

Evaluation of care for traffic accidents victims made by on duty emergency physicians and surgeons in the emergency room

Avaliação do atendimento às vítimas de acidentes de trânsito por plantonista clínico e cirurgião na sala de emergência hospitalar

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ABSTRACT

Objective: to evaluate the care for victims of traffic accidents by on call emergency physicians and/or surgeons in the emergency room. **Methods:** we conducted a retrospective, descriptive and exploratory study on the care for traffic accidents victims in the urban area of Maringá-PR, between July 2013 and July 2014 in reference hospitals. We assessed demographics and vocational training through a questionnaire sent to the attending physicians. **Results:** of the 688 records evaluated, 99% of patients had a prehospital Revised Trauma Score of 12. Statistical analysis showed that in the cases conducted by the emergency physicians (n=187), the recording of the Glasgow Coma Scale and the performance of surgical procedures were less common, whereas the recording of blood pressure values was performed in greater numbers when compared with cases led by surgeons (n=501). There was a statistically significant relationship ($p<0.01$) between the length of hospital stay and surgical specialty, with a greater chance (crude OR=28) in the period from one to six hours for the group treated by emergency doctors. Most physicians participating in the study were young, with emergency room time of up to one to two years, and with ATLS training. Among those who had attended the ATLS course, 60% did so in the last four years. Surgeons performed 73% of hospital treatments. **Conclusion:** in the care of traffic victims with minor injuries, the Glasgow Coma Scale, the blood pressure levels, the type of treatment in the emergency room and hospital stay had different approaches between emergency physicians and surgeons.

Keywords: Accidents, Traffic. General Practitioners. Surgeons. Emergency Medical Services. Evaluation of Research Programs and Tools.

INTRODUCTION

In recent years, Trauma has become one of the biggest public health problems¹. In cases of traffic accidents (TA), thousands of lives are compromised each year, making constant the need for discussion, prevention planning and treatment of these victims^{2,3}.

In pre-hospital care provided by the Emergency Trauma Care Integrated Service (SIATE) of the Fire Department, triage and classification of victims are carried out according to the degree of severity, followed by primary care for stabilization of the urgency or emergency condition and later referral to a more complex service for the continuity of treatment⁴.

In Brazil, not all hospital services have qualified professionals for the care of multiple trauma. Any doctor who has professional license can act as an emergency physician⁵. The Resolution 2077/14 of

the Federal Medicine Council (CFM) deals with the regulation of the Emergency Hospital, as well as with the design of the medical team and the work system. Its Art. 3rd defines the obligation of care be performed by a doctor, though with no reference as to specialty⁶. In practice, it is observed that the "emergency room" doctor is specializes in internal medicine or general surgery, and should have appropriate skills and knowledge to work in the emergency room. However, the CFM Resolution nº 2149/2016 of July 22, 2016, approves the recognition of Emergency Medicine as a medical specialty, and Emergency Medicine as a Medical Practice Area⁶. These new well trained specialists may make a difference with appropriate and safe decisions when acting in emergency settings⁷.

The difference of the specialized training and personality between the internal medicine physician and the surgeon is historical. Bellodi⁸ noted that even today, the stereotypes of these doctors are equivalent,

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despite all the changes over time. To clinicians, formerly physicists, the appreciation of the mind, and to surgeons, the barbers, the risky procedures^{8,9}. In another study with a group of Brazilian residents, the same author identified, amongst other variables, personality traits, the clinicians being quieter, detail-driven and more interested in interpersonal contact, while the surgeons are faster, more impulsive and more aggressive¹⁰.

It is possible that this type of aggressive and impulsive personality is a decisive factor in choosing training courses that enable the surgeon to care for polytrauma patients. This formation goal tends to make this professional the most suitable and most qualified for this type of service, differentiating him/her from those with other interests.

