

**BELL'S PALSY IN A CHILD WITH COVID 19- CASE REPORT****<sup>1</sup>\*Gayathri S., <sup>2</sup>Sajitha S., <sup>3</sup>Devika G., <sup>4</sup>Rinsy P. V., <sup>5</sup>Vinayan K. P. and <sup>6</sup>C. Jayakumar**<sup>1</sup>Senior Resident, Department of Pediatrics.<sup>2</sup>Clinical Professor, Department of Pediatrics.<sup>3</sup>Senior Resident, Department of Pediatrics.<sup>4</sup>Senior Resident, Department of Pediatrics.<sup>5</sup>HOD and Professor of Pediatric Neurology.<sup>6</sup>HOD and Professor of Department of Pediatrics.

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**ABSTRACT**

Bell's palsy is a common cranial neuropathy causing acute unilateral lower motor neuron facial paralysis. It is often due to or associated with various viral infections. There are very few rare case reports in adults of COVID 19 infection (caused by Severe Acute Respiratory Syndrome Corona Virus 2) causing Bell's Palsy. We report a case of a child diagnosed with COVID-19 infection after presenting as isolated peripheral facial palsy.

**KEYWORDS:** Bell's palsy, facial palsy, COVID-19, SARS-CoV-2.**INTRODUCTION**

Bell's palsy is defined as an acute-onset peripheral facial neuropathy, usually resulting from infective, inflammatory, traumatic, compressive or metabolic abnormalities.<sup>[1,2]</sup> This was first described by Dr. Charles Bell in 1821. The incidence of Bell's palsy is 15–25 per 100000 people including adults per year.<sup>[3]</sup> This affects males and females equally and can occur in all ages with a slightly higher incidence in mid and later life. This condition is usually self limiting and has spontaneous recovery in few weeks to months. Minoroty of cases can result in long term sequale. Though the etiology and pathogenesis of Bell's palsy is mostly unknown, certain cases are preceded by viral infections mainly herpes simplex, rubeola, rubella, mumps, reovirus, varicella zoster, poliovirus, Epstein Barr virus and influenza.<sup>[4]</sup>

There are few case reports among adults and children from Western countries regarding SARS CoV-2infection and Bells Palsy. There are no reported cases in children from India .We report a male child presenting with acute onset Bell's Palsy in the setting of SARS-CoV-2 infection.

**CASE**

3 year 11 month old male child born as first child of non consanguineous marriage with multitrigger wheeze is on preventive inhalers. He presently was brought to the emergency department with complaints of acute onset of deviation of angle of mouth to the left side noticed since the past 10 days. His father, mother and grand mother were COVID 19 positive 2 weeks prior and was

managed at home symptomatically. He had no history of fever, cough, breathing difficulty, vomiting or loose stools. There was no difficulty in closing eyes completely. He can walk and run well and there was no h/o motor neurological deficit.

He was born term by elective LSCS (oligohydrannios) with birth weight of 2.4kg. His postnatal period was uneventful. He had an initial mild motor delay but gradually attained all milestones appropriate for his age. He was immunized as per the national immunization schedule. His father, mother and grandmother were tested positive for COVID 19 infection 2weeks back. Father had Chronic Renal Failure and underwent renal transplant 11 years back. He is on immunosuppressives.

At admission he was afebrile and fully conscious with stable vitals. Clinical examination revealed deviation of angle of mouth to left with loss of nasolabial fold on right side. He could raise the eyebrows bilaterally and could close the eyes completely against resistance(House Brackmann Grade2). There were no motor deficits. COVID-19 RT PCR at admission was positive. Chest Xray was normal. Counts were normal and inflammatory markers were negative. Blood indices and peripheral smear were suggestive of microcytic hypochromic anemia. LFT/RFT/D dimer/ LDH / Ferritin were normal. Respiratory viral panel (Influenza A virus, H1N1 virus, Influenza B virus, Human corona virus NL63,229E,OC43 and HKU1, Parainfluenza 1,2,3,4 virus, Human Metapneumovirus A/B, Human

