

Guillain Barre Syndrome after vaccination against Corona Virus Disease 19: Managed in limited resource setting

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ABSTRACT

A 16-year-old boy who classically featured Guillain Barre Syndrome (GBS) after Corona Virus Disease-19 vaccination was timely treated successfully in limited resource setting in far western province. After Moderna (mRNA COVID 19 Vaccine) vaccination, he rapidly developed ascending paralysis of limbs without autonomic and sensory or cranial nerve involvement. He has been treated with Intravenous Immuno-Globulin (IVIg). Over six-weeks long observation and supportive care and he was discharged with full recovery. Many GBS cases after vaccination have been reported but yet to know the association of vaccine. It is very important to address the complication for successful vaccination programme.

Keywords: Complication; COVID-19; guillain barre syndrome; vaccine

INTRODUCTION

Guillain Barre Syndrome (GBS) is an acute auto immune demyelinating polyradiculo neuropathy. It is most common cause of flaccid paralysis. Estimated annual incidence is 1-2 cases per 10,00,000 people per year.¹ Definite cause is not known but associated with various infections, vaccines and recently reported following vaccine against COVID 19. GBS is characterized by rapidly evolving ascending motor paralysis, areflexia with or without sensory disturbance. Definitive treatment is IVIg and plasmapheresis. GBS cases are increasing by 1.5 fold during this pandemic COVID 19 and mass vaccination campaign in the world. Various reports showing numerous GBS cases during this pandemic COVID 19 and mass vaccination campaign in the world.² This is a typical case report of GBS after vaccination and managed successfully. To date Nepal about one million populations are infected and 48 million doses of COVID 19 vaccine has been taken. More GBS cases can be expected but no case reports are listed till date in Nepal.³ Prompt response to the adverse events of vaccine is necessary during this period.

CASE REPORT

A 9th grader 16-years-old-boy belonging to Sigas rural municipality-4, Baitadi, was brought to emergency department of Seti Provincial Hospital with complaints of acute progressive weakness of limbs in the 8th day of Moderna (mRNA) vaccine against COVID 19 [Figure 1].

He developed insidious onset weakness of lower limbs followed by upper limbs followed by rapidly progressive the weakness on the fourth day of vaccination. First he was taken to traditional healer (Dhami) 6th day of vaccination. When there was no recovery at all till 9th day, he was brought to the regional hospital from where referred to Provincial hospital. There was no other systemic complaints and any other co-morbidities. His detail examination was normal except lower and upper limbs motor system abnormalities. There was diminished tone of limb muscle and power was 1/5 all limbs in all joints (Modified Medical Research Council) and deep tendon reflex were absent (Bilateral Ankles, Knees, Biceps, Triceps and Supinator), Plantar reflex was bilateral mute, gait and coordination could not be performed.

Computed Tomography Scan of head was normal. Reverse Transcriptase Polymerase Chain Reaction for SARS COV- 2 was negative but serological testing for antiganglioside IgM antibodies, Nerve Conduction Test (NST), Electromyogram (EMG) and Magnetic Resonance Image (MRI) of Brain and spine could not be done due to financial constrain of patient and limitation of service in this center. Lumbar puncture was done and finding in Cerebral Spinal Fluid (CSF) analysis showed normal range of cell count and around 7-fold higher albumin level which is suggestive albumin-cytological dissociation (Table 1).

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Table 1. CSF fluid analysis.

CSF fluid analysis report	Normal Range	
Total White Blood Cell	05 cell/cum.	0-5 cell/cum
Lymphocyte	80%	
Neutrophil	20%	
Red Blood Cell	10 cells/cum	
Albumin	268.9 mg%	20-40 mg%
Glucose	81.6% mg%	45-80 mg%

With this clinical features and CSF fluid result he was diagnosed Guillain Barre Syndrome. Based on Brighton diagnostic criteria the level 2.⁴

