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Intracardiac Thrombi as a New Variant Cardiovascular Injury in a Previously Healthy COVID-19 Child: Case Report and Follow Up

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Abstract: However, with the onset of the second COVID-19 pandemic wave, single cases of acute thrombotic complications in previously healthy children began to appear. Here we describe the patient with COVID-19 time related acute intracardiac thrombus in a previously healthy 6 year old girl. The treatment according to the national pediatric protocol, included low-molecular weight heparin infusion, high-dose aspirin, methylprednisolone, and intravenous immunoglobulin was lead to dissolving without cardiac surgery. A follow up after 12 months from discharge demonstrated: physical exam, ECG, echocardiography are all normal. Our case presentation shows, that all health care providers must be informed about the full range of complications and even a mild onset of COVID-19 in children.

Keywords: Intracardiac thrombi, COVID-19, Children

Introduction

Pediatric multisystem inflammatory syndrome is the most well-known variant of cardiovascular involvement (CVI) COVID-19 in children with an estimated incidence of approximately 0.2%-0.6% among pediatric SARS-CoV-2 infections. Along with this, myocarditis, pulmonary hypertension and cardiac arrythmias have reported as types of heart injury. However, with the onset of the second pandemic wave, single cases of acute thrombotic complications in previously healthy children began to appear.

Method

Here we describe the patient with COVID-19 time related acute intracardiac thrombus.

Results and Discussion

A previously healthy 6-year old girl of Caucasian ethnicity, admitted to the Cardiology Department of a Pediatric Hospital with a fever (40,0ºC), tachycardia (PR 135), and severe headache two weeks after SARS-CoV-2 PCR positive acute respiratory infection. Past medical history of the patient revealed no evidence of heart disease or coagulopathy. On the day of admission, ECG-sinus tachycardia, echocardiography showed LVEF of 67%, mild RA enlargement and homogenus mass in RA 1,68x1,68x1,9 sm large. MRT confirmed right atrial thrombus without flotation (Figure 1).

The treatment according to the national pediatric protocol, included low-molecular weight heparin infusion, high-dose aspirin, methylprednisolone, and intravenous immunoglobulin was started. With treatment, her condition improved and the thrombus started dissolving without cardiac surgery. The patient was discharged

from the hospital with a recommendation of long-term anticoagulant therapy with apixaban. After one month a follow up showed: hetrogenous masses reduced 1,3x0,74 sm large (Figure 2).

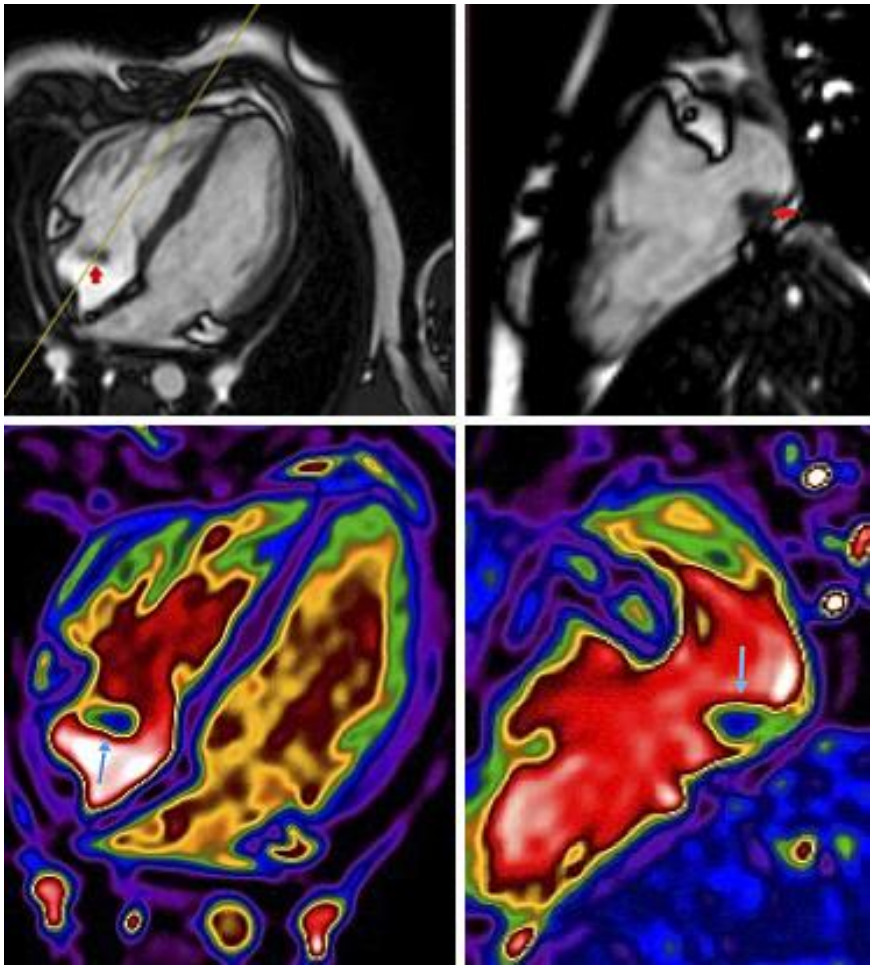

Figure 1. MRI showing the inmobile thrombus attached to the anterior right atrium wall

