

Covid-19 in Pediatric Oncology

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The COVID-19 pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) poses an unparalleled challenge we have witnessed, impacting everyone and everywhere in the world. As of 31 May 2020, almost 6 million confirmed cases of COVID-19 in 216 countries, including more than 360.000 deaths, have been reported [1]. Older people and persons with chronic diseases are at the highest risk for severe morbidity and mortality. Several reports confirmed that clinical manifestations of COVID-19 are generally milder in children compared with adults [2,3], but data indicate that infants and younger children (i.e., ≤ 5 years) are more vulnerable to the infection than older children [4]. Besides, strong evidence about the association of underlying conditions with severe illness in children is still lacking.

There is a general concern that SARS-CoV-2 in children with cancer might cause more severe or critical forms, and the true impact of COVID-19 on pediatric oncology patients remains poorly documented. Preliminary descriptions were encouraging, with a single case report of a critically ill child from China who developed COVID-19 undergoing myelosuppressive chemotherapy for acute lymphoblastic leukemia. Italian experience described five pediatric cancer patients all of whom had a benign self-limiting course; three were managed at home and two in the hospital, with no specific antiviral therapy [5]. An initial report from the French pediatric oncology centers identified 33 confirmed cases, of which five required intensive care support and there was no death to report [6]. Flash European survey of pediatric oncology centers from 25 countries found very low rate of infection with only nine positive cases, of whom eight had asymptomatic to mild disease and one was just diagnosed to report. Large differences among participating countries regarding specific measures were observed [7].

Guidance for reducing the risk of COVID-19 transmission has been formulated by national and regional authorities and public health agencies, mainly advising on social distancing measures, hand washing and respiratory hygiene. At the same time, the whole pediatric oncology community reacted to COVID-19 outbreak with different initiatives, such as recommendations for diagnostic and preventive measures, preliminary reports, implementation of hygienic educational programs, written dissemination of other helpful information and useful links, or online medical counseling

of patients and families. Favorably, families of children receiving anti-cancer treatment are usually well trained to comply with the basic hygiene rules (frequent hand washing, use of masks), to avoid crowded places or circumstances at risk of infection, and to clean and disinfect regularly high-touch surfaces around the home.

There was an obvious need to create an open registry and a platform for experience sharing. An international clinical consensus has been published in April 2020 with contribution of leadership of the International Society for Pediatric Oncology (SIOP), Children's Oncology Group (COG), St Jude Global program and Childhood Cancer International [8]. The main aim is to summarize general principles for continuing multidisciplinary care during COVID-19 pandemic, focusing on six most curable cancers that are part of the WHO Global Initiative Childhood Cancer (GICC): acute lymphoblastic leukemia, Burkitt lymphoma, Hodgkin lymphoma, retinoblastoma, Wilms tumor and low-grade glioma. Based on at the time experience, the consensus suggests modifications for adapting pediatric cancer services and treatments in case of the overwhelming by COVID-19 pandemic while protecting medical and support staff. Besides, the report provides advices on preparing for the anticipated recovery period where late diagnoses of childhood malignancies can be assumed either from limited pandemic-related access to healthcare services or parents' fear of infection discouraging them to seek early medical assessment for their children. The main point is that multidisciplinary curative treatments should continue as effectively as possible and with a few modifications as necessary, but deferring elective high-risk therapy may be reasonable for patient's safety. All children with suspected cancer should undergo clinical assessment and full investigations without delay to establish accurate diagnosis and commence treatment.

International Late Effects of Childhood Cancer Guideline Harmonization Group (IGHG) developed a statement to provide guidance to childhood, adolescent and young adult cancer survivors related to risk and additional preventive measures for COVID-19 (ZZ). The last updated IGHG COVID-19 Statement v3.0 from 14 May 2020, provides general information about survivors' potential risk for severe course of COVID-19 and five recommendations for cancer survivors [9].

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In conclusion, the true impact of current COVID-19 outbreak on pediatric oncology patients is unknown. Children with malignancies may be at risk of not receiving necessary anticancer treatment either because limited access to hospitals for the infection spread or because they do not receive normal medical care due to the restrictions for the pandemic. Although COVID-19 in profoundly immunocompromised children with cancer appears to be rare, we should be aware of a higher risk of severe course compared to immunocompetent children. A better understanding of who is at particular risk for severe disease in this vulnerable patient population and how to prevent it can only arise from global platforms and registries.

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