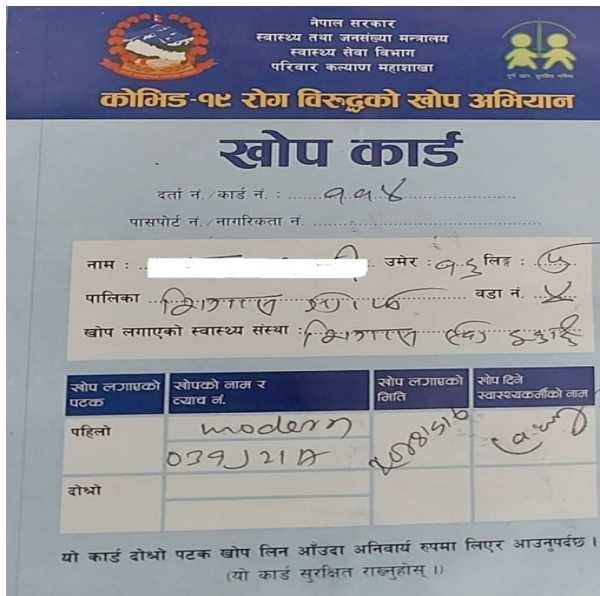


Figure 1. Vaccine card of the patient.

Patient was transferred to ICU for monitoring. Intra-Venous Immune Globulin (IVIg) 0.4mg/kg/day was given for 4 days¹ and other supportive management done including physiotherapy.

Course of illness (Figure 2): On the fourth weeks onward and on the 5th day of IVIG, patient gradually improved limb power, reflexes and tone gradually in upper limb followed by lower limb. End of the 6th week he was able to walk without support around the room and discharged. He was advised to continue physiotherapy and follow up in one week. Case was notified to higher authority of Adverse Event Following Immunization(AEFI) team.

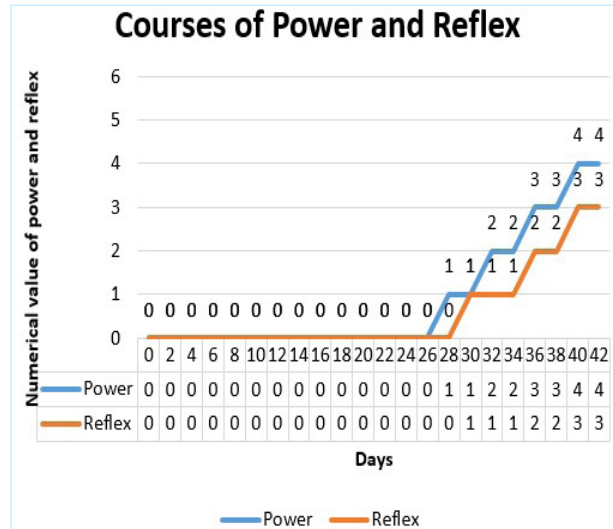


Figure 2. Graphical presentation of power lower limbs in ankle, knee and hip joint in all movement and deep tendon reflexes of ankle and knee.

DISCUSSION

Guillain Barre Syndrome(GBS) is an acute auto-immune demyelinating neuropathy characterized by rapidly evolving ascending paralysis, areflexia with or without sensory disturbance. Estimated annual incidence is 1-2cases per 10,00,000 people per year. GBS is associated with campylobacter jejune, viral infections and vaccines including COVID 19. Four variants of GBS are Acute Inflammatory Demyelinating Polyneuropathy, Acute Motor and Sensory Axonal Neuropathy, Acute Motor Neuronal Axonal Neuropathy and Miller fisher Syndrome.⁵

In Nepal, mass vaccination programme is ongoing to prevent the COVID 19 pandemic. To date 45 million doses have given.⁶ The safety profile of COID 19 vaccines are found well except minor adverse effects. The first case of GBS was published by Waheed S and team following Pfizer COVID-19 vaccine.⁷ Neurological events like GBS and CVT(Cerebral Venous Thrombosis) after COVID 19 vaccine (Moderna) reported less than 1 per 1,000,000 doses.⁸ The united States of America had reported estimated preliminary GBS 9.8 cases/100,000 doses which was four times the background rate.⁹ Likewise in Europe among 51 million doses,227 cases of GBS were reported.¹⁰ GBS and COVID 19 vaccine association not verified but high index suspicion and case report is important.¹¹

CONCLUSION

This is the most probably the first case of GBS following COVID 19 vaccination but difficult to say whether it was just temporal relationship or association. Even though the case presented lately in hospital with typical clinical features and CSF finding and able to manage successfully with IVIG and supportive management. We know the COVID 19 pandemic and mass vaccination campaigns are ongoing in Nepal. Even though COVID 19 vaccine is safe and effective, it is important to identify the critical complications and timely management by health worker and should be addressed by higher authority.

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CONFLICT OF INTEREST

The authors declare no conflict of interest

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