Main nursing diagnoses in a patient with traumatic injury of the spinal cord from the perspective of high complexity

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Abstract

Traumatic spinal cord injury and sequelae are catastrophic events that adversely affect the victim's functional capacity, and rapid rehabilitation is necessary. Nursing patients with spinal cord injury is essential for the patient's rehabilitation. Nursing professionals offer individualized support according to different levels of complexity to prevent and treat the main complications caused by spinal cord injury. The objective of this study was to verify knowledge about the care of patients with spinal cord injuries undergoing rehabilitation. This study was developed from the virtual databases resident in the Library Research Portal: Latin American and Caribbean Literature in Health Sciences (LILACS); Scientific Electronic Library online (SciELO); Medical Literature Analysis and Retrieval System Online (MEDLINE) and Elsevier. It is concluded that nurses have knowledge of methods and scientific support to care for patients with spinal cord injuries. Their professional qualification provides greater technical competence in activities carried out with victims and facilitates the progression of trauma. Its process has a high contribution to rehabilitation, aiming at care that pays attention to each individual's needs and particularities, helping to face the physical, social and psychological limitations of patients with traumatic spinal cord injuries.

Keywords: Nursing care, Nursing diagnosis, emergencies, intensive care unit, spinal cord injuries.

Principais diagnósticos de enfermagem em paciente com lesão traumática da medula espinhal sob a ótica da alta complexidade

Resumo

A lesão traumática da medula espinhal e sequelas são eventos catastróficos que afetam adversamente a capacidade funcional da vítima, e a rapidez na reabilitação é necessária. A enfermagem de pacientes com lesão medular é fundamental para a reabilitação do paciente. Os profissionais de enfermagem oferecem suporte individualizado de acordo com diferentes níveis de complexidade para prevenir e tratar as principais complicações causadas pela lesão medular. O objetivo deste estudo, foi verificar o conhecimento sobre o atendimento ao paciente com lesão medular em reabilitação. Este estudo, foi desenvolvido a partir das bases de dados virtuais residentes no Portal de Pesquisa da Biblioteca: Literatura latino-americana e do Caribe em Ciências da Saúde (LILACS); Scientific Electronic Library online (SciELO); Medical Literature Analysis and Retrieval System Online (MEDLINE) e Elsevier. Conclui-se que os enfermeiros possuem conhecimento de métodos e respaldo científico para cuidar de pacientes com lesão medular. Sua qualificação profissional proporciona maior competência técnica nas atividades desenvolvidas com os acidentados e facilita a progressão

do trauma. Seu processo sendo de alto contributo na reabilitação visando o cuidado onde se atenta a cada necessidade e particularidade do indivíduo, auxiliando no enfrentamento das limitações físicas, sociais e psíquicas do paciente com lesão traumática medular.

Palavras-chave: cuidados de Enfermagem, diagnóstico de Enfermagem, emergências, unidade de terapia intensiva, traumatismos da medula espinhal.

1. Introduction

Spinal cord trauma (SCT) is an emergency pathology characterized by the injury and possible partial or total section of the motor and sensory nerve bundles of the spinal cord, capable of generating autonomic, sensory and motor deficits inferior to the injury, but can also lead to death (Cerezetti et al., 2012; De Leener et al., 2017). Therefore, the clinical presentation and repercussions of SCT are multiple, with its phenotype depending on the level and degree of the injury (Nunes et al., 2017).

Due to possible deficits, SCT is a condition that can considerably limit the patient's independence, having social and psychological repercussions. In addition to physical, mental and social limitations, the injury is responsible for a considerable financial impact both for the victim and for the public or private healthcare system. To elucidate this impact, it is estimated in the United States a cumulative cost of 1.1 to 4.6 million dollars per patient, including costs for hospital expenses, treatment and lost productivity, considering that the most affected group is in an age group of high labor productivity (Roberts et al., 2017; Scopel et al., 2018; Silva et al., 2018).

