



ORIGINALES

Factors associated with level of pain in admission and high in victims of trauma

Fatores associados ao nível de dor na admissão e na alta em vítimas de trauma

Factores asociados al nivel de dolor en la admisión y en el alta en víctimas de trauma

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ABSTRACT

Introduction: Different factors may be associated with the genesis and maintenance of pain symptoms in trauma. the underevaluation and undertreatment of acute pain in emergency units have called in an unqualified care, increasing morbidity and length of hospital stay. the objective of this investigation was to determine the factors associated with the level of pain on admission and at discharge in trauma.

Methodology: Cross-sectional study with 92 trauma victims treated at an emergency unit in southern brazil. the intensity and location of pain were assessed, respectively, through the numerical pain scale and body diagram. data were analyzed with the aid of non-parametric statistics.

Results: The results showed that were associated with more severe pain on admission or discharge characteristics like being male, younger age, non-white skin color, companion presence, burn-like lesions, presence of drug prescription, analgesic administration intravenously and longer than 30 minutes for pain relief with pharmacotherapy.

Conclusion: The imposition of protocols or algorithms of measurement and treatment of pain by health professionals in emergency units should consider these characteristics in order to provide a resolute and quality care

Keywords: Acute Pain; Pain Measurement; Pain Management; Wounds and Injuries; Emergency

RESUMO

Introdução: Diferentes fatores podem estar associados à gênese e manutenção do quadro algico em vítimas de trauma. A subavaliação e o subtratamento da dor aguda nas unidades emergenciais têm acarretado em um atendimento desqualificado, aumentando a morbidade e o tempo de internação. O objetivo desta investigação foi verificar os fatores associados ao nível de dor na admissão e na alta em vítimas de trauma.

Metodologia: Estudo transversal, realizado com 92 vítimas de trauma atendidas em uma unidade emergencial no Sul do Brasil. A intensidade e localização da dor foram avaliadas, respectivamente, por meio da escala numérica de dor e diagrama corporal. Os dados foram analisados com o auxílio de estatística não paramétrica.

Resultados: Os achados demonstraram que estiveram associadas à dor mais intensa na admissão ou na alta características como: sexo masculino, idade mais jovem, cor da pele não branca, presença de companheiro, lesões do tipo queimadura, presença de prescrição medicamentosa, administração analgésica por via endovenosa e tempo superior a 30 minutos para melhora da dor com a farmacoterapia.

Conclusão: A instituição de protocolos ou algoritmos de mensuração e tratamento da dor pelos profissionais de saúde nas unidades emergenciais deve considerar tais características a fim de se prestar uma assistência resolutiva e de qualidade.

Palabras chave: Dor Aguda; Medição da Dor; Manejo da Dor; Ferimentos e Lesões; Serviços Médicos de Emergência

RESUMEN

Introducción: Diferentes factores pueden estar asociados a la génesis y mantenimiento del cuadro de dolor en víctimas de trauma. La baja evaluación y el bajo tratamiento del dolor agudo en las unidades de urgencia han llevado a una atención descalificada, aumentando la morbilidad y el tiempo de internación. El objetivo de esta investigación fue verificar los factores asociados al nivel de dolor en la admisión y en el alta en víctimas de trauma.

Metodología: Estudio transversal, realizado con 92 víctimas de trauma atendidas en una unidad de urgencia en el Sur de Brasil. La intensidad y ubicación del dolor fueron evaluadas, respectivamente, por medio de la escala numérica de dolor y diagrama corporal. Los datos fueron analizados con ayuda de la estadística no paramétrica.

Resultados: Los hallazgos indicaron asociación del dolor más intenso en la admisión o en el alta a características como: sexo masculino, edad más joven, color de la piel no blanca, presencia de compañero, heridas ocasionadas por quemadura, presencia de prescripción medicamentosa, administración analgésica por vía endovenosa y tiempo superior a 30 minutos para mejora del dolor con la farmacoterapia.

