 outbreak appears to have a limited impact on children. In addition, most of the affected children are asymptomatic or tend to have milder symptoms. However, the current COVID-19 outbreak underlines that hygienic educational programs are fundamental and must be continued and implemented especially for immunosuppressed children. The adoption of these preventive measures is a guarantee for reduced infection for the current pandemic and for future infectious pandemics. Detailed and clear advice by scientific organizations on the management of children with cancer are needed to avoid inappropriate conduct and/or delay of their specific treatments.

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Correspondence: Antonio Ruggiero (ORCID 0000-0002-6052-3511), Paediatric Oncology Unit, Fondazione Policlinico Universitario A. Gemelli IRCCS, Università Cattolica del Sacro Cuore, Largo A. Gemelli 8, 00168 Rome, Italy. antonio.ruggiero@unicatt.it

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