

# Postoperative COVID-19 Infection After Pediatric Cardiac Surgery: Two Cases

## Pediyatrik Kalp Cerrahisi Sonrası Postoperatif COVID-19 Enfeksiyonu: İki Olgu

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**Conflict of Interest:** The authors declare no potential conflicts of interest.

**Funding:** The authors received no financial support for the research and/or authorship of this article.

**Informed Consent:** Informed consent was obtained from the patients.

**Çıkar Çatışması:** Yazarlar hiçbir potansiyel çıkar çatışması açıklamamışlardır.

**Finansal Destek:** Yazarlar, bu makalenin araştırması ve/veya yazarlığı için hiçbir mali destek almadılar.

**Hasta Onamı:** Hastalardan aydınlatılmış onam alınmıştır.

**Cite as:** Savluk ÖF, Yavuz Y, Cine N, Yılmaz AA, Türkmen Karaağaç AT, Işık ME, Ceyran H. Postoperative COVID-19 infection after pediatric cardiac surgery: Two cases. GKDA Derg. 2021;27(1):103-6.

### ABSTRACT

*Pneumonia caused by the new type of coronavirus identified as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) was first seen in Wuhan, and it spread rapidly to other countries due to transition from person to person and its high rate of transmission. Later, this outbreak was identified as COVID-19 by the World Health Organization (WHO). COVID-19 is mostly a mild or moderate disease in children. Here we presented two pediatric COVID-19 cases with symptoms developed after cardiac surgery.*

**Keywords:** COVID-19, pediatric patients, cardiac surgery, Tetralogy of Fallot, atrial septal defect

### Öz

*Şiddetli akut solunum sendromu koronavirüs-2 (SARS-CoV-2) olarak tanımlanan yeni tip korona virüsün neden olduğu pnömoni ilk olarak Wuhan'da görüldü ve kişiden kişiye geçiş ve yüksek bulaşma oranı nedeni ile hızla diğer ülkelere yayıldı. Daha sonra bu salgın Dünya Sağlık Örgütü (DSÖ) tarafından COVID-19 olarak tanımlandı. COVID-19, çocuklarda çoğunlukla hafif ve orta dereceli şiddette seyreden bir hastalıktır. Burada kalp cerrahisi sonrası semptomları olan iki pediyatrik COVID-19 vakasını sunduk.*

**Anahtar kelimeler:** COVID-19, pediyatrik hastalar, kardiyak cerrahi, Fallot Tetralojisi, atriyal septal defekt

Received/Geliş: 27.12.2020

Accepted/Kabul: 06.01.2021

Published Online/Online yayın: 23.03.2021

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## INTRODUCTION

Pneumonia caused by the new type of coronavirus identified as severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) was first seen in Wuhan, China in early December 2019. With the onset of the epidemic, it spread rapidly to other countries due to transition from person to person and its high rate of transmission. Later, this outbreak was identified as COVID-19 by the World Health Organization (WHO) and declared as a pandemic on March 11, 2020 [1].

The first confirmed pediatric case of (SARS)-CoV-2 infection was reported in Shenzhen on 20th January, 2020 [2]. However, many pediatric cases and case series were reported [3]. COVID-19 is mostly a mild or moderate disease in children. The lack of pediatric cases results in difficulty in making a clinical diagnosis in children [4]. The milder pattern of disease in pediatric patients could be an extraordinary solution to the pathogenesis and treatment of the disease [5].

Here we presented two pediatric COVID-19 cases with symptoms developed after cardiac surgery.

## CASE REPORTS

**Case 1:** A 3-year-old girl with Tetralogy of Fallot. Before hospital admission, patient was screened for COVID-19 using nasopharyngeal swab. The patient was operated after swab result was reported as negative. She received corrective surgery with a transannular patch. Patient's cardiovascular system examination was normal after operation. Perioperative echocardiography revealed adequate correction. After an uneventful postoperative course,

patient was successfully extubated on the postoperative (PO) first day and supported with high-flow nasal cannula oxygen therapy in intensive care unit.  $FiO_2$  30% and 3 lt.

