PROFILE OF PATIENTS WITH SPINAL CORD INJURIES AND OCCURRENCE OF PRESSURE ULCER AT A UNIVERSITY HOSPITAL[1]

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Patients with traumatic spinal cord injury (TSCI) have an increased risk of developing pressure ulcers (PU). It is a retrospective study done by review of records in order to identify the characteristics of patients who were assisted at a tertiary hospital as well as the occurrence of PU. Most patients were male, white and 36,2% between 21 and 30 years. The most common causes of TSCI were wound by fire weapons followed by vehicle crash/overturn. There was a predominance of injury at the toracic level followed by cervical. The PU occurred in 20 pacientes (42,5%). The most frequent regions of occurrence were the sacral and heels. Only 25% of the records had PU's dimensions charted, 80% stated the aspect, and 52.1% did not state the stage. There is a need for better documentation of PU so that interventions used for treatment can be evaluated.

DESCRIPTORS: spinal cord injuries; decubitus ulcer; nursing care; nursing

PERFIL DE PACIENTES CON LESIÓN TRAUMÁTICA DE MÉDULA ESPIÑAL Y OCURRENCIA DE ÚLCERAS POR DECÚBITO EN UN HOSPITAL UNIVERSITARIO

Pacientes con lesión traumática de médula espinal (LTME) tienen riesgo elevado de desarrollar úlceras de presión (UP). Este estudio retrospectivo identificó a través de la revisión de las historias clínicas en hospital nivel III, carácterísticas de pacientes atendidos y la ocurrencia de UP. La mayoría fue de sexo masculino, blanca y el 36,2% entre 21 a 30 años de edad. La causa más frecuente de LTME fue herida por arma de fuego, seguida de choque/volcadura de auto. Hubo predominio de lesión a nivel toráxico, seguido del cervical. Las UP aparecieron en 20 pacientes (42,5%). Las regiones de mayor frecuencia fueron la sacra y los calcaneos. Solo el 25% de las historias tenía registro sobre la dimesión de la UP, el 80% describió el aspecto y el 52,1% no registró el estadio. Se observa la necesidad de un mejor registro de las UP para que las intervenciones utilizadas en el tratamiento puedan ser evaluadas.

DESCRIPTORES: traumatismos de la médula espinal; úlcera por decúbito; atención de enfermería; enfermería

PERFIL DE PACIENTES COM LESÃO TRAUMÁTICA DA MEDULA ESPINHAL E OCORRÊNCIA DE ÚLCERA DE PRESSÃO EM UM HOSPITAL UNIVERSITÁRIO

Pacientes com lesão traumática da medula espinhal (LTME) têm risco elevado para desenvolver úlcera de pressão (UP). O estudo é retrospectivo e, pela revisão dos registros nos prontuários identificaram-se as características dos pacientes atendidos em hospital terciário e das UP. A maioria dos sujeitos era do sexo masculino, branco e 36,2% entre 21 e 30 anos de idade. A causa mais freqüente da LTME foi ferimento por arma de fogo seguida por colisão/capotamento de veículo. Houve predomínio da lesão em nível torácico seguido pelo cervical. A UP ocorreu em 20 pacientes (42,5%). Os locais de maior freqüência foram a região sacral e calcâneos. Apenas 25% dos prontuários tinham o registro da dimensão da UP, 80% apresentava o registro do aspecto e em 52,1% não havia o registro do estágio. Observa-se a necessidade de melhor registro das UP para que as intervenções utilizadas para tratamento possam ser avaliadas.

DESCRITORES: traumatismos da medula espinhal; úlcera de decúbito; cuidados de enfermagem; enfermagem

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INTRODUCTION

Patients with traumatic spinal cord injury (TSCI) suffer a spinal cord trauma due to hyperflection or hyperextension of the head and neck, compression or rotation of the vertebral body, or by penetrating injuries, which cause a total or partial rupture of spinal transmission, leading to a change in the normal functioning of the spine[1].

The spinal cord is part of the Central Nervous System, contained in the vertebral column, and any damage caused by a physical agent (injury by fire weapon) or violent shock (falls or automobile accidents) can cause a permanent loss of sensitivity and/or motricity, leading to quadriplegia or paraplegia. Quadriplegia results from a change in the functions of the upper limbs, trunk, lower limbs and pelvic organs. Paraplegia refers to the loss of the motor and/or sensitive function in the thoracic, lumbar and sacral segments. The anatomic location of the injury is directly related to the trauma mechanism, and the level of neurological damage is based on the assessment of sensitivity and motor function[2].

TSCI more frequently affects young adults. Most injuries occur in men, in the second or third decade of life[3].