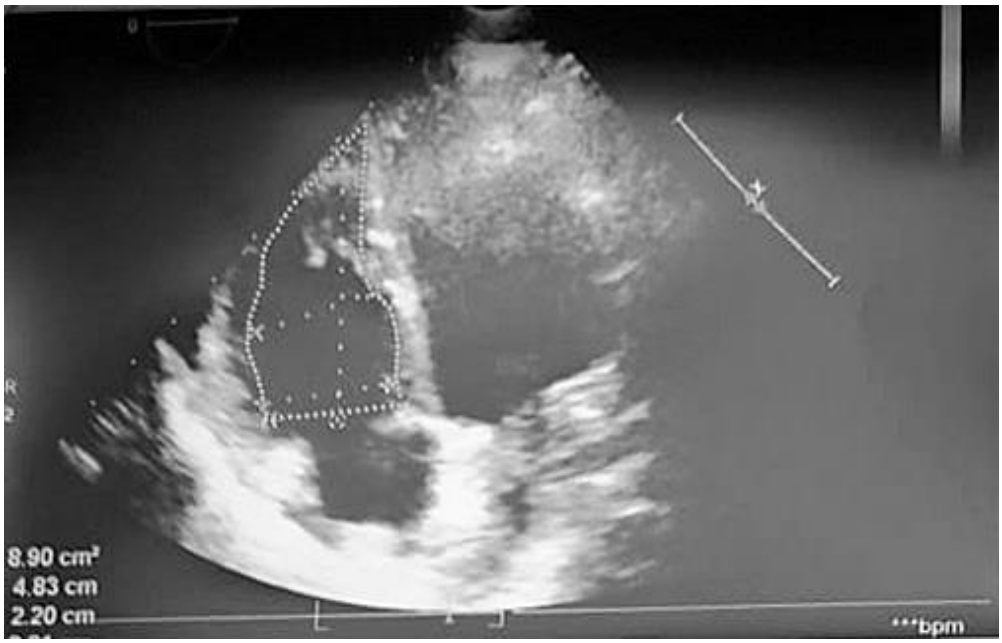

Figure 2. Echocardiography 1 month follow up had showing the size and density echogenic mass reduction

The three month follow up showed: no intracardiac echogenic mass visualized on transthoracic echocardiography. A follow up after 12 months from discharge demonstrated: physical exam, ECG, echocardiography are all normal (Table 1).

Table 1. Biomarkers regarding inflammation, coagulation, and cardiac injury

	Day 1	Day10	1 Month	3 Month
WCC (×109)	7.2	14.0	7.1	5.9
Lymphocytes (×109)	4.3	10.0	15.9	20,0
Hemoglobin (g/L)	97	115	126	127
Platelets (×109)	680	497	206	223
Fibrinogen (g/L)	N/A	3.0	N/A	N/A
D-dimers (ng/mL)	N/A	166.4	0,55	N/A
INR (ratio)	1.3	1.0	1.23	N/A
APTT (sec)	45.0	24.2	15.9	N/A
Pro-BNP (ng/L)	120,1	22,7	2,2	N/A
Troponin T (ng/L)	N/A	249	N/A	N/A
CRP (mg/L)	265	75.3	3,2	2
Procalcitonin (μg/L)	<100	<100	N/A	N/A

Conclusion

SARS-CoV-2 pathogenetic mechanisms in are still to be researched and the risk factors of CVI in children are unknown. Our case presentation clearly shows, that all health care providers must be informed about the full range of complications and even a mild onset of COVID-19 in children. Acute thrombotic complications, are probably, completely reversible conditions in previously healthy children. The systematic follow-up of pediatric COVID-19 patients, prospective cohort studies, ideally, prospective randomized controlled trials can aid us in our ability to stratify the risk and find potential therapeutic approaches.

Scientific Ethics Declaration

The author declares that the scientific ethical and legal responsibility of this article published in EPHELS journal belongs to the author.

Acknowledgements or Notes

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