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GUILLAIN-BARRÉ SYNDROME AFTER COVID-19 VACCINATION: A CASE REPORT

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Abstract: Introduction: Guillain-Barré Syndrome (GBS) is an inflammatory, acute demyelinating and autoimmune neurological disease. The appearance of GBS previously associated with several infections, with the advent of the COVID-19 pandemic in early 2020, new cases of SBG emerged as a result of COVID-19 and later after vaccination. Intense research on this correlation has been carried out, but it is difficult to prove the causality of the disease with vaccination, verifying only a temporal relationship. **Objective**: To report the case of a patient diagnosed with Guillain-Barré Syndrome after vaccination against COVID-19. **Method**: This is a case report whose data contained in this study were obtained by reviewing the medical record of the patient in question, as well as reports of complementary exams performed by the patient. **Discussion and final considerations**: In the case in question, the patient presented symptoms suggestive of GBS 30 days after the second dose of Astrazeneca vaccine. No report of clinical or laboratory findings of differential diagnoses that would justify its evolution. Despite occasional case reports in this regard, the National Health Surveillance Agency (ANVISA) maintains the strong recommendation for the continuity of vaccination as it is evident that the benefits are much greater than the risks.

Keywords: Guillain-Barre Syndrome, COVID-19 Vaccines, Nervous System Diseases.

INTRODUCTION

Guillain-Barré Syndrome (GBS) is an inflammatory, acute demyelinating and autoimmune neurological disease. It is usually preceded by an infection that induces an immune reaction against myelin mediated by a molecular mimicry mechanism. There are variants of this disease that present themselves as an immunological reaction produced

by the body. The symptoms can occur in varying degrees, usually with progressive and ascending motor weakness and may affect the trunk and face, in addition to paresthesia in the lower and upper limbs. The following may also be present in the clinical picture: low back pain (present in up to 50% of reported cases), dysphagia and balance disorders. It is accompanied by sensory abnormalities and autonomic dysfunctions, with consequent loss of deep tendon reflexes. More severe cases, in which there is not adequate management in a timely manner, involvement of the respiratory muscles can lead to more important complications and even death (ANVISA, 2021a, 2021b; ELZOUKI; OSMAN; AHMED, 2020; FERRARINI et al., 2011).

The appearance of GBS had already been associated with several infections such as Campylobacter, Zika, dengue, Chikungunya, cytomegalovirus, Epstein-Barr virus, measles, influenza virus, Mycoplasma pneumoniae, enterovirus D68, hepatitis A, B, C, HIV and. others. In addition, there is also a strong temporal relationship between some types of vaccine, such as the Influenza vaccine and the onset of the syndrome, albeit as a rare adverse event. Usually, the temporal relationship between vaccination and the onset of symptoms is up to 6 weeks later (FERRARINI et al., 2011; MINISTÉRIO DA SAÚDE BRASIL, 2021).

With the advent of the pandemic and vaccination against COVID-19, new cases of SBG emerged both in Brazil and in the world. This motivated intense research on the subject, despite the difficulty in proving the causality of the disease with vaccination, verifying only a temporal relationship (ANVISA, 2021b; MINISTÉRIO DA SAÚDE BRASIL, 2021).

The diagnosis of the Syndrome, which courses with flaccid paraparesis, is primarily clinical, but additional tests are needed to confirm or exclude other causes. According to the Clinical Protocol and Therapeutic Guidelines for Guillain-Barré Syndrome, by the Ministry of Health, released in 2015, "patients with suspected GBS must obligatorily present unequivocal degrees of weakness in more than one symmetrical appendicular segment, including cranial musculature". In laboratory diagnosis, analysis of the cerebrospinal fluid (CSF) is of paramount importance. In the electrophysiological diagnosis, however, the ideal for such analysis is to examine the patient after the first week of the onset of symptoms, since the electrophysiological alterations are more evident and better established. (MINISTRY OF HEALTH BRAZIL, 2015).

GOAL

To report the case of a patient diagnosed with Guillain-Barré Syndrome after vaccination against COVID-19.

METHOD

This is a case report whose data contained in the present work were obtained by reviewing the medical record of the patient in question and reports of complementary exams performed.