Due to decreased mobility and sensitivity, all patients with TSCI present high risks of developing pressure ulcers (PU)[4].

Pressure ulcer can be defined as "a localized area of tissue necrosis that tends to develop when soft tissue is compressed between a bone prominence and a hard surface for a prolonged period of time"[5]. It is staged from I to IV, according to the depth of observed tissue damage. In stage I, PU is characterized by a nonblanchable erythema of intact skin. In individuals with darker skin, discoloration of the skin, warmth, edema and hardness may also be indicators. Stage II is marked by partial-thickness skin loss, involving the epidermis, dermis or both. The injury is superficial and clinically presents as an abrasion, blister or shallow crater. Stage III is characterized by total-thickness skin loss, involving damage to or necrosis of subcutaneous tissue that may extend down to, but not through, underlying fascia. The pressure ulcer clinically appears as a deep crater. In stage IV, the PU is marked by full-thickness skin loss with extensive destruction, tissue necrosis, or damage to muscle, bone or supporting structures, for example: tendons or joint capsules[5].

Depending on the depth of tissue injury, PU can lead to serious complications, such as osteomyelitis, septicemia and even death. Besides financial losses to patients and relatives, the problem also causes psychological disorders and impedes or complicates the patient's participation in rehabilitation programs[6].

For both individuals and caregivers, PU can result in lost work or school time, impaired community reintegration, reduced quality of life and loss of self-esteem[4].

Traditionally, the nursing team has been responsible for maintaining skin and underlying tissue integrity to prevent PU, although other health team professionals need to be involved due to the multicausal nature of the problem. In the international context, the presence of PU has been presented as a health service quality indicator[7].

Most PU can be prevented by adopting adequate patient care measures and by education for professionals, patients and family members; however, institutions also need to be involved to provide the necessary conditions for care delivery[8].

International literature highlights that, until the start of World War II, society adopted a pessimist attitude towards patients with TSCI. The presence of PU was considered as a fatality and an unsolvable problem, that is, "which should not be treated"[9]. Later, medical, scientific and technological advances provided the necessary conditions to change this dark perspective and, today, we know that PU can be avoided and successfully treated, although individuals with spinal cord injuries will always face high risks of developing these ulcers[4].

In Brazil, a retrospective study[10] identified that, in a group of 54 TSCI patients hospitalized in a four-year period, 34 (62.9%) presented PU upon admission or during their stay in hospital. This research did not find an association between the level of TSCI and presence of injuries, although hospitalization was longer for patients with PU in comparison with persons without ulcer (p=0.000). Another study at the same teaching hospital[8], involving nursing team members who attended patients with TSCI, identified that professionals attributed the presence of PU to patient-related factors, to the care process and the institutional structure, indicating the multicausal nature of this problem.

As PU continues being one of the main secondary complications of TSCI, we aimed to investigate the profile of adult patients attended at a

teaching hospital, as well as the occurrence and characteristics of the PU registered in the patients' charts.

METHODS

We carried out a retrospective and quantitative study at the Ribeirão Preto Medical School Hospital das Clínicas. Data were collected by reviewing the charts of adult patients hospitalized with TSCI, under the responsibility of the orthopedics and neurosurgical teams, from 2000 to 2003.

The research project was submitted to and approved by the Regulation and Ethical Standards Commission at the place of study. Next, we carried out a survey at the Medical Filing and Statistics Service (SAME) to identify the charts of patients hospitalized during the above mentioned period, using International Classification of Diseases (ICD). The charts were reviewed to identify which subjects attended to the research inclusion criteria: diagnosis of TSCI, age of 18 years or older at the time of trauma and information records related to the first hospitalization after the trauma.

Data were collected in 2004, using a four-part instrument. Part one referred to demographic variables: gender, civil status, skin color (considering white and not white) and age range. Part two was related to data about the TCSI, such as the type of occurrence that led to the trauma and initial care conditions. Part three considered data about the neurological level of the injury and conditions for care by the multiprofessional team, and part four included information related to the occurrence of PU and characteristics that should be registered on the chart: location (anatomical region), classification and general appearance, such as dimension, aspect of wound bed and margins, odor[4].

After reviewing each chart, variables were coded and a database was elaborated. Data were transcribed to worksheets and the database was validated through double typing in independent worksheets. The statistical SPSS (Statistical Package for Social Science) was used for data analysis.

RESULTS AND DISCUSSION

The survey at the SAME identified 47 charts of patients who attended to the research criteria. These constituted the study population.

Table 1 presents the results of the subjects' demographic and clinical profile.