Conclusión: La institución de protocolos o algoritmos de medición y tratamiento del dolor por los profesionales de salud en las unidades de urgencia debe considerar tales características a fin de prestar una asistencia resolutiva y de calidad.

Palabras clave: Dolor Agudo; Dimensión del Dolor; Manejo del Dolor; Heridas y Traumatismos; Servicios Médicos de Urgencia

INTRODUCTION

Nowadays, external causes is a major public health problem in Brazil and worldwide. Accidents and violence have together increased the number of patients in emergency units and often represent the second or third cause of death⁽¹⁻³⁾. On this conjecture, if

potentiate public spending on hospitalizations, disablements, pensions and early retirement⁽⁴⁾.

Such matters justify the increasing number of studies on morbidity and mortality from external causes in both men⁽¹⁾, and women⁽²⁾. However, although the pain is an inevitable consequence of trauma and cause significant damage to the individual, it hasn't been studied in the same proportion⁽⁵⁾. Acute pain, defined as unpleasant sensory and emotional experience caused by actual or potential damaged tissue, or described in terms of such injuries, sudden or slow start and any intensity⁽⁶⁾, it is a symptom of high importance in clinical practice. Due to the subjectivity involved in their experience and measurement, researchers have directed the need to create objective tools that standardize the evaluation process of patients with diseases, injuries or lesions with painful characteristics⁽⁷⁾.

Current studies^(5,7,8) show that the lack of standardization in the evaluation instruments brings inconsistency regarding the knowledge of the patient's profile with acute pain victims of trauma, as well as the factors associated with its occurrence and maintenance. Therefore, the care of these individuals are disqualified because there undervaluation and under treatment of pain in emergency units, which increases morbidity and length of hospital stay⁽⁹⁾. In addition, the major studies that have investigated the level of pain among victims of trauma, only show the prevalence of pain in times of admission and discharge⁽¹⁰⁾ or the average pain scores in general numerical scales⁽¹¹⁾, i.e., without considering the analysis of the stratification as important features as the socio-demographic, injury and relief measures implemented pain. Thus, this study is justified by the fact that the assessment of pain be relevant in emergency care for trauma victims with pain complaints, both at the time of admission, the high health unit. However, being a subjective phenomenon, which requires the use of standardized instruments, scientific knowledge and time often is difficult to review and, consequently, little is known about trauma victims in pain profile, found in emergency units, as well as factors associated with the occurrence, maintenance and improvement of the pain condition⁽⁵⁾. This hinders the awareness of health professionals for planning actions, programs and allocation of human and material resources in order to evaluate, treatment and control of acute pain⁽⁸⁾.

Based on the above, this study aimed to identify factors associated with the level of pain on admission and discharge in trauma victims cared for in an emergency unit.

METHOD

Descriptive cross-sectional study, conducted in a public emergency service in southern Brazil, which had the research question: what are the issues associated with the level of pain on admission and discharge, in trauma victims cared for in an emergency unit? The unit has two nursing stations, emergency room with two beds, observation room with six chairs and three hospital rooms, one female, one male and the other pediatric with three beds each. A convenience sample of 92 trauma victims individuals participated in the study who attended the unit in the data collection period and who met the following criteria: to be 18 years or more; refer acute pain after physical trauma, regardless of the causing factor; and be admitted and discharged from the health facility in the same period (07:00 to 13:00). Patients who were intubated were excluded, sedated and could not answer the questions because of trauma (08 cases) or who refused to participate in the study (02 cases).

Data were collected from Monday to Friday in the period from 07:00 to 13:00 in the months of October and November 2013, through structured interviews, in which researchers followed a predetermined script questions. These interviews were conducted in a private place in their own emergency unit immediately after initial medical care and the implementation of care and medication administration by nursing staff. A semi-structured questionnaire, whose guiding questions focused on generating information on the socio-demographic profile of the subject, the traumatic event and to treatment was used. In addition, they were collected from medical records information relating to prescription analgesics and non-pharmacological procedures for the relief of established pain (local compression, immobilization and cryotherapy). Patients were assessed at the time of medical discharged home with regard to the pain intensity. For the evaluation of the intensity and location of pain, respectively was applied to numeric pain scale (NDT), which ranges from zero (no pain) to 10 points (severe pain / worst possible pain) and body diagram (drawing human body, in which the patient indicated the site of pain).

