Nursing care for patients with botulism: Case report

Assistência de enfermagem ao paciente portador de botulismo: Relato de caso

Cuidados de enfermería al paciente con botulismo: Relato de un caso

RESUMO

Objetivo: Descrever os cuidados da enfermagem prestados na assistência ao paciente com diagnóstico de botulismo em uma unidade crítica e relatar a importância da equipe interprofissional de saúde. Método: Estudo observacional descritivo, modalidade estudo de caso, realizado em um hospital filantrópico de grande porte, com coleta de dados de 5 de setembro a 8 de outubro de 2024. Resultados: Paciente adulto, atendimento do serviço de emergência com queixa de tontura, ptose palpebral e disartria. Internado, evoluiu com insuficiência respiratória e necessidade de intubação orotraqueal. Diagnosticado com Botulismo, administrado soro anti –botulismo. Evoluiu em processo de reabilitação, sob atendimento da equipe interprofissional de saúde. Apresentou alta após 6 meses de internação. Conclusão: A importância da equipe interprofissional ao paciente com botulismo é fundamental para sua evolução clínica satisfatória. Especificamente, a atuação do enfermeiro é importante não apenas no cuidado direto ao paciente, mas por ser o profissional gerenciador de todo processo de cuidado.

DESCRITORES: Cuidados de Enfermagem; Botulismo; Assistência Centrada no Paciente.

ABSTRACT

Objective: To describe the nursing care provided to patients diagnosed with botulism in a critical care unit and report the importance of the interprofessional health team. Method: Descriptive observational study, case study modality, carried out in a large philanthropic hospital, with data collection from September 5th to October 8th, 2024. Results: An adult patient was seen at the emergency department complaining of dizziness, eyelid ptosis, and dysarthria. He was hospitalized and developed respiratory failure and required orotracheal intubation. He was diagnosed with botulism and administered anti-botulism serum. He underwent rehabilitation under the care of an interprofessional health team. He was discharged after 6 months of hospitalization. Conclusion: The importance of the interprofessional team for patients with botulism is essential for their satisfactory clinical evolution. Specifically, the role of the nurse is important not only in direct patient care, but also as the professional who manages the entire care process.

DESCRIPTORS: Nursing Care; Botulism; Patient-Centered Care.

RESUMEN

Objetivo: Describir los cuidados de enfermería brindados en la asistencia a pacientes diagnosticados con botulismo en una unidad crítica y reportar la importancia del equipo interprofesional de salud. Método: Estudio observacional descriptivo, modalidad de estudio de caso, realizado en un gran hospital filantrópico, con recolección de datos del 5 de septiembre al 8 de octubre de 2024. Resultados: Paciente adulto que acudió al servicio de urgencias por mareos, ptosis palpebral y disartria. Hospitalizado, desarrolló insuficiencia respiratoria y requirió intubación orotraqueal. Diagnosticada con Botulismo, se le administró suero antibotulismo. Avanzó en el proceso de rehabilitación, bajo el cuidado del equipo interprofesional de salud. Fue dado de alta tras 6 meses de hospitalización. Conclusión: La importancia del equipo interprofesional para los pacientes con botulismo es fundamental para su evolución clínica satisfactoria. En concreto, el papel de la enfermera es importante no sólo en la atención directa al paciente, sino porque es el gestor profesional de todo el proceso asistencial.

DESCRIPTORES: Atención de Enfermería; Botulismo; Atención centrada en el paciente.

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INTRODUCTION

O Botulism is a serious neuroparalytic disease caused by the toxin produced by the anaerobic gram-positive bacterium C. Botulinum, found in vegetables, fruits, human feces, animal excrement and soil in the form of spores. It can also be present in ready-made foods, such as pies and homemade preserves, due to errors in preparation, storage and consumption. [1]

Currently, seven serotypes of botulinum toxins are described, from A to G, but those that cause the disease in humans are toxins A, B, E and F. Type A toxin produces the most severe syndrome, with the highest proportion of patients requiring mechanical ventilation. [2-4]

Its pathogenesis results from a sequence of events caused by botulinum toxin, which after ingestion or contamination, is absorbed into the vascular circulation and transported to peripheral cholinergic nerve terminals, inhibiting the release of acetylcholine at the neuromuscular junction, causing symptoms similar to cranial nerve palsy followed by descending symmetrical flaccid paralysis of varying severity and extent, proportional to the dose of toxin. [5]