On postoperative third day in intensive care unit, she experienced hypoxia and dyspnea with fever. Her body temperature was 37,8°C and the patient had hypoxemia with oxygen saturation levels of 85%-

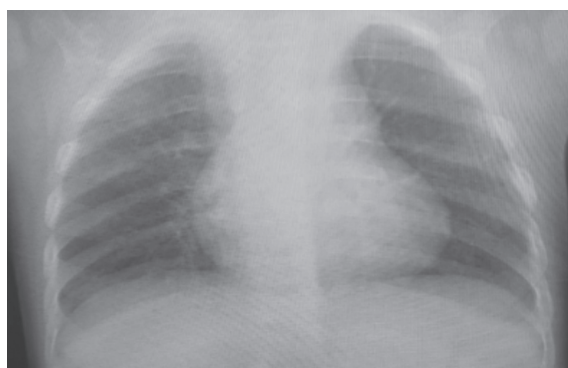


Figure 1. Preoperative chest X-ray of Case 1.

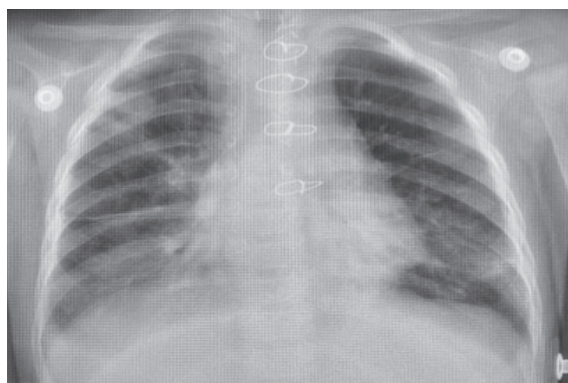


Figure 2. Chest X-ray of case 1 (COVID-19+).

Table 1. Laboratory test results of case 1 during COVID-19.

	Day 1	Day 4	Day 10	Day 14
WBC ( $10^3/\mu\text{L}$ )	14,5	10,6	8,3	6,9
Lymphocyte (%)	12	22	32	41
Neutrophil (%)	81	74	63	53
Platelet ( $10^3/\mu\text{L}$ )	81.000	161.000	232.000	298.000
CRP (mg/L)	18	11,4	6,2	3,1
ALT (U/L)	22	20	21	23
AST (U/L)	42	38	39	36
LDH (U/L)	966	712	423	316
Blood cultures	Negative	None	None	Negative
Nasopharyngeal swab	+	+	+	-

90%. Then, high flow oxygen support was increased to FiO<sub>2</sub> 80% and 8 lt. The patient was isolated and nasopharyngeal swab was analyzed for COVID-19. The result was positive. Chest radiography was abnormal with air-space shadowing and subpleural ground glass opacities (Figure 2). Laboratory tests showed an elevated white blood cell (WBC) and neutrophil counts, decreased lymphocyte and platelet counts, increased C reactive protein (CRP) and lactate dehydrogenase (LDH) levels. Alanine aminotransferase (ALT) and aspartate transaminase (AST) and troponin T levels were normal (Table 1). Electrocardiography (ECG) and echocardiography (ECHO) evaluations were normal.

Patient received an antibiotic regimen consisting teikoplanin and meropenem along with dexamethasone, vitamine C, vitamine D, enoxaparin and acetaminophen (if necessary). After 48 hours, the general condition of the patient improved. Fever, tachypnea and intercostal retraction subsided gradually.

High-flow support was tapered gradually. Repeated examination of nasopharyngeal swabs yielded negative results at 14<sup>th</sup> day, and she was discharged with complete recovery.

