

COVID-19

LITERATURE REPOSITORY

Title: Outcomes of Covid-19 infection in immunocompromised children

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Discussion

In 2019 the world became aware of a new novel coronavirus. Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) has since spread throughout the globe infecting people of all ages. Current data suggests that the rate of infection and severity of disease is lower in the paediatric population (Ludvigsson, 2020). Paediatric SARS-CoV-2 infections account for approximately 2% of cases (Dhochak et al, 2020; Tung et al., 2020). The fatality rate in children is minimal whereas adult case-fatality ranges from 7%-17% and up to 50% in those over 65 years population with an underlying medical condition (Lee et al., 2020). What are the outcomes of SARS-CoV-2 infection in immunocompromised children?

Minotti et al., (2020) described 110 adult and paediatric immunosuppressed patients with COVID-19; 65.5% did not require intensive care and the fatality rate was 20.9% with no paediatric deaths. A study of 15 children with a history of malignancy in Madrid also recorded overall positive outcomes. All patients had mild to moderate disease, two patients required oxygen and there were no fatalities (Lee et al., 2020). Likewise, Melgosa et al., (2020) found no deaths in their review of nine children on immunosuppressive therapy for chronic renal disease. No patients required intensive care admission, and all had recovered at the time of follow up.

Other studies have found variable outcomes. A large multicentre cohort study of 582 European children with COVID-19 included 84 patients that had either a known primary immunodeficiency, malignancy, stem cell transplant, were on immunosuppressive treatment or had chemotherapy within the past 6 months. No patients with primary immunodeficiency needed intensive care unit (ICU) admission; though five patients with malignancy, three on immunosuppressive therapy and two with prior chemotherapy required ICU support. There were four fatalities in total including one patient who had a stem cell transplant 15 months ago. Two of the fatalities had no pre-existing medical condition (Gotzinger et al., 2020). In another study of seven patients with primary immunodeficiency, two patients with agammaglobulinaemia had mild symptoms and a short disease course of up to 3 days, and Five patients with common variable immune deficiency had severe disease and a longer illness of 16-25 days, including one fatality (Quinti et al., 2020).

Conclusions

Due to the small cohorts it is difficult to determine whether an immunocompromised state significantly affects paediatric COVID-19 outcomes, and if so, are there specific immune dysfunctions that predispose to more severe disease. It is likely that most immunocompromised patients do not fare worse than the general paediatric population. As the pandemic continues, this should be further clarified in future studies with larger study populations.

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