Data were compiled in the computer program Microsoft Office Excel 2010[®] and later transferred to the statistical program SPSS 20[®], in which statistical tests that assisted data analysis were performed. The scores for the level of pain on admission and discharge from the emergency service were submitted to the Kolmogorov-Smirnov and Shapiro-Wilk, verifying that the data of the variable pain level did not show a normal distribution, even, stratified the scores by the independent variables of the study (sociodemographic, injury and analgesia). Thus, they were adopted non-parametric Mann Whitney test for two independent samples (dichotomous variables) and the Kruskal Wallis test for multiple independent samples (polytomic variables). It was considered the p value <0.05 as level of significance. The study was developed in line with the guidelines governed by Resolution 466/12 of the National Health Council and its project approved by the Standing Committee on Ethics in Research Involving Human Beings of the State University of Maringa (CAAE: 20517513.3.0000.0104). All participants signed informed consent in two ways.

RESULTS

Most of the subjects were female, aged between 18 and 49 years of non-white skin color, without a partner and with education more than eight years. Regarding the pain level at the time of admission to the health service, it was found that the median was significantly higher in subjects aged between 18 and 49 years. While, at discharge, the average pain levels were significantly higher among males, color not white skin and with mate (Table I).

Table I: Distribution and comparison of pain level at admission and discharge, according to socio-demographic characteristics of trauma patients, Mandaguari-Paraná, Brazil, 2013.

Variables	n	%	Md* - pain on admission	p	Md* - Pain on discharge	p
Sex						
Male	41	44,6	08	0,160	03	0,024**
Female	51	55,4	07		01	
Age						
18 - 49 years	71	77,2	08	0,037**	03	0,955
Or more 50	21	22,8	06		01	
Skin color						
White	25	27,2	08	0,432	01	0,014**
Nonwhite	67	72,8	07		03	
Marital status						
No companion	51	55,4	07	0,801	01	0,016**
With companion	41	44,6	07		05	
Education						
≤ 08 years	42	45,7	07	0,304	03	0,911
> 08 years	50	54,3	08		2,5	

* Median. ** significant P-value in Mann Whitney test for independent samples

Regarding to the lesion of trauma victims features, as shown in (Table II), the cutting and the lower limbs correspond, respectively, to the type and location most frequently observed lesions while the home accident was elicitor trauma referred to by most individuals.

There was statistical difference between the median pain both at the time of admission, as the discharge of patients in relation to different types of injury. It was found that the median burns showed higher pain at enrollment (Md = 09) while drilling the lower median (Md = 05). At discharge, burns again had the highest median (Md = 05), while the bruises showed median zero pain. It is noteworthy that all patients had minor burns and first and second degree concurrently.

Although the evaluation of the lesion trigger has not been demonstrated statistically measurable difference can be noted that traffic accidents showed the highest median pain both on admission, as in tall patient (Md = 08, and Md = 03, respectively). Regarding the site of injury were also not apparent statistical differences, but the anatomical sites with pain medians in higher admission were: abdominal (Md = 09), upper limbs and head / neck (Md = 08 each) and at the time of High: upper and lower limbs (Md = 03 each) (Table II).

Table II: Distribution and comparison of pain level at admission and discharge, according to characteristics of injury trauma patients, Mandaguari, Paraná, Brazil 2013.

Variables	n	%	Md* - pain on admission	p	Md* - Pain at discharge	p
Type of lesion ***						
Burn	06	6,5	09		05	
Fracture	23	25,0	08		03	
Court	41	44,6	07	0,018**	01	0,002**
Excoriation	10	10,9	07			
Crush	10	10,9	05			
Drilling	02	2,2	05			
Triggering injury						
Traffic accident	24	26,1	08		03	
Domestic accident	48	52,2	07	0,738	03	0,103
Work accident	17	18,5	07			
Fall in public via	03	3,3	06			
Injury site						
Abdomen	03	3,3	09		02	
Upper limbs	29	31,5	08		03	
Head / neck	11	12,0	08	0,343	01	0,769
Lower limbs	41	44,6	07			
Thorax	08	8,7	06			

* Median. ** P value significant at the Kruskal Wallis test for multiple independent samples. *** Considered only the predominant type of lesion in the injured site.

