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# Massive pericardial effusion in a 9-year-old female with covid-19 associated multisystem inflammatory syndrome in children (mis-c): A case report

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Coronavirus disease 2019 (COVID- 19) is a global pandemic that has had a catastrophic effect on the human population with approximately 20% experiencing severe or critical disease. In general, children have an overall milder clinical course and more favorable outcome compared to adults. However, a growing number of countries have been describing cases of a systemic hyper inflammatory condition defined as multi-system inflammatory syndrome in children (MIS-C). The purpose of this case report is to describe a severe complication of MIS-C on the cardiovascular system and provide clinical considerations on cardiac evaluation and follow-up on pediatric patients affected with COVID-19.

This is a case of a previously healthy 9-year old female, who tested positive for SARS-CoV-2 two weeks prior and presented with pericardial effusion, pleural effusion and ascites in the setting of fever, cough, diarrhea and edema. The inflammatory response involving the cardiovascular, pulmonary and gastrointestinal systems and the elevated inflammatory markers support the diagnosis of MIS-C. IV-gamma globulin, Methylprednisolone, and Aspirin were started. However, 2d echocardiography showed progression of pericardial effusion, with evidence of right atrial and ventricular wall collapse, on the verge of Cardiac tamponade. Hence patient was referred to Interventional Pediatric Cardiologist who did Emergency pericardiostomy tube insertion.

Variable degrees of cardiac involvements during and after COVID-19 infection have been reported in recent literature. Pericardial effusion has been identified as one of the more common cardiovascular complications in MIS-C. In a study by Val Verde et al., out of the 249 MIS-C patients who underwent echocardiography, pericardial effusion was detected in 51 patients, composing of 45 mild and 6 moderate cases, but no severe cases. Likewise, in the study of Cantarutti et al., 42 patients showed pericardial involvement, representing 50% of all patients and 66% of MIS-C. In the Philippines, the case series of Blasurca et al. identified cardiac dysfunction among reported MIS-C cases. This included pericarditis, pericardial effusion and valvular regurgitation. Data about the spectrum of cardiac presentation of COVID-19 infection in children is limited and frequency of severe pericardial effusion requiring drainage is still unknown. Raymond et al. described one similar case of a 7-year-old female who fulfilled the criteria of MIS-C and presented as acute pericardial tamponade, needing surgical pericardial decortication and pericardiectomy. In the Philippines, this will be the 1st reported case of MIS-C presenting with edema, ascites, pleural effusion and massive pericardial effusion requiring emergency pericardiostomy tube insertion.

This case report involves a child with no underlying cardiac disease who developed massive pericardial effusion as a complication of COVID-19 associated MIS-C, requiring pericardiostomy tube insertion. This was necessary to prevent cardiac tamponade, which is a medical emergency. As knowledge about novel manifestations of COVID-19 in children is evolving, reporting is necessary to better equip clinicians in recognizing the spectrum of symptoms of MIS-C, which is imperative for timely initiation of appropriate management.