Table 1 - Distribution of subjects with TSCI hospitalized in a university hospital in 2000-2003, according to demographic and clinical variables. Ribeirão Preto, 2004

Variables	n	%
Gender		
Male	45	95.8
Female	02	04.2
Civil Status		
Single	20	42.6
Married or with partner	27	57.4
Skin color		
White	32	68.1
Not white	15	31.9
Age range		
< 20	08	17.0
21 - 30	17	36.2
31 - 40	05	12.5
41 - 50	07	14.9
51 - 60	03	06.4
> 60	03	06.4
Cause of Trauma		
Wound by fire weapon	21	44.7
Vehicle crash/overturn	11	23.4
Fall	08	17.0
Run over	03	06.4
Diving	03	06.4
Motorcycle	01	02.1
Neurological Injury Level		
Cervical	19	40.4
Thoracic	21	44.7
Lumbar	07	14.9

Only two subjects were women. A large majority of participants were young adults, with 36.2% between 21 and 30 years old. As to skin color, 68.1% were white and, what civil status is concerned, 57.4% were married or had a partner. With respect to the type of accident that caused the trauma, 44.7% were due to wounds by gun shot, followed by vehicle crash/ overturn (23.4%). Even when we classified together motor vehicle-related accidents (crash/overturn; run over and motorcycle), the number of events (31.9%) was still lower than traumas caused by gun shots . Injuries most frequently affected the thoracic region (44.7%), followed by the cervical region (40.4%).

The results, that victims of TSCI are most frequently young adult men are confirmed by other authors in Brazilian and international literature[1-3].

Related to the higher frequencies of TSCI caused by gun shot, this tendency is observed in Brazil and other parts of the world, as a result of increased violence[2].

A study carried out at the same institution [10] between 1996 and 1999 found that, in a group of 54 patients with TSCI, most victims were under 38 (75%). The injury affected the thoracic level in 46.3% of patients and the cervical region in 40.7%. However, in terms of the type of accident that led to TSCI, the main cause of trauma was automobile accidents (48.1%), followed by gun shot (25.9%), as opposed to our results.

Many accidents that lead to TSCI could by avoided by prevention campaigns, to alert the population about injury-causing risk behavior, such as diving in shallow waters and the need to evaluate depth before diving, for example[11]. Injuries caused by falls could also be reduced if civil construction workers adhered to recommendations about the use of protective measures[2].

Tables 2 and 3 present results about PU and their characteristics, as registered in the subjects' charts.

Table 2 - Number and anatomic region of PU in adult patients with traumatic spinal cord injury. Ribeirão Preto, 2004

Variables		
Number of PU	**n**	**%**
0	27	57.4
1	7	15.0
2	5	10.6
3	4	8.5
4	3	6.4
5	1	2.1
Anatomic region of PU		
Sacral	17	36.9
Heel	8	17.4
Gluteal	5	10.8
Ischia	5	10.8
Coccyx	3	6.5
Trochanter	2	4.4
Malleoli	2	4.4
Calves	2	4.4
Scapulae	2	4.4

In the group of 47 subjects, 20 (42.5%) had PU, with an average of 2.3 PU per patient. One single patient had 05 PU in different body regions. Two (4.3%) of the registered PU were present when the patient was admitted to hospital. In terms of anatomical region, ulcers were found in different body regions, but the most affected sites were the sacral region (37%), followed by the heels (17.4%). In these regions, PU happen when patients are kept in prone or dorsal position for a long period of time, with the bed in a horizontal position, and are aggravated if the bed head is raised to an angle bigger than 30 degrees, like in Fowler's position[5]. The problem gets worse when regular hospital mattresses are used, which are hard and, due to wear and tear, frequently present a depression in the sacral region (which receives the greatest body weight in this position), which causes a larger pressure increase on that site – the main etiological factor for developing PU[7]. It is known that capillary closing pressure is 32 mm/Hg and that, when the compression degree exceeds this pressure, cell hypoxia and ischemia occur, causing tissue damage and breaking skin integrity, as evidenced by the PU[7].

Thus, staying in the same position for a long time and on inadequate mattresses, are factors leading to the development of PU[5].

In the heel region, PU appear for the same reason, but can be aggravated if patients with spinal cord injury present constant foot friction as a result of muscle spasms[4]. Prevention measures include elevating the feet by placing pillows under the patients' calves, changing position frequently, protecting the skin with transparent film dressings, using skin hydrating creams and detecting ulcers early through a daily examination of the regions [4-5]. Other frequently observed PU, like in the trochanter and malleoli region, are due to excessive pressure caused by remaining in the lateral position for a long time. As subcutaneous tissue is not thick in these regions and there is no muscle mass, pressure ulcers appear faster and reach the deep layers in few days[4-5]. Early detection and treatment can avoid complications.