Regarding to the analgesic action, most of respondent trauma presented prescription drug for the relief of pain (95.7%) received medication intramuscularly (IM) or subcutaneous (SC) administration (76, 1%) and achieved improvement in pain symptoms 30 minutes after drug administration (59.8%).

It was observed that the level of pain on admission and discharge of those who received drug prescriptions and obtained pain relief 30 minutes after the administration of pharmacotherapy, it was significantly higher. For those who received the drug intravenously (IV) the level of pain was also significantly higher at the time of discharge from the health unit (Table III). Most of interviewed (70.7%) underwent some nonpharmacological measure for pain relief (local compression, immobilization and cryotherapy), and of these, most had decreased pain 30 minutes after the start of the technique, however no statistical differences between the groups (Table III).

Table III: Distribution and comparison of pain level at admission and discharge, according to characteristics of analgesia measures applied to trauma patients, Mandaguari-PR, 2013.

Variables	n	%	Md% ^{***} – pain on admission	p	Md p ^{***} – pain at discharge	p
Medication						
Yes	88	95,7	7,5	0,001 ^{****}	3,5	0,010 ^{****}
No	04	4,3	01		00	
Route of administration						
IM or SC	70	76,1	07	0,277	02	0,008 ^{****}
EV	18	19,6	08		05	
Recovery time*						
< 30'	35	38,0	05	<0,001 ^{****}	01	<0,001 ^{****}
≥ 30'	55	59,8	08		03	
Nonpharmacological measures						
Yes	65	70,7	08	0,314	03	0,353
No	27	29,3	07		01	
Recovery time**						
< 30'	24	26,1	08	0,325	2,5	0,140
≥ 30'	27	29,3	08		01	

* Recovery time with pharmacological measures; ** Recovery time with nonpharmacological measures; *** Median; **** P value significant in the Mann Whitney test for independent samples.

DISCUSSION

According to the data analysis it was shown that in trauma patients the highest level of pain was associated with socio-demographic characteristics, both at the time of admission (younger age) and at discharge (male, color not white skin and the presence of companion). Investigations carried out in different parts of the country showed similar profile among those victimized by severe trauma, with a predominance of males, young adults and black/colored skin^(1,4).

Thus, we must consider the fact that the most serious traumas related to violence, traffic accidents and work occur in individuals with the above characteristics, which causes more intense painful processes. Thus, health professionals, during the attendance for trauma victims in emergency units, should try to correlate the socio-demographic profile, the cause of trauma and the individual's level of pain, this is because the guided assistance the clinical evidence and profile humanizes the patient qualifies and increases the resoluteness of care.

Regarding the perception of pain for the victims of trauma, more precisely at the time of discharge from the emergency unit, it is worth noting the significant difference observed between the sexes. International literature indicates that there is an association between sex and pain threshold or tolerance to it. In a systematic review and meta-analysis, conducted with studies published between 1950 and 2011, the authors showed the influence of gender on the perception and expression of pain

level, but mainly suggested relationship with the social and cultural factors of gender⁽¹²⁾.

Research conducted in Britain and Libya, comparing men and women undergoing stimulation tests to pain, showed that men had a higher tolerance and pain numeric scale used lower levels to express the intensity of pain they felt⁽¹³⁾, which clashes with the results of this study. Probably this is because conservative European countries or predominantly Islamic religion has a cultural view of the male figure as strong, provider and that can hardly show their feelings, including pain. Moreover, the fact that men engage in more violent traumatic events and greater physiological impact make studies with victims of trauma, they complain more than women of acute pain⁽¹⁴⁾.