The spine is divided into 33 to 34 vertebrae named according to their morphology and location. It is divided into 7 cervical, 12 thoracic, 5 lumbar and 4 or 5 coccygeal vertebrae. The sacral vertebrae fuse to form a single bone as do the coccygeal vertebrae to form the coccyx. The flexibility and mobility of this spine are related to the muscles and ligaments. Thus, the spine is not restricted to just a skeletal structure it also, refers to its interior and its components: muscles, vessels and nerves (Rohen et al., 2021; Netter, 2023).

The etiologies of spinal cord trauma are due to external causes and can be divided into two main mechanisms: blunt trauma to the spinal cord and perforating trauma, in addition to other forms with a lower incidence such as burns. Blunt trauma is the most prevalent, corresponding to approximately 70% of the causes, in which car accidents predominate, with a variation from 33.40 to 40.80%, followed by falls with 23.30 to 33.30% of cases. In relation to car accidents, it is important to mention the high number of motorcyclists involved, representing 50 to 66% of patients (Santos et al., 2019). In comparison, in a short evaluation period in a trauma center in Italy (Europe), 1104 cases of severe spinal cord trauma were treated (Spota et al., 2023), variations occur between countries and their traffic laws and high density of drivers.

Meanwhile perforation trauma, mostly composed of firearm projectiles (FP), varies mainly depending on the region and has a prevalence of 22.60 to 32%. Castro-Espicalsky et al. (2020) in a survey carried out in Brazil, determined 868 deaths in the craniofacial region. Other forms, such as burning or self-extermination, varied from 4.9 to 16.8%. Another important aspect for the classification of SCT would be to define the level of the injury and the location of the region, affecting which functions may be affected, and, consequently, being a prognostic and quality of life factor. The topography is variable according to the study; however, the thoracic region had the highest rate of cases, with a variation between 43.3 to 50%, followed by the cervical region with a variation of 26 to 41.5%. Then, a higher prevalence was observed at the lumbar level, with 14.34 to 26.7% of cases (Müller et al., 2020).

The incidence of spinal injuries is higher among males, with the most frequent causes being falls from heights, car accidents, PF and violence; also associated with alcohol poisoning and high speed (Metcalfe; Steward, 2023). In Brazil, a study was carried out in all regions of the country, and they agree that the most affected segment is the cervical segment (Monte et al., 2019).

The pathophysiology of SCT is divided into two phases and is directly linked to the interruption of the protection of the spinal cord, generating spinal damage, which consists of the rupture of vessels and axons, thus damaging nerve cells and the propagation of the action potential (Mataliotakis; Tsirikos, 2016; Hebert, 2017).

The first "acute" consists of initial mechanical injury, where the damage is directly linked to the applied force that promotes changes to the axons, vessels and cell membranes. This injury occurs in the first few minutes with the formation of hemorrhagic petechiae within the gray matter, which can result in necrosis, thus reducing blood flow at the site of the injury. In the second phase, vascular disorder, ischemia, edema, inflammatory proliferation, cell apoptosis and other changes related to injury occur. Inflammatory cells move to the site of injury, initiating the proliferation of glial cells and, consequently, the development of scar tissue and cysts within the spinal cord

(Veronezi, 2016; Cunha et al., 2023).

In turn, the consequences depend on the level of the injury, ranging from motor and functional loss to cardiogenic shock and respiratory failure, leading to death. The importance of understanding the anatomophysiopathology of SCT is evident, as well as how to proceed with its care, aiming for better conduct and its repercussions, avoiding greater damage to the patient's life (Braulio et al., 2021).

Assistance to people with physical trauma must be carried out in a multidisciplinary way, however, this is experienced in a more integrated way by the nursing professional, who considers the patient as a biopsychosocial being, not just focusing on curative practice, as nursing care it is a dynamic and complex process (Martiniano et al., 2020; Wang et al., 2023; Cunha et al., 2023).

As nursing care is an instrument based on judgment and clinical knowledge carried out by nurses, these are attributed with a view to real, behavioral, family and community results. Also, in individual perceptions that are measured during the assessment process, in order to continue the treatment with the implementation of specific actions (Oliveira et al., 2018).

