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MIS-C following SARS-CoV-2 infection in children: one year after the onset of the pandemic in a high-incidence area

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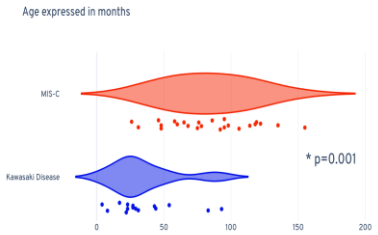
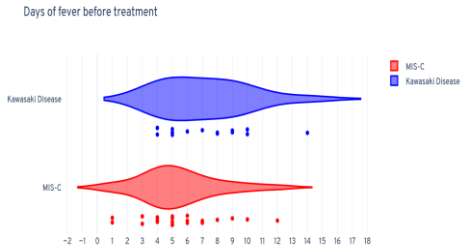
Background.

SARS-CoV-2 infection in children can trigger cardiovascular manifestations potentially requiring an intensive treatment leading to define a new entity named Multisystem Inflammatory Syndrome in Children (MIS-C), partially overlapping with Kawasaki Disease (KD).

Methods.

Cross-sectional study including diagnoses of MIS-C and KD from April 2020 to May 2021 in our Center, retrospectively evaluating clinical, laboratory and cardiological features at onset and during the follow-up.



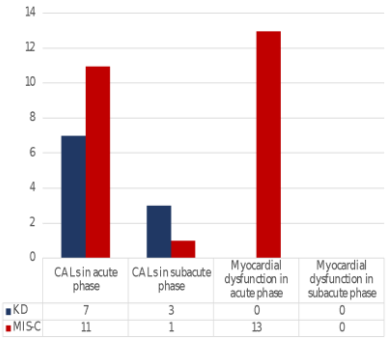


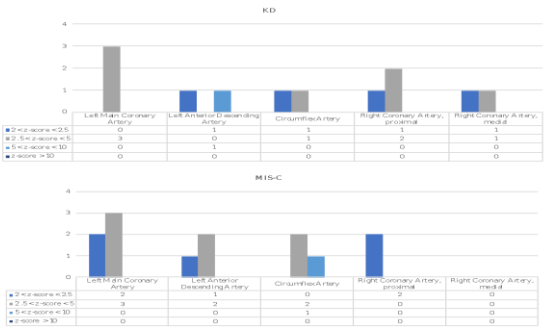
Results.

24 MIS-C were diagnosed (14 boys, median age 82 months): 13/24 cases (54.17%) presented left ventricular dysfunction, 12/24 (50%) required inotropic support, 10/24 (41.67%) developed coronary anomalies (CALs). All patients received steroids and IVIG at a median time of 5 days (IQR1:4, IQR3:6.5) from onset of fever and heart function normalized 6 days (IQR1: 5, IQR3: 7) after therapy, while CALs persisted in 1. One patient (12.5%) required Infliximab because of refractory disease and still presented CALs 18 days after therapy. X pts required ICU admission, inotropic support..

During the same study period, 15 KD were diagnosed: none had ventricular dysfunction, 7/15 (46.67%) developed CALs. 3/15 patients (20%) still presented CALs 46 days from onset.

Compared to KD, MIS-C pts show higher levels of IL-10 and IL-8, who may affect endothelial function and permeability.





Conclusions.

Despite a more severe presentation and cardiac involvement compared to KD, MIS-C have a good response to immunomodulatory treatment, particularly the myocardial injury and CALs, suggesting a different pathogenesis than KD. Cardiovascular involvement in MIS-C is more likely to be due to cytokine storm-induced myocardial stunning and arterial vasoplegia rather than direct cytotoxic injury. Early control of inflammation may limit the disease's severity.