Early prognostic evaluation of coronary artery aneurysm and dilatation in covid-19 and non- covid children

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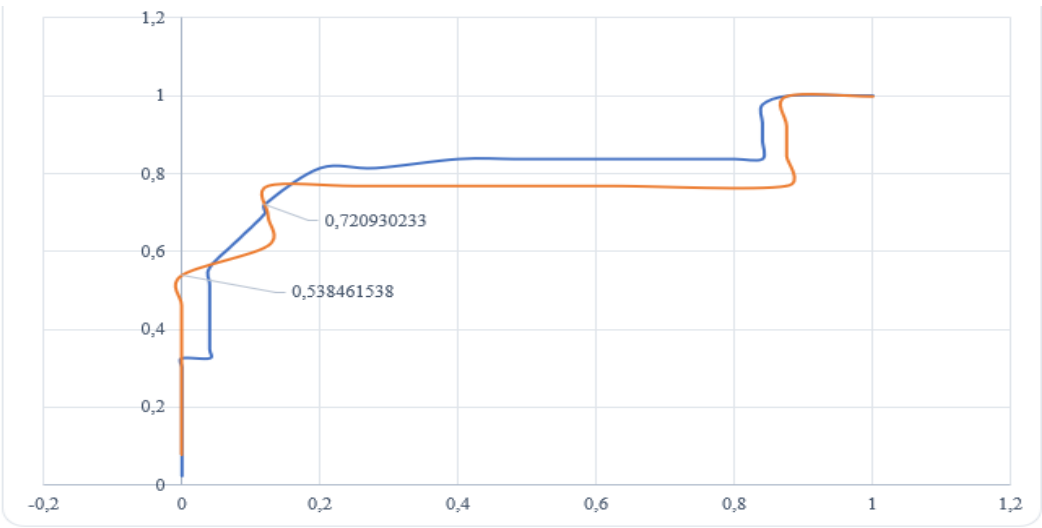
Background: COVID-19 is an infectious disease associated with cardiovascular implications. Although infection with SARS-CoV-2, is usually mild in children, some children later develop a severe inflammatory disease that can have manifestations similar to or Kawasaki disease (KD) with coronary artery dilation or aneurysms have been described. In 2020, the Centers for Disease Control provided a case definition of manifestations for what was ultimately termed multisystem inflammatory syndrome in children (MIS-C) associated with COVID-19 . We aimed to evaluate the risk of coronary artery abnormality development using baseline demographic and laboratory data, including echocardiogram findings in covid children.



ROC curves coronary artery abnormality development related to the baseline z scores (non-covid patients in blue vs covid patients in orange)

Methods: We recruited 89 consecutive children from January 2018 to January 2022 (mean age 2 years) M/F = 1.5 non-covid (68) with KD and covid (21) who had diagnostic criteria for KD or MISC, both received standard IVIg treatment in our pediatric cardiology unit. The following variables were assessed in the risk model: demographic factors, including age, sex, race, ethnicity, and clinical factors; and baseline laboratory studies including white blood cell count (WBC), hemoglobin, hematocrit, platelets, C-reactive protein (CRP). The baseline maximum z score of the proximal right coronary artery and the proximal left anterior descending artery was measured, and coronary artery abnormality was defined as a z score of the coronary artery internal diameter of 2.5 or more. We selected those that correlated with the onset and three-month z scores. We used ROC curves to evaluate the predictive value of these parameters and their specific weight on CAA risk at three months.

Conclusion: Patients with covid have mean values of CRP, and WBC slightly higher but for them, they have the same risk of persistence of CAA compared to the noncovid population. The onset of the disease at about one year of life appears to be related to a higher risk index for CAA.