KINETIC RECOVERY IN GUILLAIN – BARRÉ SYNDROME CASE STUDY

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Abstract

Guillain Syndrome - Barré or acute poly-radicular-neuritis is a dysimmune demyelinating peripheral inflammatory neuropathy, characterized clinically by bilateral and symmetrical involvement of several spinal nerve roots and corresponding peripheral nerves and histologically through a process of demyelination and regression [1].

From the first days of illness, the physiotherapist's contribution to the medical team is of crucial importance.

It is essential that the recovery program be implemented as early as possible, to avoid complications, reduce disabilities and functional deficits caused by the disease, through therapeutic means aimed at controlling, stabilizing, and possibly recovering the affected functions. The elaboration of measures for the prophylaxis of complications and the most effective methodologies of recovery, clinical and functional evaluation, and its use in establishing motor skills and therapeutic needs, assessing the clinical-etiological impact on the patient's functional status and identifying associated actions are considered.

Introduction

Guillain Syndrome - Barré or acute polyradicular-neuritis is "a dysimmune demyelinating peripheral inflammatory neuropathy, characterized clinically by bilateral and symmetrical involvement of a number of spinal nerve roots and corresponding peripheral nerves and histologically through a process of demyelination and regression" [1].

It is an inflammatory disorder of the peripheral nerves, being one of the causes of flaccid paralysis in children [2].

Morphological studies have revealed lymphocytic infiltration of peripheral nerves and segmental demyelination mediated by macrophages. Axonal loss can also be marked, especially in severe cases.

In addition to idiopathic forms, there are frequent forms secondary to an infection, homeopathy, a dysimmune condition.

Some viruses (cytomegalovirus, measles, rubella, mumps virus, HIV, Zika), some bacteria (Campylobacter jejune) have been blamed for triggering this condition.

According to epidemiological data, the annual incidence of this disease is 1-3 cases per 100,000 inhabitants [2].

The recovery treatment will be performed by the collaboration of a complete team consisting of family, infectious disease doctor, recovery neurologist, ophthalmologist, ear doctor.

In addition to drug treatment, the physiotherapist 's intervention aims to prevent bedsores by mobilizing and changing positions frequently, passive mobilizations, prophylaxis of muscle atrophy and recovery of lost muscle strength, such as restoring muscle tone, impaired disease functions.

Material and method

Study of case

In the present study we have made a research in the case of a disturbance inflammation of peripheral nerves which is characterized by the installation quick to weakness in the legs, the arms, then the muscles of respiratory and muscles of the face.

The disorder is an acute immune-mediated polyneuropathy, being one of the causes of flaccid paralysis in children.

C. L M., female, 13 years old

Diagnosis: *Encephalomyelitis, acute poly-radicular-neuritis, Guillain-Barré syndrome, mechanically assisted acute respiratory failure; Flaccid tetraparesis.*

The girl was hospitalized in the period: 30.07 - 23.09.2019 at the St. Mary Children's Hospital in Iasi, intensive care unit.

During the period 23.09-30.10.2019 she was hospitalized at the “Marie Sklodowska Curie” Emergency Children's Hospital in Bucharest, for neuromotor recovery.

A 13-year-old child is hospitalized for the sudden onset during the day of an inter-scapular-vertebral pain followed by sensory disorders expressed by paresthesia in the upper limbs with loss of muscle tone and a crisis of generalized tonic-clonic seizures.

The onset of this disorder follows a viral respiratory infection in the girl's recent medical history.

Clinically at admission presented severe general condition, state of consciousness abolished, ROT absent in lower limbs and upper limbs, O_2 saturation = 98%, but 6 hours after admission O_2 saturation drops sharply to 56-60%, breaths are superficial, does not respond to verbal or painful stimuli, so that endotracheal intubated and ventilated mechanically. Oxygen in these maneuvers result of saturation increases to 100% AV = 105/minute.

The disease was evaluated in several phases.

In a first phase that lasted 10 days, the clinical pattern was characterized by a symmetrical ascending paralysis that affects the four limbs (tetraplegia). Touching the cervical and cranial roots causes respiratory paralysis that necessitates mechanical ventilation.