It presents as initial signs and symptoms nausea and vomiting, followed or not by paralysis of the cranial nerves that may include respiratory impairment due to involvement of the upper airways, respiratory failure and paralysis of the extremities, producing prolonged flaccid paralysis that lasts weeks to months.[6-7]

Botulism is treated by administering botulinum antitoxin as early as possible, preventing progression to respiratory impairment and reducing the extent and severity of paralysis. The care provided includes preventing complications such as healthcare-related infections, pressure injuries and venous thromboembolism, which requires care from an interprofessional healthcare team, which includes nursing care. [6-7]

According to the World Health Organization (WHO), botulism outbreaks are rare, but when a case is detected, it is a public health problem, which requires rapid recognition and targeted care, in order to identify its genesis and consequently prevent the emergence of new cases and the promotion of rapid and effective treatment for infected individuals. [8]

Thus, this study aimed to describe the nursing care provided to patients diagnosed with botulism in a critical unit and report the importance of the interprofessional health team.

METHOD

This is a descriptive observational study, case study modality. Carried out in a large philanthropic hospital in the city of São Paulo/SP, with data collection from September 5th, 2024 to October 8th, 2024.

The sample is a 74-year-old male adult, admitted to the general critical unit with a diagnosis of botulism, under the care of an interprofessional health team.

The data collection process was carried out by consulting the medical records to gather information. Data on the progress of nursing and the interprofessional team were collected, as well as data on examinations and ventilatory parameters obtained through the electronic medical record. An open interview was conducted with the patient to gather their perspective regarding the care received.

The study was authorized by the institution's Ethics and Research Committee, under Opinion No. 6,951,643 (CAAE: 81345524.5.0000.5461), in accordance with the ethical aspects of Resolution 466 of 2012, preserving the identity of the participant and the signing of the Free and Informed Consent Form (TCLE) by the study subject.

RESULT

Male adult patient, 74 years old, born and raised in São Paulo/SP, with a history of systemic arterial hypertension, pre-diabetic and carotid atherosclerosis. He sought emergency care in December 2021 complaining of one day of dizziness, eyelid ptosis and progressive dysarthria. While hospitalized, he developed acute respiratory failure, therefore undergoing orotracheal in-

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tubation. A diagnostic hypothesis of Botulism was raised due to history and exams, later confirming the presence of toxin in laboratory tests and food analysis. An anti-botulism serum vial was administered.

After 42 days of hospitalization, the patient was transferred to the institution where this study was conducted and where he received care until discharge. He was admitted to the Intensive Care Unit and attended to by the nursing team and interprofessional team. Anamnesis and physical examination were performed, and care was planned and implemented. The patient's level of consciousness was preserved, he was cooperative, his skin was intact, and his muscle strength was grade 3 according to the Medical Research Council (MRC) scale. He was supported by a tracheostomy in mechanical ventilation mode. Pressure support (PSV) parameters were: PS 12, PEEP 8, FiO2 25%, Rf ~22 rpm, Vt ~400 ml. He was hemodynamically stable. A peripherally inserted central catheter, gastrostomy, and indwelling urinary catheter were inserted.

Transferred to the General Critical Care Unit after one day in the intensive care unit. Conscious and oriented, hemodynamically stable, tracheostomized with Bilevel Positive Airway Pressure (BIPAP) ventilatory support parameters: PEEP 8, FiO2 25%, FR16 and tidal volume 420 ml. Evaluated by the speech therapy team, presenting a secretory condition, with no possibility of using the speaking valve and nebulization at the moment.

After three months of hospitalization and rehabilitation, the physiotherapy team performed a diaphragmatic evaluation, presenting criteria for the use of electrostimulation by ultrasound. An esophageal catheter was inserted by the nurse to monitor the evolution of diaphragmatic strength. Electrostimulation therapy was initiated on the diaphragm by the specialized physiotherapy team and the use of the speaking valve, alternating with ventilatory support in BIPAP mode.

As for the nurse, it is up to him to manage care and coordinate care planning for the patient's rehabilitation together with the interprofessional health team.

In the process of systematizing nursing care, the patient presented risk for bronchoaspiration, low risk for pressure injury according to the Braden scale, high risk for falls according to the Johns Hopkins Fall Risk Assessment Tool, partially dependent for self-care activities and preserved verbal comprehension capacity. The nursing prescription was made and the care implemented.