Thus, it is necessary to recognize the specificities related to the feeling and the pain, the trauma characteristics and cultural issues, which leads to the professional the need to assess properly, particular and individual case by case, so as not to take as a rule the male pain tolerance, once the triggering of traumas and injuries can be very severe and intense them.

Another feature, which is worth to mention, is the marital status. Study of patients who experienced chronic pain observed higher prevalence of cases among married⁽¹⁵⁾. In turn, we found no studies conducted with trauma patients with acute pain that emphasized the marital status. In the case of the emergency care profile design for victims of trauma and individualized care for patients with acute pain, it seems essential that health professionals consider the social context of these individuals, and in it, the marital status. Just see that this variable is often linked to older age, which in turn predisposes painful experiences triggered, often by occupational accidents, given the need to work to provide home maintenance and welfare of the family.

Regarding the type of injury showed that the burns showed the median higher pain at admission (Md = 09) and at discharge from the health unit patient (Md = 05). In fact, burns are acute injuries intensely painful⁽¹⁶⁾. Literature review of studies found that pain in burned patients often is associated with the injury itself, anxiety and performing painful procedures, which makes the experience even more traumatic for those who went through it⁽¹⁶⁻¹⁷⁾. Therefore, acute pain for burning must be valued during the assessment and clinical interventions by health professionals.

However, it is clear in practice that in many cases the pain in burn patients can be underestimated by health professionals because there is no scientific consensus on the subject and not effective methods of pain assessment for such patients. Therefore, pain management; it is essential for the individual's recovery must take into account the individuality of the same and the factors that triggered the lesion⁽¹⁷⁾. In this study although it was not statistically significant difference between the triggers of trauma, it can be seen both on admission, as high, the level of pain was higher in those involved in traffic accidents. Researchers from Turkey, Israel and the United States have linked young people the serious consequences of the events in traffic. They point to the use of alcohol and drugs, excessive speed, risk behavior and disobeying traffic laws as made inherent to young people in general^(3,18-19).

Therefore, it appears as mandatory a careful evaluation of the patient victim of car accident with regard to acute pain, as well as the identification, registration and data analysis that point factors associated with the trauma and the resulting level of pain. It is worth noting, however, the result of a study conducted in southern Brazil, which

showed that motorcyclists who died as a result of trauma were those with more than 40 years, bringing new information about severe trauma motorcyclists⁽²⁰⁾. Therefore, health professionals should assess judiciously acute pain not only among young people but also among older, as they are involved in traffic accidents related to severe trauma.

Thus, in the current contemporary context, all ages deserve attention preventive public accident policies, as well as special care within the emergency units, with respect to acute pain. At the time of admission, even without statistical difference, it was observed that the anatomical sites showed higher median pain were abdomen and upper limbs, while in high were the upper and lower limbs. For proper patient care trauma victims is essential in addition to the measurement of pain, evaluation of its location, since it allows the identification of internal trauma to adjacent organs. Specifically in relation to the members, it is important to detail the location of the pain, as it can proceed anatomical structured as joint, bone, muscle, tendon and ligaments, which, depending on the affected site, change the clinical management of health professionals⁽¹³⁾.

Regarding analgesia measurements, one can show that the vast majority of trauma patients received medication for pain relief, especially by means of intramuscular or subcutaneous administration, wherein the median of the high pain in these cases was significantly lower when compared to subjects who received medication intravenously.

This apparent contradiction is caused by the fact that the medication administered intravenously produces almost immediate effect and was described as significantly associated with more rapid pain relief in another study⁽²¹⁾. However, subcutaneously anesthetic is administered for holding sutures and this in itself reduces the local pain. It is worth mentioning that patients receiving medication intravenously already had higher pain levels at admission, which may have interfered in fact also present at discharge. Patients reported improvement in pain symptoms after 30 minutes of administration of pharmacotherapy had higher pain medians, both at admission and at discharge. Perhaps, this arises from the fact that most drugs have been administered intramuscularly or subcutaneously, which have longer absorption and therefore for action.