**Case 2:** An 11-year-old boy with atrial septal defect. Before hospital admission, patient was screened for COVID-19 with nasopharyngeal swab. After confirmation of a negative result, patient was operated. He received a pericardial patch closure. Patient was extubated after an uneventful postoperative course. He was supported with oxygen mask. Patient's father was tested for COVID-19 before patient was discharged from intensive care unit. Due to father's positive test result, the patient was retested and the test result revealed positive for Covid 19. Patient was isolated. He did not show any relevant clinical signs or symptoms. Electrocardiography (ECG) and echocardiography (ECHO) evaluations were normal. He received oxygen support with mask. Oxygen saturation levels were around 98-100 percent. Chest

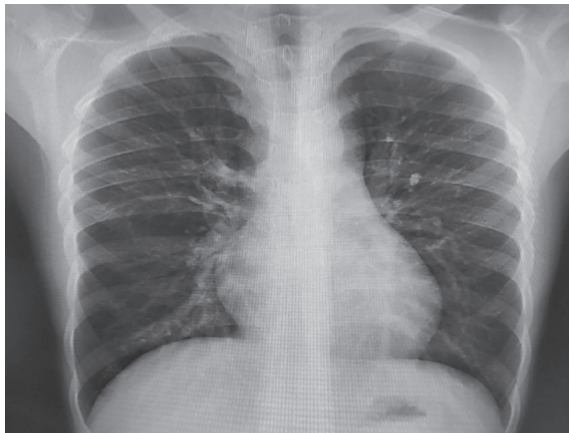


Figure 3. Preoperative chest X-ray of case 2.

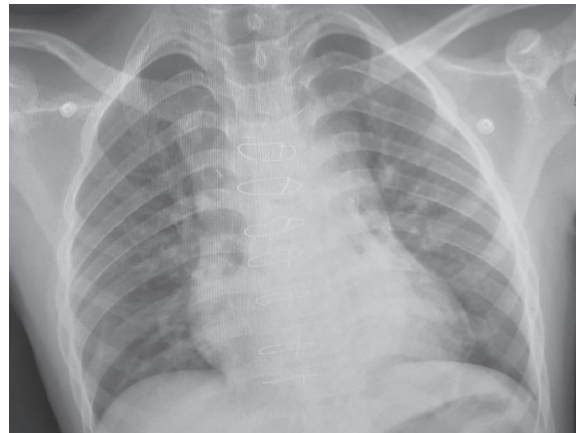


Figure 4. Chest X-ray of case 2 (COVID-19+).

Table 2. Laboratory test results of case 2 during COVID-19.

	Day 1	Day 4	Day 8	Day 11
WBC (10 <sup>3</sup> /μL)	11,6	8,5	8,1	9,1
Lymphocyte (%)	19	25	24	27
Neutrophil (%)	67	58	63	53
Platelet (10 <sup>3</sup> /μL)	276.000	290.000	278.000	320.000
CRP (mg/L)	6,1	4,8	4,2	3,1
ALT (U/L)	12	11	9	10
AST (U/L)	20	18	15	19
LDH (U/L)	263	256	250	206
Blood cultures	Negative	None	None	None
Nasopharingeal swab	+	+	+	-

radiography (Figure 4) and laboratory tests were normal (Table 2). Patient received oral antibiotherapy with sefazolin along with vitamins C and D, and enoxaparin. A nasopharyngeal swab analyzed via PCR was negative at 11. day and he was discharged with a complete recovery.

## DISCUSSION

Our experience with these patients showed that COVID-19 could affect children. Highly occult COVID-19 disease has a rapid transmission. Children and teenagers infected with COVID-19 have mild clinical symptoms however, rarely they might have severe or critical symptoms. Mild-stage patients have mild clinical symptoms and no pneumonia on imaging [6]. Although COVID-19 seems to have a mild course in the pediatric age group, it may show severe clinical symptoms in children with chronic diseases, malignancy or immunosuppression. Since a significant portion of severe cases are reported in infants, careful monitoring of this age group is important. With an approach as in adult patients, pediatric patients need supportive care with special focus on the respiratory management [7].

Providing qualified care based on current and evidence- based information for pediatric patients with

COVID-19 in intensive care units is very important for keeping children alive.

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