Considering the studies showing different personality characteristics between clinicians and surgeon as a factor for specific training, it is fair to raise the following issue: "Is there a difference in trauma care provided by the emergency physician and the surgeon?". So far, there are no references in the literature comparing the polytrauma patient approach with the kind of specialty of the emergency room doctor.

The objectives of this study were to evaluate the care of victims of traffic accidents by emergency physicians and / or surgeons in the emergency room and to identify the emergency training of such doctors.

METHODS

We conducted an observational, documental, retrospective, descriptive and exploratory study, with traffic accident (TA) victims in urban areas, over 18 years of age, of both gender, attended by the prehospital rescue team – SIATE – in Maringa, PR, and sent to reference hospitals in the period from July 2013 to July 2014.

We obtained data from the site www.bombeirosascavel.com.br, collecting the records made

by Maringa Fire Department V Division, containing the name, day, time and type of event and the destination hospital. With this list, we then obtained the hospital records of patients and Rescue Attendance Reports (RAR).

The variables analyzed in this study were: type of medical specialty of the professional who attended the victim, recording of Glasgow Coma Scale (GCS) and of levels of Systemic Blood Pressure (SBP), procedures carried out by the professional and hospital stay.

As non-surgical procedures, we considered analgesia, clinical observation, neurological observation and sole evaluation; and as surgical procedures, analgesia + dressing, analgesia + immobilization, dressing, immobilization and suture.

We applied a questionnaire to doctors working at the emergency rooms to characterize the professionals as for demographic variables, professional training and difficulties in trauma patient care.

We ordered data in spreadsheets (Microsoft Excel for Mac 2011 Version 14.6.0) and analyzed them in a descriptive way through absolute numbers and percentages. We applied the chi-square test, uni and multivariate analysis with the software SAS 9.4, considering $p \leq 0.05$ as significant.

This study was approved by the Standing Committee on Human Research of the State University of Maringa (COPEP-UEM), opinion Nº 37686114.8.0000.0.

RESULTS

During the study period, 45 physicians (17 clinicians and 28 surgeons) were responsible for the care of 688 TA victims (177 attendances by emergency physicians and 501 by surgeons).

According to univariate analysis, there were statistically significant differences between variables related to medical specialty. The results are shown in Table 1.

GCS values were recorded in 345 evaluations made by surgeons and in 56 cases treated by clinicians. In 287 records, GCS recording was absent. The chance of a clinician not recording the GCS was 5.2 times higher than the surgeon's.

SBP values were recorded in 137 evaluations made by surgeons and in 129 by clinicians, lacking in 422 charts. The chance of a clinician recording SBP was six times higher than the surgeon's.

Hospital stay greater than six hours occurred in 10% (n=69) of treated cases; 99% of these visits were performed by surgeons. The chance of a clinician discharging a patient before six hours of observation was 28 times greater than the surgeon's.

Regarding the type of treatment provided in the emergency room, in 75% (n=515) of cases "nonsurgical" procedures were performed. The chance of a clinician performing a non-surgical procedure was 1.7 times greater than the surgeon's.

We also applied multivariate analysis and found a statistical correlation between variables, whose results are shown in Table 2.

As for the length of stay and type of treatment, we observed that these were not associated factors (Table 3).

Only 40% (n=18) of physicians responded to the questionnaire, identifying some features shown in Table 4. The profile found in this study were of young doctors, mostly male and Surgeons, 61% with ER time less than four years and with ATLS training. Of these, 60% had taken the course less than four years before.

DISCUSSION

There is no legal requirement in Brazil for the doctor attending the emergency room to be from a clinical or surgical specialty. In this sample, there was a contingent of surgeons greater than clinicians.

In the 688 patient records analyzed, we observed that surgeons have made 501 evaluations

and proportionately more surgical procedures than clinicians have. This fact could be justified by the victim having lesions that justify the procedure or by the greater predisposition toward this conduct by the characteristics of the surgeon, such as impulsiveness, quick thinking and aggressiveness in conducts¹¹. Surgeons tend to be more practical, objective and like manual activities, often with faster and more concrete results¹⁰.