However, in addition to considering the time needed for pain relief after analgesia administration, it is imperative to consider the results of a study of more than a thousand users of the emergency department of a large hospital located in the United States, which showed that the diagnosis of painful discomfort on the part of professionals, took approximately 55 minutes to be established. Added to this, stemmed almost 60 minutes for that to happen the prescription painkiller and its administration by the nursing team⁽²²⁾. This finding points to the need to develop urgent actions that seek to address this critical-node support, related over time for pain control in emergency units. This is because the emergency hospital sector is the unit that receives newly victimized individuals for many types of traumatic injury, which are in many cases classified as urgent. This classification is given, not only due to the overall severity of the trauma, but also the high level of pain presented at the reception and admission to the sector.

Thus, pain control should be seen as a priority in the provision of health care. Its relief can be understood as a basic human right and therefore goes beyond the clinical question and meets the ethical issue involving health professionals⁽²¹⁾. In addition to

drug therapy, used alone or in combination with other therapeutic measures, it is essential for the control of pain, the use of non-pharmacological measures, such as, for example, cognitive-behavioral interventions and physical agents⁽⁵⁾.

In this study the majority of respondents (70.7%) underwent some nonpharmacological measure of pain relief (local compression, immobilization and cryotherapy), unlike study in the Netherlands with 1,407 people treated in emergency services, that about 25.0% of them received non-pharmacological measures⁽¹¹⁾. Considering that most of the individuals who received nonpharmacological measures of pain relief also showed a decrease in pain 30 minutes after the start of the technique, it is emphasized that the adoption of non-pharmacological measures can increase the chances of success in controlling pain acute in trauma patients and constitutes a possibility of intervention that can be prescribed and implemented, not only by medical professionals, but also by nurses.

Finally it is emphasized that a Dutch study on pain management points out that, in general, there are no protocols or guidelines based on evidence and to address issues such as efficacy and safety of drugs and procedures used to control pain among patients suffering from trauma, regardless of the emergency care chain stage in which the individual is found⁽⁹⁾. Although this study has focused research on patients from ready fixed service, it is noted that since the mobile prehospital care, pain is the main complaint of trauma patients, which requires health professionals skilled care already in this step care.

After the investigation of risks to the vital integrity of the trauma victim through the initial assessment (clinical and neurological), pain management should be a priority, given the existence of a variety of situations that contribute to the onset of pain symptoms. It is essential that the health team know the harmful effects of pain remain, such as suffering, neurodegenerative changes and the restriction of physical mobility caused, and to take responsibility for its control and / or at least their relief⁽⁵⁾.

CONCLUSION

The results of this study have highlighted that were significantly associated with higher level of pain at the time of admission to younger age (18-49 years), the burn-like lesions, the need for prescription drug and longer than 30 minutes to improve the painful picture with pharmacotherapy. Already at the time of discharge from the hospital was significantly associated with higher level of pain: male, nonwhite skin color, presence of companion, burn type injuries, analgesic drug prescription, intravenous administration and time improvement with greater than 30 minutes pharmacotherapy. Despite these conclusions, which can direct care practice in emergency units when considering such features during the evaluation and management of acute pain in patients victims of trauma, one must consider that the study has methodological limitations. One is the fact that the sample was made up of convenience, which circumscribes the results evaluated population.

The other relates to the fact that data collection took place from Monday to Friday during the morning period, it caused not participate in the study people involved in violence, which occur most frequently on weekends, in period nocturnal and associated with the abuse of alcohol and other drugs. So not assessed the factors associated with the level of acute pain in individuals involved in violence. Opposite the listed results and the limitations of this study, it is noted that the identification of the

patient's pain level victimized by trauma is an indispensable and important step in identifying lesions, stabilizing the overall picture of the patient and the supply of comfort to it. Thus, it points to the need for new investigations that focus on pain management from pre-hospital care (whether mobile or fixed), and contribute to the systematization of care to trauma patient with pain, through, for example, the establishment of protocols or algorithms of measurement and treatment of pain; the systematic recording of the measured levels and implemented measures; and identification of factors associated with differences in these levels.

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