During the time he was hospitalized, the patient did not present any pressure injuries. Nursing care measures for preventing skin injuries included: use of a mattress appropriate to the risk presented, use of protective foam dressings in areas of bony prominence and changing the patient's position every two hours.

Regarding the risk of bronchoaspiration, the speech therapy team began exercises to optimize the biomechanics of swallowing from the patient's arrival at the unit. As the patient progressed to using the phonatory valve and reducing airway secretion, oral medication was offered with progressive food intake. Nursing care such as elevated decubitus of 30 to 45 degrees, checking for signs of abdominal distension, monitoring bowel habits, and encouraging the use of prokinetic medications were also used to prevent episodes of bronchoaspiration.

The fall prevention protocol includes the use of a wristband and a bed alarm, which is activated for patients assessed as having a high risk of falling. In addition to these precautions, the patient was instructed to remain with a companion 24 hours a day and to ring the bell if necessary. The patient wore glasses and these were within his reach. The patient was also instructed to wear appropriate footwear for rehabilitation exercises.

The patient remained conscious throughout the rehabilitation period. Due to the use of a mechanical ventilator, bathing was performed in bed, but the patient wanted to take a shower and the interprofessional team sought alternatives to meet this request, focusing on the patient's experience and excellence in care.

The risks of shower bathing were discussed with the institution's risk management team and some criteria were established for shower bathing: 1) clinical evaluation by the physician, nurse and physiotherapist; 2) preparation of the mechanical ventilator and mandatory extensions, as well as battery life of the device; and 3) evaluation of the ventilatory parameters (considering dead space and patient effort during the bath). Shower bathing began to be performed in February.

In one of the reports to the team, the patient said:

"I was very excited when I found out about the possibility of taking a shower, it was one of my biggest wishes. It was one of the best days of my hospitalization when I finally went to take a shower, being able to hold the shower head, feel the water running down my body. It was an accomplishment."

The patient remained in rehabilitation, was decannulated in early June and was discharged with his son on June 18th, 2022, without motor deficits, conscious, oriented, in room air and eating exclusively orally. There was no harm related to the care provided by the interprofessional team.

When asked "What role did the interprofessional health team play in your care?" the patient reported: "The team was super important. It was important both for my recovery and for my psychological well-being."

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DISCUSSION

The study reports food poisoning by Clostridium botulinum in an adult male patient who required prolonged mechanical ventilation support. The patient's initial symptoms consisted of symptoms of nervous system involvement, which are frequently described in foodborne botulism. The description of the consumption of the suspected food is essential for the diagnostic hypothesis.

The reported case demonstrated the progression of typically descending paralysis, where the first symptoms were on the face (palpebal ptosis), dysarthria and on the third day of the onset of symptoms, the need for orotracheal intubation demonstrates that the thoracic region was affected.

Botulinum antitoxin was administered following the recommendation in the literature, which states that the administration of anti-botulism serum should be as early as possible, eliminating the circulating toxin that did not attach itself to the central nervous system [9] and is associated with milder development of the disease. [10-11] The patient remained on mechanical ventilation for a prolonged period, longer than the average reported in the literature, which is eight weeks. [9]

The interprofessional team is essential in the patient's rehabilitation and the nurse has a prominent role, integrating information from the team, patient and family, directing the care plan with greater assertiveness.

In view of this scenario, a shower bath was proposed, where the team discussed possible unfavorable outcomes, focusing on patient and procedure safety, such as: risk of airway loss; energy expenditure beyond what is necessary for the patient during the bath; problems related to the mechanical ventilator, since it was also necessary to carry an oxygen torpedo. All issues were discussed by the professionals involved and shared with the patient, taking into account their experience.

The literature shows that patient experience is directly related to clinical effectiveness and patient safety. Health professionals need to internalize the importance of including patients in decisions about their health, understanding that this co-participation does not diminish their decision-making capacity, but rather allows for the strengthening of the guidelines provided by these professionals, enabling the patient to recognize their co-responsibility in this process. [12]

The patient who is ventilated through a tracheostomy has loss of control over secretions and the need for frequent aspirations may become necessary. [13] The airway suctioning procedure can be performed by the nurse or physiotherapist during your care.