From a clinical point of view, the GCS score is an important neurological parameter and practically a synonym of gravity in head trauma (TBI). Scores between 3 and 8 are classified as severe trauma, between 9 and 12 as moderate and between 13 to 15 as mild¹¹.

In a study of patients rescued by emergency mobile care service, Souza¹² reported that despite its importance, GCS was neglected many times, reporting abstention to record this value in 3.2% of cases. Ribeiro¹³ identified charts without its records in 897 cases (97% of total) when filled by nurses prehospital, though with no references to notes in hospital care.

In this study, surgeons recorded GCS values in patients' charts at hospital admission more frequently than clinicians did (69% versus 30%, respectively). The vast majority of victims assisted (400 – 58%) had scores between 13 and 15, and only one case presented score of 3. In 42% (n=287) this record was missing, and in some reviewed charts there was a description by the doctor that the victim was conscious, oriented and without motor deficits, inferring a high value for GCS; however, having not been registered, we did not consider it as recorded. This condition could explain the 42% of absence of GCS records in this sample.

In contrast, in cases reported in medical records (n=401), 86% were by surgeons, while only 14% by emergency physicians. The ATLS advocates the use of the GCS as an objective clinical measure of TBI severity, becoming routine to the doctor in polytrauma care, even in those

patients without TBI¹⁰. This finding is important for the proper evaluation of trauma patients in view of the possibility of unnoticed injuries evolving to a neurosurgical emergency¹⁴.

Alvarce *et al.*¹⁵ found that the SBP measure, besides being simple and easy to execute, should be carried out in all health care evaluations, independently of the attending physician specialty. In this study, we observed that surgeons recorded SBP values at hospital admission fewer times than clinicians did (27% versus 69%). A previous study found SBP recording in 85.3% of cases evaluated, differing from the latter because only 39% (n=266) of cases were recorded at admission, however, according to pre-hospital care data, SBP was recorded in 97% of case¹⁶.

SBP levels are an important physiological parameter in the evaluation of polytrauma patients, depending on the types of injuries found, translating volume loss (bleeding). Although not reflecting the actual state of tissue perfusion, its systematic measurement is advocated¹⁷. The estimated blood loss based on the initial condition of patients with multisystem trauma can be classified into classes (I, II, III and IV). Each has signs and symptoms according to the degree of volume loss. Classes I and II comprise an approximate blood loss of up to 15% (volume = 750ml) and between 15 and 20% (volume = 750 to 1500ml), respectively. On physical examination, one does not observe a drop in SBP levels in these two classes. This fall will be identified in shock, i.e., classes III and IV^{11,18}.

In this study, most patients were victims of minor injuries and t-RTS 12 (corrected RTS 7.8408), with no evidence of hemorrhagic shock (mean systolic SBP 127mmHg), both in the prehospital assessment and at arrival at the emergency room. This could justify the lack of importance given by the surgeon to the measurement of blood pressure at that time and consequently to its recording.

Regarding the length of stay, we found that 621 patients (90.3%) remained for a time shorter or equal to six hours, and the majority (n=435) was attended by surgeons. We observed a greater chance of an emergency physician releasing the patient before six hours of observation. The relevance of this finding (OR=28) did not translate into better type of service or professional negligence. The result in question might be justified by the clinical picture and type of injury presented by the patient (t-RTS 12 and CODE 1 SIATE) opposing the medical specialty.

Vieira *et al.*¹⁹, in a study conducted in Sergipe, showed that 76% of victims treated had length of stay of up to 12 hours. In another study conducted in Ribeirão Preto, Coelho *et al.*²⁰ reported that 39.8% of patients remained for less than six hours and 27.4%, between 24 and 30 hours, with no mention to the type of specialty.

Statistical analysis showed that there was an association between length of stay and surgical specialty (Tables 1 and 2). However, when related to the type of treatment, there was no statistical association, that is, the chance of an emergency

Table 1. Univariate logistic regression model of variables related to medical specialty.

