

Case Report

Paroxysmal Supraventricular Tachycardia in a Neonate With COVID-19: A Case Report

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ABSTRACT

COVID-19 is an infectious disease caused by SARS-CoV-2 that has significant potential cardiovascular implications for patients. Here, we describe a patient referred to Namazi Hospital, Shiraz, Iran, whose COVID-19 polymerase chain reaction test result was positive and developed paroxysmal supraventricular tachycardia. (*Iranian Heart Journal 2023; 24(1): 104-107*)

KEYWORDS: COVID-19, PSVT, Neonate

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COVID-19 is a new infectious disease caused by the latest known virus in the Corona family.¹ On January 30, 2020, the WHO declared the New Coronavirus-2019 epidemic a public health emergency of global concern.² The disease is often characterized as viral pneumonia with symptoms such as fever, shortness of breath, and coughs. However, unusual pulmonary manifestations, such as gastrointestinal, neurological, and cardiovascular involvement, as well as thromboembolic events, have been reported among COVID-19 patients.³ In the epidemic of infectious diseases, special attention should be paid to newborns because infants with infections may be asymptomatic and present with mild or severe symptoms.⁴ Manifestations of COVID-19 in infants are often unusual and gradual.⁵ The presence of tachypnea, apnea, and coughs is essential to identifying the infection in adults; nonetheless, in infants,

these symptoms may not be a specialized sign of the disease.⁶

Here, we describe a patient referred to Namazi Hospital, Shiraz, Iran, whose COVID-19 polymerase chain reaction (PCR) test result was positive and developed supraventricular tachycardia.

Case Report

The patient was an 11-day-old baby boy born via Cesarean section due to fetal stress. He was 3700 g in weight and 50 cm in height and had a head circumference of 35 cm. His gestational age was 36 weeks and 4 days, and he was born with an Apgar score of 9 to 10.

The patient was hospitalized for 5 days at birth with a diagnosis of transient tachypnea of the newborn. He was referred to Namazi Hospital in Shiraz due to tachycardia in the outpatient follow-up. His vital signs at the onset were as follows: heart rate of 300 beats per minute, respiratory rate of 55

breaths per minute, body temperature of 36.8 °C, and blood pressure of 87/40 mm Hg. The patient was monitored immediately, and an electrocardiogram was requested. Paroxysmal supraventricular tachycardia (PSVT) was evident. After the administration of 3 doses of adenosine, the boy's heart rate reached 160 beats per minute, and flecainide was started for the patient (Fig. 1). Echocardiography revealed mild left ventricular hypertrophy, trivial pulmonary regurgitation, and trivial tricuspid regurgitation. The boy's parents mentioned only the possible infection of the

patient's grandmother with COVID-19, so the baby was isolated. Subsequently, a COVID-19 PCR test was done, and the result was positive.

The patient underwent sepsis workup from the beginning, and antibiotics were started (Fig. 2). He was still feverish 48 hours after cardiac stabilization when his sepsis workup was complete. The boy underwent LP, and due to the positive outcome of his antibiotic LP, the dose of meningitis was changed. The patient was discharged with oral Inderal after receiving a full course of antibiotics for meningitis.

Table 1: Laboratory data of the patients

Lab Data	On Admission	1 Week After Admission	2 Weeks After Admission
WBC, /mm ³	7700	7200	13800
Hb, gm/dL	13.6	13.3	13.6
MCV, fL	105/2	104/4	95.3
Platelet, /mm ³	420000	273000	341000
Blood sugar, mg/dL	169		
BUN, mg/dL	9	6	7
Cr, mg/dL	0.05	0.63	0.31
Na, mEq/L	136	140	134
K, mEq/L	4.9	6.3	5.2
AST, IU/L		46	
ALT, IU/L		6	
CRP, mg/L	1	26	16
Ferritin, ng/mL		> 2000.0	
CPK, IU/L		40	
LDH, IU/L		1230	
D-dimer		3245	
Troponin I rapid test		60	
Fibrinogen		372	
Fluid type		CSF (mg/dL)	
	Total cell	15000	
	WBC count	60	
	Lymph	30	
	PMN	30	
	Glucose	44	
	PRO	34	
Blood culture	Negative	Negative	Negative
PCR COVID	Positive	Negative	Positive