The nurse's action in assisting patients with traumatic spinal cord injury is fundamental and indispensable. The approach and attention directed to these victims must be carried out effectively, going beyond the integration of care systems: prevention, pre-hospital and hospital care, and rehabilitation. In this sense, the victim needs specialized and continuous attention not only during initial care and admission, but throughout the entire process until hospital discharge (Martiniano et al., 2020).

In agreement with the Brazilian Federal Nursing Council (COFEN) (2009), through resolution 358/2009, it provides for the Systematization of Nursing Care (SAE) and the implementation of the Nursing Process (NP). This must be carried out systematically and deliberately in all public or private environments where nursing care occurs (Dorneles et al., 2021).

The SAE is considered a nurse's exclusive activity and must be operationalized through the nursing process (NP). The NP is divided into five stages, the first being data collection, the second clinical judgment, where nursing diagnoses will be listed, the third planning, followed by intervention and ending the evaluation (Dorneles et al., 2021). In view of the above, the study aims to describe the main Nursing diagnoses in patients with traumatic spinal cord injuries treated in highly complex sectors.

2. Materials and Methods

This is a theoretical-reflective study, built on the basis of a literature review of an exploratory nature with a qualitative approach, but with a social extension: the appearance of extension. To develop the study, the following descriptors were used: Nursing Care; Nursing diagnosis; Emergencies; Intensive Care Unit and Spinal Cord Injuries.

With regard to the inclusion criteria, articles, monographs, dissertations and theses published between 2018 and May 2023 were established, in Portuguese and English and that are related to the pre-established theme, which was done through the reading the titles and respective summaries. In turn, articles, monographs, dissertations and repeated theses, incomplete manuscripts and those with unauthorized free access were excluded. In view of the above, it is justified that the exclusion of studies outside the Brazilian reality, which made the search more cohesive, palpable and reliable, with the non-inclusion of other studies in other countries. Based on the data, after applying the inclusion and exclusion criteria, 26 studies were selected.

The following databases were used: Latin American and Caribbean Literature in Health Sciences (LILACS); Scientific Electronic Library online (SciELO); Medical Literature Analysis and Retrieval System Online (MEDLINE) and Google Scholar.

3. Literature review

3.1 Impacts and repercussions of traumatic spinal cord injury on patients assisted in high complexity

3.1.1 Category 1

Traumatic spinal cord injury, when affecting patients cared for in highly complex units, triggers a profound set of impacts and repercussions. The devastating partial or total loss of motor and sensory function below the point of injury results in significantly reduced mobility. The patient often faces dependence on assistive devices, such as wheelchairs, and requires intensive rehabilitation to regain independence in locomotion (Sousa; Lima, 2022).

It is confirmed that, in addition to motor limitation, the injury can also affect the body's sensitivity and autonomic regulation, leading to a variety of complications. The loss of tactile sensation and temperature along with dysfunctions in the cardiovascular, gastrointestinal and urinary systems requires constant attention from healthcare professionals. Furthermore, respiratory muscles weakened by the injury increase the risk of pulmonary complications, causing many patients to require ventilatory assistance to maintain adequate breathing (Brangioni; Reis, 2022).

The impacts go beyond the physical and permeate the psychosocial aspect. Adapting to this new reality imposes considerable emotional challenges, often leading to feelings of depression, anxiety and social isolation in both patients and their families. High complexity units in this context play a vital role in providing intensive rehabilitation, comprising physiotherapy, occupational therapy, and psychological support, aiming not only at functional recovery, but also at improving quality of life and social reintegration (Andrade, 2022).

However, the cost of care required to cope with traumatic spinal cord injury cannot be underestimated. Treatments, therapies, assistive devices and home facility modifications can be financially burdensome creating significant socioeconomic challenges for patients and their families. This reality continues into long-term care, requiring constant monitoring and adaptations as the condition evolves (Sousa; Lima, 2022).

At the same time spinal cord injury has driven research in several areas from neuroscience to biomedical engineering and regenerative therapy. The search for new therapeutic approaches is largely fueled by patients, families and support organizations who become active advocates for issues related to accessibility rights of people with disabilities and medical innovation. Collaboration between high-complexity units and research can result in significant advances in treatment and improved quality of life for those impacted by this challenging condition (Brangioni; Reis, 2022).