Variable	Categories	Surgeons n=501 (73%)	Clinicians n=187 (37%)	Gross OR	95% CI	p-value
Glasgow Coma scale	Not recorded	156	131	5.2	[3.589; 7.452]	< 0.001
	Recorded	345	056	1		
Systemic Blood Pressure	Not recorded	364	058	1	[4,098; 8.547]	< 0.001
	Recorded	137	129	6		
Type of treatment	Non-surgical	362	153	1.7	[1.135; 2.630]	0.0107
	Surgical	139	34	1		

OR: odds-ratio. CI: confidence interval. p-value: Chi-square test of Mantel-Haenszel.

Table 2. Multivariate logistic regression model of the variables related to clinical specialty.

Variable	Adjusted OR	95% CI	p-value
GCS recording	7.509	[4.818; 11.702]	< 0.001
SBP recording	8.33	[5.347; 12.987]	< 0.001
< 6-hour hospital stay	15.969	[2.102; 121.30]	0.0074
Type of treatment: non-surgical	1.696	[1.035; 2.781]	0.0107

Or: odds-ratio. CI: confidence interval. p value: Chi-square test of Mantel-Haenszel. GCS= Glasgow Coma scale. SBP= Systemic Blood Pressure.

physician performing a non-surgical procedure in hospital stays shorter than or equal to six hours was similar to a surgeon's (Table 3). Only 18% of care provided by clinicians needed surgical treatment in the emergency room, while for surgeons that number was 28%, which raised the suspicion of different complexity and time of stay, corroborating the significant finding (OR 28) mentioned above.

The results of the questionnaire applied to attending physicians (Table 3) showed that 89% of respondents were male, aged between 25 and 60 years and had surgical specialty. Most (50%) had time of ER over three years, and 39% of respondents had had ATLS training less than one year before.

Campos and Senger²¹ reported that 31.7% of graduates worked in emergency services independently of being enrolled or not in some medical residency program. The easy insertion in these services pointed out the importance of proper training for care in this type of situation. Hamamoto²² and Pego-Fernandes²³ reported the unpreparedness of recent graduates and the disorganization of the health care system, which hampers emergency care in public hospitals.

Still on ATLS, 81% of surgeons attended this training, while for the emergency physicians

this percentage was 50%. This result suggests the initial hypothesis of this work, that surgeons are more interested in training for trauma care due to their training background and personality. Brito *et al.*²⁴ stated that training is of utmost importance for the improvement of professional performance, both individually and as a team, which corroborates the pressing need of the professional, regardless of specialty, to train in the respective field, besides making the professional feel more secure and able to provide adequate care²⁵.

For 13 (72%) physicians, technical training was considered sufficient, and 89% reported feeling safe in the diagnosis and treatment of multiple trauma victims. However, 89% of respondents said trauma care requires specialized training. This need of respondents goes against the principle of the impact of ATLS training for trauma care, which says that students may retain the course techniques and procedures for at least six years. According to the ATLS, this is the most significant impact of all¹¹. All 18 respondents consider care protocols to be extremely important in the service.

Not all doctors who were part of the clinical staff of the emergency service in the hospitals

Table 3. Correlation as to the type of treatment and length of stay.

Length of stay	Type of treatment		Gross OR	95% CI
	Non-surgical	Surgical		
≤ 6h	467	154	1	
> 6h	48	19	1.2004	[0.6846; 2.1048]

Or: odds-ratio. CI: confidence interval. p-value: Chi-square test of Mantel-Haenszel.