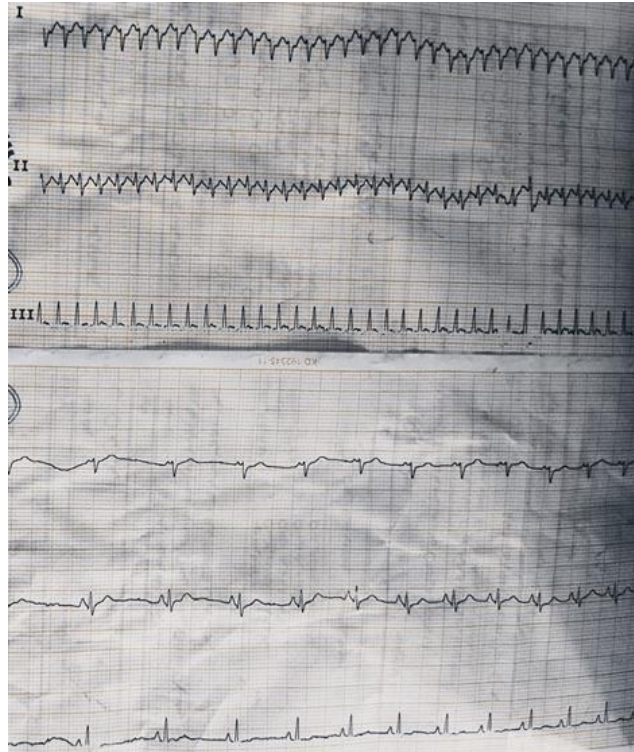


Figure 1: The image shows the patient's electrocardiogram before and after receiving 3 doses of adenosine.

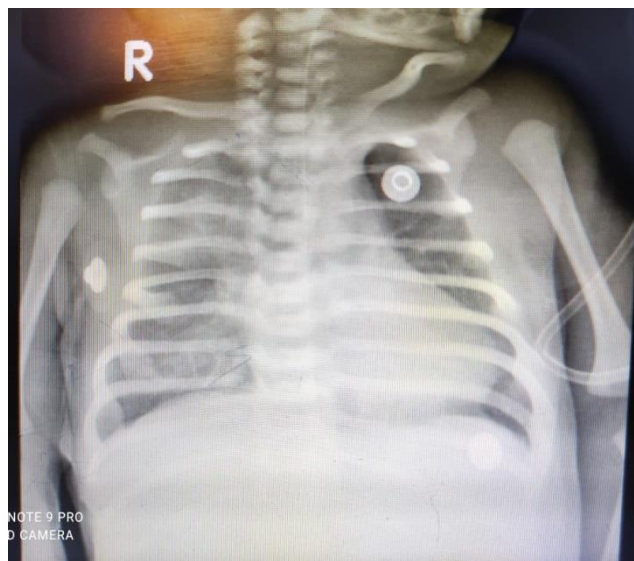


Figure 2: The image presents the patient's chest X-ray.

DISCUSSION

PSVT is a common arrhythmia primarily caused by the reentry dysfunction of the atrium and atrioventricular junction.⁷ PSVT typically causes heart rates in excess of 150

beats per minute with a regular and narrow QRS complex.⁸

Scientific reports have documented relevant associations between COVID-19 infection and cardiac arrhythmias, with palpitations or

documented arrhythmias occurring in 7% to 17% of patients with COVID-19.⁹

Few studies have reported PSVT in patients with COVID-19, especially in neonates. So far, no report of this arrhythmia has been published in infants with COVID-19, and only limited reports regarding the incidence of this arrhythmia in adults are available.

Gulia et al¹⁰ evaluated cardiac complications in patients undergoing COVID-19 treatment and reported that only 45 patients had invasive supraventricular tachycardias. Han et al¹¹ found no case of atrial arrhythmias in patients with severe COVID-19.

Although respiratory symptoms are the most obvious clinical sign of COVID-19 infection, serious cardiovascular damage, such as arrhythmia, is also a complication of the virus. Early detection can reduce morbidity and mortality.

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