The patient and family in the present study were consulted for authorization to use the aforementioned data through the Informed Consent Form (FICF) (ANNEX 01). They were informed about the objectives of this study and ensured all their ethical and legal rights.

CASE REPORT

ANAMNESIS OF ENTRY INTO SERVICE

DS, male, 60 years old, previously healthy and without allergies, was admitted to the Emergency Room of the Hospital Santa Casa de Misericórdia in Vitória (HSCMV), on August 7, 2021, reporting paresthesia in the fingertips of the upper and lower limbs.

started 02 days ago and loss of balance with progressive worsening. He also reported diffuse low-intensity pain in the chest, of an intermittent nature that did not worsen on exertion and without irradiation. Previous history of infection by COVID-19 in March 2021 and vaccinated with two doses of AstraZeneca vaccine on April 11 and July 6, 2021. Then proceeded with laboratory tests, imaging tests and electrocardiogram.

PHYSICAL EXAMINATION OF ENTRY INTO SERVICE

On physical examination, the patient was awake, lucid and oriented, without appendicular focal motor deficit (strength preserved in the upper and lower limbs). Preserved sensitivity in limbs (no sensitive level). Decreased deep reflexes in lower limbs and ataxic gait. Patient presenting with hypertension (blood pressure in the right upper limb of 160 x 90 mmHg and in the left upper limb of 180 x 90 mmHg), heart rate of 62 bpm, capillary refill time of 3 seconds, respiratory rate of 17 bpm, saturation 98% in ambient air.

EVOLUTION OF THE CLINICAL PICTURE

Initial exams were performed, such as computed tomography of the skull (image 01) and laboratory tests without significant changes. The patient was admitted to the hospital on the same day of admission to the emergency room, August 7, 2021 for investigation of the condition.

On the following day, 08/08/2021, the patient reported bilateral low back pain, without irradiation and with improvement after the use of intravenous opioids. She was prone to hypertension despite the use of antihypertensive drugs.

On 08/09/2021, on examination by the Neurology team, the patient presented loss of strength and balance. Motor strength of the upper limbs was classified as grade 5 and that of the lower limbs as grade 4, with no sensory level. Positive Romberg test. Therefore, the hypothesis of Guillain-Barré Syndrome with cord predominance was raised. To complement the investigation, other tests were performed, such as dosage of vitamin B12 and folic acid with results within the reference values