Paraclinical investigations were continued with *craniocerebral CT* and *native cervical spine* and *CIV* that did not reveal pathological elements.

Thoracoabdominal angiography ruled out abdominal aortic dissection.

Two lumbar punctures were performed that did not reveal any pathological elements.

Consultation on infectious diseases has raised the suspicion of acute encephalomyelitis. Following neurological and neurosurgical examinations, he opted for the diagnosis of acute poly-radicular-neuritis, Guillain-Barré syndrome with atypical onset.

The second phase, the "plateau phase" with a duration in which the signs in the first phase stabilize, can be longer or shorter.

He received drug treatment with high-dose intravenous immunoglobulins and solumedrol, but no significant improvement was obtained, which is why 4 Plasmapheresis sessions were performed. The method of treatment is chosen according to accessibility and contraindications.

During hospitalization he developed an episode of Bronchopneumonia with a slowly favorable evolution until remission under antibiotics of various combinations.

The patient maintained severe general condition, orotracheal intubation with mechanical ventilation 21 days, intermediate pupils, responds to verbal stimuli through eyeball movements, conscious, cooperative, bilaterally diminished ROT, preserved superficial sensitivity, deep sensitivity absent, negative Babinski test and solumedrol, with mechanical ventilation was kept for 32 days, and on 19.09 it was canceled (saturation 99%).

The neurological examination of September 28,2019 describes the conscious patient, without cognitive disorders, without swallowing disorders, global motor deficit type tetraplegia, active movements at

distal upper limbs and lower limbs, live ROT, bilateral plantar clonus, symptoms that raise the diagnosis of acute encephalomyelitis sequelae.

The pain reported by the patient in the lower thoracic and epigastric region was interpreted as having a neuropathic origin, which is why carbamazepine was introduced into the treatment, obtaining a significant improvement in symptoms.

Throughout the hospitalization, the patient was monitored (blood pressure, heart rate, the respiration and fluid levels).

In support of the diagnosis of Guillain Barré Syndrome comes the relative symmetry of symptoms and signs and speed, sudden, distal, relatively symmetrical onset of paresthesia, rapidly followed by weakness in the limbs, predominantly motor, sometimes accompanied by sensory dysfunction. The proximal limb muscles are affected before the distal one. Muscle weakness progresses rapidly, eventually leading to paralysis of the limbs, torso, or respiratory muscles [2].

Motor disorders in this case are global, in the form of quadriplegia Convulsions were another common manifestation as well as tremor.

To improve respiratory function in the kinetic program were included [3, 4]:

- postural drainage achieved mainly by tapping and vibration.

The treatment plan must include maneuvers that promote postural drainage to mobilize bronchial secretions provided that the child is placed in a position appropriate to the location of the secretions so that they are more easily evacuated. When drainage was not performed, and he recur to the bronchial aspiration. The tapping is made paravertebral on the entire surface of the back and on the anterior right hemithorax, above the diaphragm line, with the palm cupped, on the large surfaces, with the ulnar part of the hand or with the tips of the fingers on smaller surfaces. This is done under the monitored control of vital functions and is interrupted in case the saturation in volume $O2_2$ falls below 80%. Vibrations also lead to more efficient treatment associated with cough and directed expectoration education and breathing exercises. The sessions are repeated 2-3 times a day and last 20-30 minutes. The focus is on the busiest areas, reaching the healthiest ones. The cough was ineffective,

Postures have been associated with other recovery techniques resulting in increased therapeutic benefits, to avoid bedsores; alternating sloping positions by means of the tips of the fingers. Passive mobilizations were made to maintain the mobility of joints, the trophic tissue, stimulating the blood circulation.

The positions are equally important, performed as accurately, avoiding complicated installation of motility disorders. Correct positioning will ensure optimal conditions, being comfortable single without child making efforts to allow movement of the joint can be executed by its maximum amplitude, to ensure stability and security.

