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Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) Infection in Children and Adolescents: A Systematic Review

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Abstract

Importance: The current rapid worldwide spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection justifies the global effort to identify effective preventive strategies and optimal medical management. While data are available for adult patients with coronavirus disease 2019 (COVID-19), limited reports have analyzed pediatric patients infected with SARS-CoV-2.

Objective: To evaluate currently reported pediatric cases of SARS-CoV-2 infection.

Evidence review: An extensive search strategy was designed to retrieve all articles published from December 1, 2019, to March 3, 2020, by combining the terms coronavirus and coronavirus infection in several electronic databases (PubMed, Cochrane Library, and CINAHL), and following the Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines. Retrospective cross-sectional and case-control studies, case series and case reports, bulletins, and national reports about the pediatric SARS-CoV-2 infection were included. The risk of bias for eligible observational studies was assessed according to the Strengthening the Reporting of Observational Studies in Epidemiology reporting guideline.

Findings: A total of 815 articles were identified. Eighteen studies with 1065 participants (444 patients were younger than 10 years, and 553 were aged 10 to 19 years) with confirmed SARS-CoV-2 infection were included in the final analysis. All articles reflected research performed in China, except for 1 clinical case in Singapore. Children at any age were mostly reported to have mild respiratory symptoms, namely fever, dry cough, and fatigue, or were asymptomatic. Bronchial thickening and ground-glass opacities were the main radiologic features, and these findings were also reported in asymptomatic patients. Among the included articles, there was only 1 case of severe COVID-19 infection, which occurred in a 13-month-old infant. No deaths were reported in children aged 0 to 9 years. Available data about therapies were limited.

Conclusions and relevance: To our knowledge, this is the first systematic review that assesses and summarizes clinical features and management of children with SARS-CoV-2 infection. The rapid spread of COVID-19 across the globe and the lack of European and US data on pediatric

patients require further epidemiologic and clinical studies to identify possible preventive and therapeutic strategies.

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Salvatore S, Marinoni M, Agosti M.

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