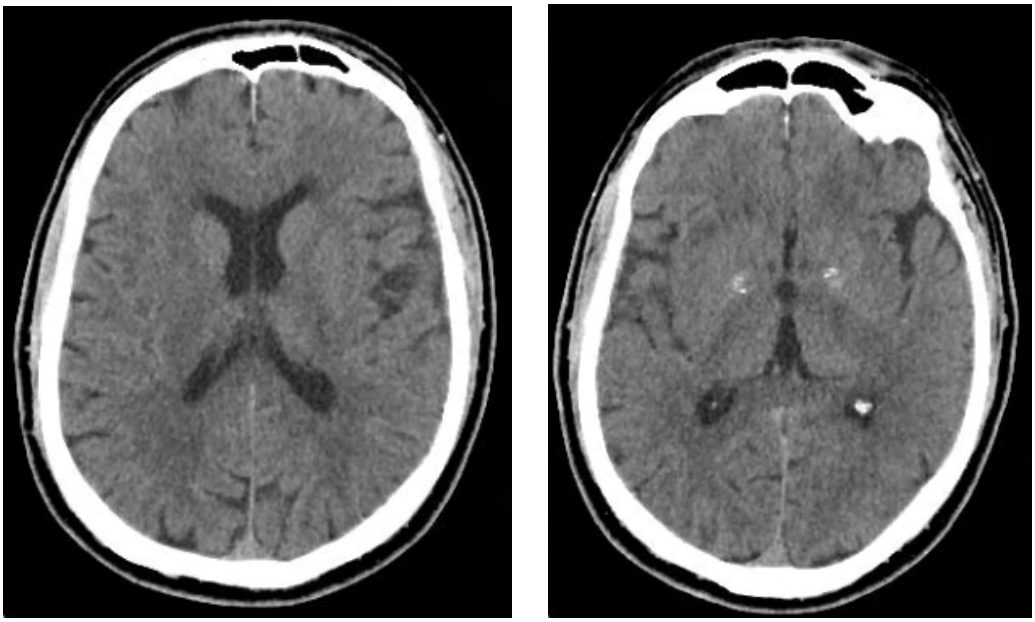

Image 01: Skull Computed Tomography

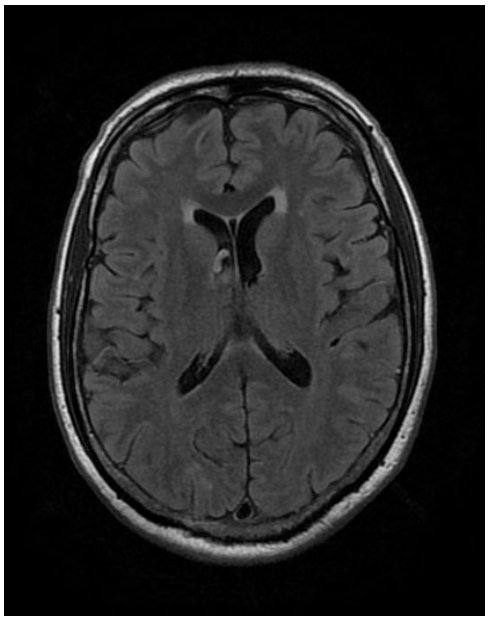

Image 02: Skull Magnetic Nuclear Resonance

and serology, which were negative. Cranial nuclear magnetic resonance performed on 10/08/2021 without significant changes for the case (Image 02). A lumbar puncture was requested for CSF analysis, which resulted in a CSF accompanied by few cells (cytology with red blood cells and zero leukocytes) and high proteinorrhachia (135 mg/dl) in addition to clear, colorless, glucose 64mg/dl (normal), Non-reactive VDRL, herpes IgM negative and IgG 8.5 (reactive). Serology for non-reactive IgG and IgM Toxoplasmosis.

In view of the findings, the high suspicion of GBS indicated the initiation of therapy with immunoglobulin at a dose of 0.4g/kg/day, for five days, and electroencephalogram performed.

Immunoglobulin was started on 08/12/2021, but on the following days, the patient evolved with a gradual and progressive worsening of motor strength, which came to be classified as tetraparesis with grade II motor strength in the lower limbs and grade III in the upper limbs. Due to the rapid evolution, the patient was admitted to an intensive care bed for monitoring of respiratory and neurological pattern on 8/15/2021.

Still in the Intensive Care Unit of HSCMV, on 8/16/2021, the last day of the proposed therapy with immunoglobulin, the patient evolved with a drop in saturation and a decrease in the level of consciousness that led to orotracheal intubation. In this context, he was also treated as septic shock of pulmonary focus and started Sodium Piperacillin associated with Sodium Tazobactam (Tazocin) on 08/16/2021. A transthoracic echocardiogram study did not show significant changes.

The assistant Neurology team considered the possibility that the worsening of the patient's condition was due to the natural evolution of the disease, which has NADIR between 7-14 days. Considering that immunoglobulin therapy could reduce the chances of sequelae and that after supportive therapy, the improvement in muscle strength must be reassessed. Despite the controversy regarding the indication of plasmapheresis after immunoglobulin infusion, it was advised to consider the possibility of such a procedure

before the 15 protocol days. But in this case, he would need to be transferred to a reference center, but he did not have clinical transport conditions.

On 8/18/2021, the patient was still undergoing mechanical ventilatory assistance with low pressure-controlled ventilation parameters, maintaining good renal function and hemodynamic stability, with shock improvement, without the need for vasoactive drugs.

When he was in transport conditions, the patient was transferred to a referral hospital for neurological syndrome due to the possibility of indicating plasmapheresis. However, he returned to the HSCMV three days after regulation after evaluation by the neurology team, which corroborated the GBS hypothesis, but did not indicate additional approaches due to important clinical evolutionary improvement. During the period he was out of the HSCMV, the referral hospital to which the patient had been transferred described a significant clinical improvement with evolution to extubation, despite the persistence of muscle weakness, especially in the lower limbs, classified as grade I and dysphagia.

