

# Is Coronavirus One of the New Etiologies of Facial Nerve Paralysis? A Case Report Study

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## Abstract

Coronaviruses are important pathogens in humans and animals. Two years ago, a new coronavirus was identified as the cause of pneumonia and adult respiratory distress syndrome. These viruses have many clinical features, and new features are created daily. Bell's palsy is sporadic facial nerve palsy. The main reason of Bell's palsy is not recognized. Many viruses, such as herpes simplex or herpes zoster, have been previously identified as Bell's palsy. This case report seeks to explain the occurrence of Bell's palsy in a patient infected with coronavirus. The polymerase chain reaction test of a 60-year-old woman was positive for SARS-CoV-2. Bell's palsy happened on the 2<sup>nd</sup> day of admission to intensive care unit and recovered by the 12<sup>th</sup> day. After ruling out other etiologies of Bell's palsy, coronavirus appears to be one of the new etiologies of Bell's palsy.

**Keywords:** COVID-19, facial nerve paralysis, herpes simplex

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## INTRODUCTION

Coronavirus is an important human virus. A new version of the virus is rapidly spreading as an acute respiratory illness, so the epidemic that caused COVID-19 is known as an acute coronavirus-2 acute respiratory syndrome (SARS-CoV-2).<sup>[1,2]</sup> After this pandemic, multiple clinical presentations were related to this virus. Facial nerve palsy is one of these presentations. Bell's palsy or idiopathic facial nerve palsy is the most common cause of acute spontaneous peripheral facial paralysis.<sup>[1]</sup> Although the etiology of Bell's palsy remains unknown in most cases, there are some common causes such as herpes simplex, herpes zoster, diabetes mellitus, and pregnancy.<sup>[1]</sup> Perhaps, one of the new causes of idiopathic facial nerve palsy is the coronavirus. There is not enough information on this problem in our country. We want to report this case to start new studying about this disease.

## CASE REPORT

A 60-year-old female is a documented SARS-CoV-2 by positive polymerase chain reaction test, and pulmonary involvement was admitted to Sina Hospital in Hamadan City. She was admitted on June 21, 2021. She had no previous medical history based on her history. She was awake and alert. She knew about her problem and was oriented to time, place, and person. She had only one injection of Botox for cosmetic reasons on her forehead. For 6 months, there was no problem with the injection.

On the 2<sup>nd</sup> day of admission, she was moved to intensive critical care. On the 2<sup>nd</sup> intensive care unit day, she complained of ptosis of the right eye [Figures 1 and 2]. All other neurological examinations were normal. The pupils were normal size and reactive. The force and tonicity of the four limbs were normal. Babinski's test of both feet was normal. Deep tendon reflexes were normal.

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We consulted a neurologist. She ordered a brain computed tomography (CT) scan. The brain CT was normal. Laboratory data are presented in Table 1. The neurologist was started tablet acyclovir 200 mg every 8 h for 5 days. Ophthalmic oint for preventing eye dryness and physiotherapy of muscles at the right side of the face.

After the replacement of right femoral central vein catheter, on the 4<sup>th</sup> day, deep vein thrombosis occurred. Anticoagulant as a prophylaxis dose was started on the 1<sup>st</sup> day and had continued as a therapeutic dose. Lung CT angiography was performed to rule out pulmonary thromboembolism. There was no evidence of pulmonary thromboembolism. The hematoma of the right thigh happened, and the hemoglobin decreased. All the drugs and laboratory data are seen in Table 1. Muscle physiotherapy was continuing. On the 10<sup>th</sup> day, ptosis is completely recovered. Brain magnetic resonance imaging (MRI) was done, and no evidence of occupying lesion or nerve entrapment was seen. Acetylcholine receptor antibody was checked. It was 0.1 that was less than the positive average, and the patient was discharged and followed 1 week later. She had no new problem.

## DISCUSSION

Bell's palsy is a condition that causes a temporary weakness or paralysis of the muscles in the face. The exact reason is not recognized yet. We want to say coronavirus and COVID-19

may be one of the new reasons for Bell's palsy. In the past studies, herpes simplex and herpes zoster and intranasal influenza vaccines were called reasons.<sup>[1,3]</sup> In new articles, the higher rate of Bell's palsy in vaccinated persons for COVID-19 is higher than unvaccinated people.<sup>[1,4]</sup> However, the patients involved in coronavirus are not recognized yet. In this article, we ruled out other reasons for idiopathic Bell's palsy. Brain MRI was normal. Acetylcholine receptor antibody ruled out herpes simplex. The absence of vesicles ruled out herpes zoster. The patient was not pregnant and did not recognize as a diabetic patient. The patient was the definite case of SARS-CoV-2, and Bell's palsy happened after her positive test. Other possible reasons were excluded. This case report is a new window to explain the efficacy of coronavirus on nerve involvement, especially on the sporadic facial nerve palsy.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

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Nil.



Figure 1: Eyes of patient in first day happening of Bell's palsy



Figure 2: Eyes of patient in first day happening of Bell's palsy (other position)

Table 1: Laboratory data divided of days admitted to hospital and intensive care unit															
Laboratory tests	HB	HCT	BUN	Cr	ALB	SGOT	SGPT	Na	K	INR	LDH	BS	Ca	Mg	Acetylcholine receptor Ab
Day 1	12.6	39.2	10	1.12		56	45	137	4.5	1	864	159			
ICU day 1	13.1	40.8	18	1				141	4.1	1.2		144			
ICU day 2	13	41	16	0.8		109	113	139	4.4	1.2		168			
ICU day 3	9.5	30	22	0.7				140	3.9	1		132			
ICU day 5	10.9	34.8	20	0.6	3.48	53	121	138	4.4	1		159	7	3.53	
ICU day 8	10.5	34	18	0.6				139	4.4	1		161			
ICU day 10															0.1

HB: Hemoglobin, HCT: Hematocrit, BUN: Blood urea nitrogen, ALB: Albumin, SGOT: Serum glutamic oxaloacetic transaminase, SGPT: Serum glutamic oxaloacetic transaminase, Na: Sodium, K: Potassium, INR: International normalized ratio stands for a way of standardizing the result of prothrombin time tests, LDH: Lactate dehydrogenase, BS: Blood sugar, Ca: Calcium, Mg: Magnesium, Ab: Antibody, ICU: Intensive care unit

### **Conflicts of interest**

There are no conflicts of interest.

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