Multisystem Inflammatory Syndrome in Children (MIS-C): Special Theme Session at Functional Imaging and Modeling of Heart FIMH 2021

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Title: Cardiac imaging in acute MIS-C – Echo based AI in the detection and early to mid-term follow up

Abstract: Across the globe, millions of people are affected secondary to the Corona Virus (COVID-19) pandemic. Although a higher mortality rate is observed in adults, a recent systematic literature review has shown that children have accounted for ~1% of diagnosed cases with <1% deaths. There is increased pediatric hospitalization in the intensive care units and pediatric wards with fever in association with multiorgan system inflammation. Specifically, there is an observed increase in Kawasaki disease (KD) disease like presentation in association with COVID-19, currently known as Multisystem Inflammatory Syndrome in Children (MIS-C).
Echocardiography (Echo) plays critical role in the early diagnosis, ongoing management and monitoring of this disease course, as does data from clinical finding, serum labs, EKG, Chest X Ray (CXR), MRI. In addition to the classical features of KD, there is increased prevalence of cardiac dysfunction noted in older children with MIS-C.
In order to enhance and accelerate the clinical diagnosis and monitoring of this disease, an AI based supervised learning tool is critical for automated quantification of the volumes, ventricular and valvular function, in addition to monitoring and tracking the coronary artery changes. This may play significant role in the active differentiation of KD shock like syndrome and other cytokine storm syndromes which have relatively similar presentation as a severe MIS-C. Thus, the ultimate goal is to risk stratify and develop AI based predictive models for MIS-C population.