

Review of Pediatric Multisystem Inflammatory Syndrome and Associated Racial Disparities in Health Care

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Multisystem inflammatory syndrome (MIS-C) is a serious inflammatory condition that can develop in children and adolescents in association with coronavirus disease 2019 (COVID-19). Throughout the time of raging COVID-19 spread from February 2020 and onwards similar pediatric and adolescent disease presentations were reported across the European countries: 8 first potential cases in UK in April, 2020 [1] with additional 58 cases published in June, 2020 [2]; Kawasaki disease-like outbreak was reported in Italy [3] and similar cases were described in Spain [4,5], France and Switzerland [6]; The New York State Department of Health (NYSDOH) has alarmed about the condition affecting adolescents and children with 95 confirmed and 4 potential MSI-C cases out of reported 191 by May 10, 2020 in the New York State alone [7], as well as 186 total cases in the multiple different states of America [8] as of May 20, 2020. In total, about 230 suspected cases of new paediatric inflammatory multisystem syndrome temporarily associated with SARS-CoV-2 infection (PIMS-TS) have been reported in EU/EEA countries and the UK in 2020 by European Centre for Disease Prevention and Control in 2020 [9].

Children and adolescents presented with Kawasaki disease-like mucocutaneous, gastrointestinal and hyperinflammatory symptoms causing cardiovascular dysfunction and shock requiring hospitalization at intensive care units, with mechanical ventilation, pressor support and ECMO in some cases, with recovery in most but few tragic deaths associated with complications. COVID-19 infection has not been proven as etiologic factor but linkage is evident with presentation during the span of pandemic, simultaneous description in different countries and most of the patients (70% of the largest USA study [8] and 78% in UK study of 58 patients [2] having either SARS-COV-2 antibodies or positive SARS-COV-2 polymerase chain reaction (PCR) test results. More patients testing positive for SARS-COV-2 antibodies rather than PCR results and time lag of MSI-C case presentations from the peak of COVID-19 infection itself in some countries has raised hypothesis that this could be a post infectious autoimmune mediated enhancement of the disease [2]. Questions remain about why MSI-C and or Kawasaki disease like symptoms have not been reported in China in the origin of COVID-19 infection [10].

Treatment of MSI-C consisted mostly of higher levels of supportive measures, hemodynamic and ventilatory support coupled with immunomodulators like intravenous immunoglobulins, glucocorticoids, interleukin-6 (tocilizumab or siltuximab) and/or interleukin-1RA (anakinra) inhibitors. According to the largest USA study of 186 patients as of May 20, 2020 a total of 70% patients were discharged alive, 28% remained hospitalized and 4 patients have died (2%), 2 of which have had comorbid diagnoses and 3 received ECMO support [8]. 1 out of 8 originally reported patients from UK study has died [1]. 1 fatality was reported in France [9].

Demographic analysis demonstrated 6 out of 8 children in UK series were of Afro-Caribbean origin [1]. In analysis of the New York state data 40% of the patients were black, and 32% of Hispanic origin [7]. COVID-19 infection and pandemic disproportionately affect minorities and those living in poor income areas [11] and survival rate at times might depend on the hospital patient is being treated at [12]. Attention needs to be drawn to these factors and efforts made to intensify awareness and measures of prevention of COVID-19 spread in the most vulnerable population of adolescents and children as well as their parents and other adults from whom children might

acquire disease even during quarantine and at home lockdowns. Described severe life-threatening presentation of children and adolescents linked with still actively raging COVID-19 pandemic emphasizes the need of elimination of previous misconception that children and younger adults are spared of severe and sometimes fatal consequences. Children and adolescents similar to all other age groups should be the ultimate part of preventing and stopping at times asymptomatic spread of COVID-19 with universal mask wearing, maintaining social distancing and protecting their own families as well as the rest of the world.

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