Rhinovirus, Human Boca virus, Human Respiratory syncytial virus A/B, Human adeno virus, Human Entervirus, Human Parecho virus, Mycoplasma pneumonia) and HSV IgM were negative. MRI brain with contrast showed Subtle T2 FLAIR hyperintense signals seen in bilateral occipital region (left> right) probably due to early hypoglycemic insult. NCV of facial nerve was normal. His facial palsy gradually improved without any specific medical treatment. COVID19 antigen test done after 10 days of isolation was negative. He was advised to continue physiotherapy at home. He was followed up after 10 days of discharge and there were no facial nerve deficits (House Brackmann Grade 1)



**Picture 1: There is deviation of angle of mouth to left side with loss of nasolabial fold on the right side (House Brackmann Grade 2)**

## DISCUSSION

We describe the case of Bell's Palsy in a 3 year old male child in whom SARS-CoV-2 infection was proved. Bell's palsy is usually associated with viral infections mainly herpes simplex and herpes zoster viruses. Pathogenesis of Bell's palsy remains unclear. Herpes virus tends to have axonal spread and viral replication leading to inflammation and demyelination causing Bell's Palsy.<sup>[5]</sup>

SARS CoV-2 mainly causes respiratory symptoms but less commonly neurologic manifestations has also been described. SARS-CoV-2 is very similar in structure and infectious mechanism to the coronaviruses (CoV). The novel corona viruses are very well known for its neuroinvasive nature. Hence SARS CoV2 also possesses this potential neuropropensity due to its high affinity for ACE 2 receptors in the nervous system.<sup>[6,7,8,9]</sup> ACE2 receptor is highly expressed in the nasal mucosa, particularly in the ciliated epithelium and goblet cells, where viral replication appears to be the greatest, as evidenced by the highest viral titers shed from the nose.<sup>[10]</sup> SARS-CoV- 2 affects olfactory nerve and bulb and act as the direct pathway to the central nervous system.<sup>[11]</sup> All his family members were positive for

COVID19 infection about 2 weeks back. He did not have any respiratory symptoms.

Bell's palsy is a clinical diagnosis. The characteristic findings are acute onset of unilateral lower motor neuron facial paralysis that affects muscles of the upper as well as lower face and reaches its peak by 72 h. These findings are frequently accompanied by symptoms of neck, mastoid or ear pain, dysgeusia, hyperacusis or altered facial sensation. Our patient presented with deviation of angle of mouth towards the left side. He did not have any ear or neck pain, change in taste or sensation.

Other causes of acquired facial paralysis were also considered. Infectious etiologies mainly herpes simplex and varicella were less likely due to the absence of skin lesions. His Herpes simplex IgM 1 and 2 were negative. Respiratory viral panel were also negative. Immunologic diseases such as vasculitis, sarcoidosis or other autoimmune diseases were unlikely as systemic involvement was not present. Neoplasm and cerebrovascular diseases should be considered in the presence of other neurologic deficits which were ruled out by MRI brain.

Bell's palsy is typically self-limiting, and symptoms generally resolve within weeks to months. Minority of cases can result in longer-term facial muscle weakness or in sequelae such as ocular dryness, lagophthalmos, exposure keratopathy, or swallowing dysfunction.<sup>[12]</sup> The condition often resolves without treatment. The use of antiviral agents and corticosteroids are again a controversy and is typically utilized, especially if diagnosed within 72 h of onset of symptoms.<sup>[13,14]</sup> Our child's facial weakness spontaneously recovered without any specific treatment. He did not have any deficits at the time of follow up.

This single case report suggests a possible association between SARS-CoV- 2 infection and Bell's Palsy. The possibility of atypical, neurologic, presentations of the virus in pediatric patients is being highlighted here. The manifestations of SARS-CoV2 virus in children are still being understood. Further studies are needed to comprehend the natural history and prognostic significance of cranial neuropathies in SARS-CoV-2 infection and to determine the best management strategy.

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