Management of Pediatric Sepsis in the Era of Coronavirus Disease 2019 - Pearls, Perils and Pitfalls

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) presents with either organ dysfunction in children, or as a sepsis and/or respiratory failure or a hyper inflammatory shock syndrome. The numbers and literature on coronavirus disease 2019 (COVID-19) disease caused by the novel SARS-CoV-2 has grown at an unprecedented pace. Thankfully, the disease affects a lesser proportion of children (1.7–2%) of overall worldwide COVID-19 reported cases,[1] however, having said that, the potential for critical illness in children remains. Shekerdemian LS and colleagues in their case series have identified severe critical COVID- 19–related illnesses associated with primary SARS-CoV-2 infection and findings consistent with a phenotype of pediatric sepsis and/or septic shock.[2] Children have presented with a myriad of symptomatology, including severe COVID-19 myocardial dysfunction, pediatric acute respiratory distress syndrome (PARDS), altered mental status, and/or multiple organ dysfunction syndrome[3,4] resembling atypical Kawasaki disease, or a Kawasaki-shock, and/or a toxic shock syndrome. A terminology Pediatric Inflammatory Multisystem Syndrome Temporally associated with Severe acute respiratory syndrome coronavirus 2 infection (PIMS-TS) or Multisystem Inflammatory Syndrome in Children (MIS-C) has been used to define this clinical presentation in children.[3] Since the syndrome shares many features with pediatric sepsis, applicability of the Surviving Sepsis Campaign (SSC) guidelines to manage the same remains an important question. Also, whether organ dysfunctions triggered by severe acute respiratory syndrome coronavirus 2 (SARS-CoV- 2) should be attributed as a phenotype of pediatric sepsis or septic shock yet needs to be answered.

The incidence of non-COVID-19 sepsis continues to rise whilst COVID-19 and PIMS-TS/MIS-C have rightly garnered clinician attention; the increasing cases of non-COVID sepsis can therefore not be overlooked. Furthermore, overwhelmed local resources and fear to seek medical attention with reduced access to vaccinations in the current COVID-19 times adds to further sepsis related morbidity not only globally, but manifold in a resource limited setting like ours.

Prompt recognition of sepsis remains the first step towards management regardless of it being associated or not with COVID-19. The same has been reinforced as part of the Surviving Sepsis Campaign (SSC) International Guidelines for the Management of Septic Shock and Sepsis-associated Organ Dysfunction in Children.[4] The SSC taskforce concludes that care for COVID-19 sepsis should primarily follow management principles of other causes of pediatric sepsis. Weiss *et al*[4] succinctly elaborated and contrasted characteristics of COVID-19 sepsis, PIMS-TS/MIS-C, and non-COVID-19 sepsis. They highlight that hypoxemia and myocardial dysfunction being the commoner of the presentation in children presenting with MIS-C/PIMS- TS warrant earlier recognition and management in patients with COVID-19 sepsis.

The authors emphasize the significance of addressing the non-COVID-19 illness; the management essentials stay the same, regardless. They also encourage to obtaining cultures and start empiric antibiotics until bacterial cultures return negative in patients with suspected COVID-19 sepsis. Having said that, one must remain cognizant on not missing out a treatable co-infection. We suggest seeking consultation with infectious disease team and other specialties to determine the best current approach to management of a child where there may be diagnostic dilemma with regards to COVID-19 caused sepsis or otherwise.

References

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