Table 3 - Stages of PU in adult patients with traumatic spinal cord injury, according to location (anatomic region). Ribeirão Preto, 2004

	Stages PU					
Location	I	II	III	IV	No record	Total
Sacral	-	2	1	4	10	17
Heel	2	2	1	-	3	8
Gluteal	1	-	-	-	4	5
Ischia	-	2	-	2	1	5
Coccyx	-	1	-	-	2	3
Trochanter	1	-	-	-	1	2
Malleoli	-	1	-	-	1	2
Calves	-	-	1	-	1	2
Scapulae	1	-	-	-	1	2
Total PU	5 (10.9%)	8 (17.4%)	3 (6.5%)	6 (13.0%)	24 (52.2%)	46 (100%)

In 52.2% of PU cases, the patients' charts did not contain any documentation about the classification stage. Among the PU whose classification

was registered, 03 (6.5%) were in stage III, 05 (10.9%) in stage I and 6 (13.0%) in stage IV. The deepest PU (stage IV) were identified in the sacral (4) region and ischia. In stage III, ulcers were found in the sacral region, heels and calves. In the latter, in view of the documentation in the patient's chart, the PU was probably due to the use of a positioner for the lower limbs, to avoid the development of a clubfoot. This caused pressure in the area and contributed to the development of PU.

A study that analyzed data of TSCI patients attended in the American regional system found a substantial decreased in the proportion of stage III and IV pressure ulcers during the annual evaluation after the injury. The authors[12] argue that this decrease can be attributed to different factors, including better knowledge about causes of PU, improved patient care and follow-up, as well as increased options of support surfaces and pillows for patients.

In the previously mentioned study[10], carried out at the same institution, 16 (36.4%) subjects presented stage II PU, 14 (31.8%) stage III and 4 (9.1%) stage IV. In our study, we found an increase in stage IV ulcers, although no inferences can be made about any changes, as both are retrospective studies, based on chart review.

As to information about the general appearance of the PU, among the 20 subjects who presented these injuries, documentation about aspect were found in 16 charts (80%), while data about dimensions were found in only 05 (25%). This finding, that is, that 75% of patient charts do not contain information about the dimensions of the PU, indicates a lack of data registration with a view to an objective assessment of care results, as the improvement of PU can be evidenced by a reduction of its area and change of aspect, with decreased exudate and odor[4,13].

CONCLUSIONS

This study allowed us to conclude that:

- Patients were predominantly men (95.8%), considered young adults (21 – 30 years), white (68.1%), married or living with a partner (57.4%).
- The main external cause of trauma was accident due to WFW (44.7%), followed by automobile accidents: vehicle crash/overturn (23.4%).
- Most injuries occurred in the thoracic region (44.7%), followed by the cervical level (40.4%).
- In the study population of 47 patients, 20 (42.5%) presented registers of PU, totaling 46 ulcers, with an average of 2.3 ulcers per patient.
- Ulcers were distributed across different body regions, but PU most frequently affected the sacral region (36.9%), followed by the heels (17.4%).
- In 52.2% of ulcers, patients' charts did not register the classification stage. This information was registered for 22 ulcers, 3 (6.5%) of which were in stage III, 5 (10.9%) in stage I and 6 (13.0%) in stage IV. The deepest ulcers (stage IV) were identified in the sacral region (4) and ischia. In stage III, ulcers were found in the sacral region, heels and calves.
- As to information about the characteristics of the PU, only 05 patient charts (25%) contained registers about ulcer dimensions and 16 (80%) about aspect.

Data found in this study need to be analyzed by health professionals, with a view to improve documentation about PU location and description of dimensions and characteristics, and also with a view to using guidelines recommendations for the selection of adequate interventions, which include pressure relief in the ulcer site and type of topical treatment.

Incomplete or erroneous registers in patient charts, caused by "badly written, confusing, incomplete or technically unsubstantiated notes, can easily extrapolate to the understanding that the same lack of professionalism occurred in attitudes or patient care" [14].

Literature highlights that negligence in chart registers can result from the amount of time spent to make descriptive notes on PU conditions, as well as from professionals' lack of knowledge. However, for legal and ethical reasons, as well as for monitoring treatment and assessing its efficacy, documentation is essential [15].

Educational programs are needed, informing students and professionals about how they should make notes on the characteristics of pressure ulcers and on prevention and treatment interventions, as well as about the legal implications of chart registers.

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