Upon returning to the Intensive Care Unit at the HSCVM, the patient presented significant hypoxemia, which led to an immediate chest angiography. It was not possible to rule out pulmonary thromboembolism due to the technical difficulty of the examination, however, consolidation in the lung base was seen, which supported the start of a new antibiotic therapy cycle with Meropenem, probably due to nosocomial pneumonia.

Over the days, still hospitalized in the Intensive Care Unit of HSCMV, the patient continued to show clinical improvement and gradual but significant recovery of muscle strength and on 26/08/2021 he was discharged from the ICU to an open unit.

On the ward, he maintained good clinical evolution, gradual recovery of motor strength, acceptance of oral diet in follow-up with a speech therapist, and excellent response to antibiotic therapy. On 8/30/2021, he actively moved the four limbs with constant recovery of movement and strength.

As a complementary exam, he performed Electroneuromyography (ENMG) of the four limbs, which showed a marked inflammatory sensorimotor polyneuropathy, primarily demyelinating, with secondary axonal degeneration, with acute evolution. Such examination met the neurophysiological criteria of the American Academy of Neurology for Guillain-Barré Syndrome (AIDP variant).

On 09/01/2021, the patient was awake, oriented, in room air, with significant improvement of tetraparesis, already with active limb movement, completely treated for nosocomial pneumonia, accepting an uneventful oral diet with full condition for discharge hospital that was performed on that day. He was instructed to follow motor and respiratory physiotherapy, preferably daily, for the first two weeks after discharge. Advised on the need to consume protein in the diet associated with a nutritional supplement and the need to maintain follow-up with a neurologist.

DISCUSSION AND FINAL CONSIDERATIONS

Following the definition of the World Health Organization in which a rare disease is classified as one that affects up to 65 people per 100,000 individuals, that is, 1.3 people for every 2,000 individuals, GBS is classified as a rare disease and the development of such syndrome as a post-vaccination adverse effect for COVID-19 is also classified as rare. However, it is important to emphasize that GBS requires early identification and interventions

so that there is no worse evolution and more serious sequelae after its resolution (ANVISA, 2021a; MINISTÉRIO DA SAÚDE BRASIL, 2014).

Regardless of the etiology, treatment in GBS is based on two pillars: anticipation and control of associated comorbidities and treatment of the progression of signs and symptoms aiming at a shorter recovery time and minimization of motor deficits. As in the case reported here, strict surveillance and anticipation of potential complications are necessary for favorable outcomes. (MINISTRY OF HEALTH BRAZIL, 2015).

In this case, the patient presented symptoms suggestive of GBS 30 days after the second dose against COVID-19, in the case of Astrazeneca. No report of symptoms of infection prior to the condition and no other clinical finding that would justify its evolution after exhaustive investigation with several tests to rule out the main differential diagnoses of the syndrome. There is no way, at the present time, to obtain a causal relationship between the vaccine and the development of GBS, but there is a temporal relationship between them. There are now reports of several adverse events related to vaccines available against COVID-19 infection in addition to GBS and they are classified as rare. Therefore, despite the increase in the number of suspected and confirmed cases of the syndrome, ANVISA maintains the strong recommendation for the continuity of vaccination with all vaccines available and approved by Organs competent bodies to fight COVID-19, as it is clear that the benefits of vaccines are much greater than the risks of the vaccine. It is important to highlight that the early identification of the syndrome, regardless of etiology, reduces chances of sequelae and morbidity and mortality (ANVISA, 2021a; MINISTRY OF HEALTH BRAZIL, 2014; EUROPEAN MEDICINES AGENCY, 2021; MINISTRY OF HEALTH BRAZIL, 2021; MCKEAN; CHIRCOP, 2021)

It is noteworthy that such reports are not intended to indicate a specific vaccine as a specific cause of the development of the syndrome, nor to discourage vaccination, but rather to alert the scientific community that symptoms of post-vaccination weakness can be a manifestation of SBG and must always be taken into account. Notification by health professionals to the bodies responsible for epidemiological data is of paramount importance, since through notification it is possible to have a real notion of the number of suspected or confirmed cases of GBS as a post-vaccination event.

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