When secretions have accumulated and the airways are obstructed, making adequate ventilation difficult, tracheostomy aspiration is indicated. [14] During aspiration, it is important to ensure that the patient is well oxygenated before the procedure and that the professional lubricates the tip of the aspiration probe to facilitate its insertion. It is necessary to use gentle movements, limiting the time to avoid causing discomfort or injury to the mucosa. [15]

Changing the tracheostomy tube attachment is also the responsibility of the nursing team and should be done daily after bathing or whenever there is dirt, to prevent infections, by two professionals: one professional should hold the tube in place while the other removes the previous attachment and places a new one. The ostium should be cleaned whenever necessary, using 0.9% saline solution and sterile gauze. It is necessary to observe inflammatory signs and the appearance of the secretion, recording this in the patient's medical record. [16]

The JH-FRAT scale underwent cross-cultural adaptation and content evaluation in Brazil in 2016, being easy and quick to operate, and includes assessment of the following aspects: previous risk-defining situations; age;

> “The use of tracheostomy tube is also associated with the risk of bronchoaspiration.”

In this case, the patient also had the use of enteral nutrition as a risk factor. The occurrence of aspiration can trigger clinical signs, such as tachypnea at rest, bilateral wheezing on pulmonary auscultation and reduced arterial oxygenation. Episodes of aspiration that do not cause noticeable changes in the clinical evaluation are also observed, being classified as silent aspiration. [17]

Interventions to minimize risks are recommended by the Nursing Intervention Classification (NIC), such as: positioning the patient in a recumbent position equal to or greater than 30 degrees, monitoring the level of consciousness, assessing the cough reflex, swallowing ability, controlling emesis, keeping the head of the bed elevated 30 to 40 minutes after offering food, performing oral hygiene and checking for reflux from gastric/enteral/gastrostomy tubes. [18]

These care measures are incorporated into the systematization of nursing care and are prescribed by the nurse, after performing a risk assessment and identifying factors that predispose to aspiration. The speech therapy team was also called and monitored the patient until discharge. Speech therapy assessment is indicated for patients at risk of aspiration, and it has been demonstrated that adherence to a preventive program through the applica-

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tion of a protocol including a speech therapist is cost-effective, resulting in a gain of R$900.00 per hospital admission and a reduction of 0.15 days of hospitalization per patient. [19]

> "The nurse also plays a fundamental role in preventing skin lesions, and in the case of this patient, with a prolonged hospitalization period, daily assessment is essential, capable of identifying risk factors and preventive measures that must be implemented, through the prescription of care."

Risk assessment scales have been developed, and the Braden scale is the scale used in the institution. This instrument is capable of predicting the risk of injury formation, assisting nurses in identifying patients at greater risk of developing injury. [20]

The preventive measures implemented are in accordance with the guidelines of the National Pressure Injury Advisory Panel (NPIAP), the National Health Surveillance Agency (ANVISA) and the Pan Pacific Pressure Injury Alliance (PPPIA), including changing the position every two hours to promote the redistribution of pressure, especially in bony prominences, skin hydration, use of a pneumatic mattress and hydrocolloids for prevention. [21]

Regarding recommendations for preventing falls, all health professionals involved in care must be trained to provide guidance to patients, family members and companions on good practices for preventing falls. [22-23]

The Johns Hopkins Fall Risk Assessment Tool (JH-FRAT) scale was used to assess this patient's risk of falling, and the entire team involved in care followed the recommendations, as found in the literature: keeping the bed in a low position with the rails raised and locked, always ringing the bell within the patient's reach to activate the care team when necessary, keeping personal items within the patient's reach, and using a bracelet identifying the patient's risk. [22-23]

The JH-FRAT scale underwent cross-cultural adaptation and content evaluation in Brazil in 2016, being easy and quick to operate, and includes assessment of the following aspects: previous risk-defining situations; age; history of falls; eliminations; medications; assistance equipment; mobility and cognition. [24]

> "Communication between healthcare professionals and patients/companions must be carried out in a way that provides a good understanding of the subject, according to the individual needs of the patients. In this sense, care must be coordinated between the professionals involved and with the patients and companions to avoid gaps and ensure safe and quality care. [25]"

CONCLUSION

The nurse plays a role in planning, managing and implementing care at all levels of care to which the patient has been subjected. As well as the role of predicting and avoiding possible harm related to health care.

Regarding the performance of the interprofessional team, its importance for a favorable outcome for the patient was highlighted, which, together with the participation of the patient and family, allows for shared decisions and the guarantee of individualized and person-centered care.

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