3.2 Main nursing diagnoses in patients with traumatic spinal cord injury

3.2.1 Category 2

For category 2 in patients with spinal cord trauma, the parameters are described in (Frame 1).

Frame 1. Nursing diagnosis parameters, interventions and expected results.

Nursing Diagnoses	Interventions	Expected Results
1. Impaired physical mobility	Promote self-care, look for devices that facilitate and improve mobility, and perform hygiene.	Level of mobility and locomotion, tissue integrity: skin and mucous membranes, wound healing by primary intention.
2. Urinary retention	Adherence to means that can promote bladder relief.	Urinary elimination.
3. Compromised skin integrity	Assess and monitor the integrity of compromised skin during dressing changes and assess wound healing. Encourage changes in position; Explain skin care and surrounding areas; Keep skin clean and dry; Guide body and intimate hygiene; Caring for the insertion site of invasive devices.	Integridade da pele melhorada
4. Cold	Be aware of possible problems and make the necessary changes in food and water intake and promote means of intestinal relief when necessary.	Distended abdomen, increased abdominal pressure; abdominal pain; effort to evacuate; hard stools; decreased stool volume; decreased frequency; inability to eliminate feces; change in intestinal pattern.
5. Rectal Distension		

6. Pressure injury	Perform position changes. Controlling pressure on areas of the body, controlling nutrition and changing dressings.	Risk control, response to medication and improvement in wound integrity.
7. Pain	Assess pain; Provide adequate sleep, provide Comfort.	Pain control.
8. Urinary infection	Observe frequency, color and appearance of urine; Strictly administer medications at prescribed times, provide guidance on intimate hygiene.	Control and eventual reduction of the infectious condition and stabilize urine elimination.
9. Anxiety	Establish a relationship of trust with the patient; Provide information about diagnosis, treatment and prognosis; Encourage reporting of your anxiety; Provide a calm and pleasant environment; Provide well-being.	Anxiety control.
10. Sexual dysfunction and altered sexuality patterns	Sexual counseling, emotional support, improving self-esteem, empowering body image, encouraging development.	Sexual identity: acceptance, body image and self-esteem.

Source: Sistematização da Assistência de Enfermagem: Fundamentos, Teorias e Taxonomias (capes.gov.br), 2023.

4. Conclusions

Through this review study, 10 titles were identified according to NANDA in patients with traumatic spinal cord injury, this finding of nursing diagnoses made it possible to describe the clinical profile of patients with traumatic spinal cord injury, and through NIC and NOC the identification of necessary interventions and expected results.

Currently there has been an increase in patients with traumatic spinal cord injury, however advances in technology and specialized services have helped to improve the quality of care for people with spinal cord trauma, where interventions when carried out correctly and in a timely manner, fewer complications will be possible, allowing greater quality of life. There are several factors involved in the occurrence of traumatic spinal cord injury that impact the condition and quality of life of patients, such as social, physical and psychological. Long and expensive treatments, although extremely necessary, are necessary for rehabilitation and to reduce injuries due to lack of correct interventions.

The work of nursing staff is fundamental throughout the process, so that there is rehabilitation that pays attention to each need and particularity of the patient with spinal cord trauma, thus helping to cope with physical, social and psychological limitations.

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6. Authors' Contributions

Ane Raquel de Oliveira: project development, research, writing, discussion and submission. *Gabriel Nivaldo Brito Constantino*: data search, writing, reading and grammatical corrections. *Larissa Christiny Amorim dos Santos*: interpretation of data, reading, development of material and research method. *Miriam Maria Ferreira Guedes*: interpretation of data, reading, development of material and research method. *Érica Motta Moreira de Souza*: reading, interpretation and discussion of results. *Elcio Gomes dos Reis*: reading, interpretation and discussion of results. *Wanderson Alves Ribeiro*: advisor, reading, monitoring writing, discussion and publication.

7. Conflicts of Interest

No conflicts of interest.

8. Ethics Approval

Not applicable.

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