PHENOTYPIC VARIATION IN DISEASE SEVERITY AMONG HOSPITALIZED PEDIATRIC PATIENTS WITH COVID-19: ASSESSING THE IMPACT OF COVID-19 IN THE EPICO STUDY

Melisa Sofía Naranjo Vanegas¹, María Camila Sossa², Mónica Paola Gutiérrez², Natalia Becerra², Luz Yessenia Ortegon², María Camila David², Pablo Vasquez-Hoyos³, María Lucia Mesa-Rubio², Sergio Moreno-Lopez¹, Olga Lucía Baquero Castañeda³, Sonia Restrepo-Gualteros², Clara Galvis⁵, Martha Africano⁶, CINTA MORALEDÁ⁷, ALFREDO TAGARRO⁷, Blanca Herrero⁹, Carlos Grasa⁹, Antoni Soriano-Arandes¹⁰, Andrea Ramirez¹, Luis Miguel Navarro Ramirez¹¹, Gabriela Friedrich¹¹, Alejandro Díaz-Díaz¹², Carlos Alvarez-Moreno¹³, Juan Gabriel Piñeros¹⁴, Luz Marina Mejía¹⁵, Iván Gutierrez-Tobar¹⁶, Andrés Camilo Mesa¹⁷, William Ricardo Bachiller Tuta¹⁸, José Manuel Nieto¹⁹, Paola Marcela Pérez Camacho²⁰, Claudia Beltrán-Arroyave²¹, Rosalba Vivas Trochez²², Irati Gastegi²³, Paula Rodriguez-Molino²⁴, Susana Melendo²⁵, Irene Gómez Pastrana²³, Sonsoles García García²³, Victoria Fumado²⁶, and Lourdes Calleja²⁷

¹Universidad de los Andes Facultad de Medicina
²Hospital Universitario de la Fundación Santa Fe de Bogotá
³Red colaborativa pediátrica de Latinoamérica (LaRed Network
⁴Clínica Infantil Colsubsidio
⁵Hospital Militar Central
⁶Universidad Industrial de Santander Facultad de Ciencias
⁷Hospital Universitario 12 de Octubre Centro de Investigacion Biomedica
⁸Hospital Infantil Universitario Nino Jesus Servicio de Cuidados Intensivos Pediatricos
⁹Hospital Universitario La Paz Hospital Infantil
¹⁰Hospital Universitario Vall D’Hebron
¹¹Universidad de los Andes Facultad de Medicina Santiago, CL
¹²Universidad Nacional de Colombia Facultad de Medicina Bogota, CO
¹³Universidad Nacional de Colombia
¹⁴Hospital Universitario de la Fundacion Santa Fe de Bogota Bogota, CO
¹⁵Instituto de Ortopedia Infantil Roosevelt Bogota, CO 110001
¹⁶Clínica Colsanitas SA Bogota, CO 111176
¹⁷Hospital Infantil San José Bogotá, CO
¹⁸Fundación Universitaria de Ciencias de la Salud Bogota, CO
¹⁹Hospital Regional de la Orinoquía Yopal, CO
²⁰Fundacion Valle del Lili Centro de Investigaciones Clinicas Cali, CO
²¹Universidad de Antioquia, Clínica del Rosario Medellin, CO
²²Clínica SOMA Medellin, CO
²³Hospital Universitario 12 de Octubre Centro de Investigacion Biomedica Madrid, ES
Abstract

Background: SARS-CoV-2 infection has been extensively documented since the onset of the pandemic, particularly in the adult population. However, there is a lack of evidence describing the phenotypic manifestations of the disease in the pediatric population. We aimed to characterize the clinical phenotypes of SARS-CoV-2 infection in hospitalized children. Methods: The EPICO study is a multicenter cohort conducted between April 2020- November 2021, involving 55 institutions in Spain and 13 institutions in Colombia. Hospitalized children aged 29 days to 17 years with confirmed SARS-CoV-2 infection were included to determine the disease’s evolution, severity factors, and outcomes. Cluster analysis was conducted to characterize clinical phenotypes. Results: A total of 2318 patients from Colombian and Spanish institutions were included. The population was 55% male, with infants being the largest group (36%). Five distinct phenotype clusters emerged, differing significantly in clinical and epidemiological characteristics. Cluster 1 (26.57%) consisted of infants without comorbidities, with low PICU admission and mortality rates. Cluster 2 (18.5%) had respiratory comorbidities, high co-detection, and mortality rates. Cluster 3 (11.51%) showed fever, gastrointestinal symptoms, and high PICU admission. Cluster 4 (32.09%) had mild unspecific symptoms and low mortality. Cluster 5 (11.3%) included adolescents without comorbidities, with low co-detection and hospitalization rates. Comparable findings were observed in both countries. Conclusion: Our study successfully identified distinct patterns of clinical and epidemiological characteristics associated with SARS-CoV-2 infection in hospitalized pediatric patients. These findings may help shape future guidelines and improve risk stratification in children.

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