Concurrent COVID19 pneumonia and systemic inflammatory syndrome in a two-week-old requiring ECMO

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Neonatal COVID: Concurrent COVID-19 pneumonia and systemic inflammatory syndrome in a two week old requiring ECMO

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Objectives
We present a case of a 2-week-old previously healthy preterm, twin, male infant who developed severe COVID-19 pneumonia, subsequent acute respiratory distress syndrome (ARDS), and an inflammatory syndrome requiring VA-ECMO support for 22 days.

Methods
A retrospective chart review was performed. Parental permission for a case report was obtained in compliance with institutional standards.

Clinical History
➢ 2-week-old male presented to an outside emergency department for lethargy and abnormal breathing.
➢ Chest x-ray showed diffuse bilateral non-specific infiltrates (Table 1).
➢ The mother was negative for SARS-CoV-2 at the time of delivery and was unvaccinated. Family denied any sick contacts.
➢ On HD 6 his twin brother was admitted for increased work of breathing, nasal congestion, and apnea. The brother’s SARS-CoV-2 real time polymerase chain reaction (RT-PCR) was positive.
➢ Infant declined precipitously over the next several days ultimately requiring ECMO support.
➢ Chest CT was obtained showing extensive confluent consolidation throughout both lungs, greater on the left, most compatible with pneumonia (Table 2 and 3).

Management
➢ At the time of this case there was paucity of clinical practice guidelines for neonates.
➢ Multiple centers were contacted for additionally opinions including: CHOA, CHOP, SCH, and Neurmors.
➢ Multisystem inflammatory syndrome (MIS) was suspected and we began treatment with several agents (Table 4).
➢ Due to concern for possible stroke we separated the infant from ECMO support as he had improved enough and had adequate oxygenation and ventilation.
➢ He was successfully decannulated on HFOV with vasoactive support, which he required for several more days.
➢ Ultimately, he underwent tracheostomy placement and is undergoing home ventilator trials. His twin never became seriously ill and remained on NC support during his illness.

Conclusions
➢ Infants who develop severe COVID-19 can be successfully managed on ECMO.
➢ Our infant did not classically meet the criteria for MIS-C, but did noticeably begin to improve after initiation of anti-inflammatory agents.
➢ Concurrent MIS-C presents additional management challenges, but use of immunomodulating agents should be considered in infants with severe COVID pneumonia.