During the treatment, the patient must be aware of as many sensations as possible on the tone, posture and limits of motor skills and even experience the sensations of as many postures and normal movements, on the principle of "beating the nerve pathways". Correction of the vicious posture and the formation of the habit of relaxing in comfortable positions must be considered.

Improving motor skills in its residual sequences in terms of both posture and movement. Coordination of head and neck movements related to the torso.

The use of proprioceptive and exteroceptive stimuli is achieved by manual contact in the form of sockets and counter-sockets, in the "central key points of mobility and stability" through PNF method (traction, decoupling, joint telescopes, slow and long stretches), stretching the parts soft (muscles, tendons, ligaments, fascia) [5]. The physiotherapist's sockets represent the indicator of the direction of the movement scheme and external and proprioceptive pressures are exerted on the skin, muscle groups, tendons and joints involved in the movement scheme. The effect is facilitating.

In case of muscular hypotonia or if the compression is maintained throughout the active movement, the facilitation is applied by different methods: Vojta, Castillo Morales [5]. Light touches have a facilitating effect on the extremities, especially the facial muscles, the spine, the upper limbs on the extensor muscles, on the muscles antagonistic to the spastic muscle (flexor-adductor).

Also acting as facilitator and they applied as complementary techniques excitatory exteroceptive thermal (hot and cold) method.[10].

Tele receptive stimuli (visual, auditory) allow the rapid obtaining of the movement scheme or the coordination of the segment, even when it is performed passively, passively-actively by the physiotherapist. Decompensation movements are transitions from one facilitation technique to another to reduce or avoid fatigue. It is achieved by alternating agonist-antagonist schemes [6, 9].

Techniques for increasing and strengthening muscle tone were used, represented by the following PNF techniques: C.R and MARO.

They use it in education and neurological rehabilitation techniques reversal of antagonists to imbalances coordination, strength and movement in daily activities (grasping and leaving objects in hand) [7].

In the treatment of balance disorders, fine movement coordination disorders were used Bobath method, Frenkel methods, specific techniques on different devices, associated with other techniques [8].

Results and discussions

From the beginning in support of the diagnosis of Guillain- Barré Syndrome comes the mode of rapid evolution with sudden deterioration of the general condition, clinical picture characterized by a symmetrical ascending paralysis with the touch of the four limbs, with frequent pain that may persist for a long time (myalgias, spinal pain), sensory deficits moderate (paresthesia or dysesthesia) and or hyporeflexia tendon. Touching the cervical and cranial roots causes respiratory paralysis which necessitates mechanical ventilation.
Following the recovery program combined with drug therapy, the patient manages within three months to:

- As the physical treatment is applied to this child, signs of slow spasticity appear in the development, starting from the distal part of the body and progressing proximally. This "migration" to increase muscle tone helps the girl to regain a sitting position, then orthostatism. In the initial phase, the child is mobilized to maintain the tone of the limbs and prevent bedsores.
- In hypotonia the muscles are mainly the affected structures. Their tendency is to become weak and tired, meaning that they cannot generate an active force large compared to that of a normal child, tend to become longer and will have a normal activity in time of evolution. Joint hypermobility is often associated. The main problem is the instability and weakness of the torso and also the control of the position and posture of the head. The proximal muscles of the lower limbs and upper limbs are especially affected.
- The physiotherapist must select and individualize, depending on the particularity of the child's case, exercises to stimulate the balance system, respectively the skills he must effectively maximize existing skills, possibly the emergence of other skills.

Conclusions

It has made all efforts in the program of recovery, as far as possible, for the overall rehabilitation of the patient in close correlation with his family and social environment.

The evolution is favorable, little patient recovers in the course of a few of months function motor, fails to recover prehension, to sit in the seat at the edge of the bed and to achieve and to maintain the standing posture, in fact and force muscles to improve, the kind and tone.

Regarding the respiratory function, the girl is decannulated, she regains her spontaneous breathing. Regarding the sensitive function, the lumber pain but decreases a lot in intensity.

The child will continue the treatment (kinetic and ambulatory), to restor the state of health as it was before the beginning of this disease.

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