Table 4 – questionnaire variables applied to physicians (n = 18)

Variables	Categories	Frequency	
		n	(%)
Gender	Male	16	89
	Female	02	11
Age	25-30	09	50
	31-40	05	28
	41-50	01	05
	51-60	03	17
Specialty	Surgical	16	89
	Clinical	02	11
Time in emergency room	< 1 year	0	0
	1 to 2 years	06	33
	2 to 3 years	03	17
	3 to 4 years	02	11
	> 4 years	07	39
Time since ATLS attendance	not held	04	22
	< 1 year	07	39
	1 to 2 years	02	11
	2 to 3 years	01	05
	3 to 4 years	01	05
Technical training believed to be:	> 4 years	03	17
	Enough	13	72
	Insufficient	04	22
	Didn't say	01	06
Security in the diagnosis of "imminent risk of life" in a trauma victim	No	0	0
	Yes	18	100
Security to perform necessary medical procedures to treat a trauma victim	No	02	11
	Yes	16	89
Believe one need specialized training for trauma care	No	02	11
	Yes	16	89
Believe protocols for trauma care are necessary	No	0	0
	Yes	18	100

ATLS: Advanced Trauma Life Support.

studied answered the questionnaire, only 51% (n=18) returning. This made it difficult the analysis of some variables. However, the results showed the need to implement care protocols at the hospital level for multiple trauma patients and to encourage the training of medical professionals involved in this type of care

Data from this study indicated a significant difference in care of trauma victims between clinical

and surgical specialists. We did not assess the quality of care, but the focal differences in trauma care priorities. This result raises a reflection and discussion about a pressing need now, that is, the figure of the expert in emergency care in the Emergency Units. Differences in medical care provided to victims of trauma depending on the medical specialty are unacceptable. However, the training, even in renowned courses, does not prepare the professional the same way a medical

residency in the area does. This conclusion is explained in the speech of professionals when they say they feel secure as to their capacity to diagnose and treat multiple trauma victims, but at the same time, they claim to need specialized training in trauma care. It is essential that the competent bodies and associations

establish policies that allow emergency healthcare institutions to hire medical experts in the field. This would ensure a safe care, for both the patients who are attended by skilled professionals, and for the professionals who, due to their training, perform the activities with confidence, dynamism and efficiency.

R E S U M O

Objetivo: avaliar o atendimento às vítimas de acidentes de trânsito por médicos plantonistas cirurgiões e/ou clínicos na sala de emergência hospitalar. **Métodos:** estudo retrospectivo, descritivo e exploratório do atendimento às vítimas de acidentes de trânsito da área urbana de Maringá-PR, entre julho de 2013 e julho de 2014, em hospitais referenciados. Questionário aplicado aos médicos plantonistas avaliou dados demográficos e a formação profissional. **Resultados:** dos 688 prontuários avaliados, 99% apresentavam *Revised Trauma Score* pré-hospitalar de 12. Análise estatística mostrou que nos atendimentos feitos por Clínicos (n=187), a anotação dos escores da Escala de Coma de Glasgow e a realização de procedimentos cirúrgicos foram feitas em menor número e, em contrapartida, a anotação dos valores de pressão arterial sistêmica foi realizada em maior número quando comparados com atendimentos feitos por Cirurgiões (n=501). Houve relação estatisticamente significativa ($p<0,01$) entre o tempo de permanência hospitalar e a especialidade cirúrgica, com maior chance (OR bruta=28) observada no período de uma a seis horas para o grupo atendido pelos Clínicos. A maioria dos plantonistas que participaram do estudo eram jovens, com tempo de atividade em sala de emergência hospitalar de um a dois anos e com capacitação no curso do ATLS. Entre os que participaram do curso do ATLS, 60% o fizeram nos últimos quatro anos. Cirurgiões realizaram 73% dos atendimentos hospitalares. **Conclusão:** nos atendimentos às vítimas de trânsito com lesões leves, a Escala de Coma de Glasgow, os níveis de pressão arterial sistêmica, o tipo de tratamento na sala de emergência e o tempo de internação hospitalar tiveram abordagens diferentes entre Clínicos e Cirurgiões.

Descritores: Acidentes de Trânsito. Clínicos Gerais. Cirurgiões. Serviços Médicos de Emergência. Avaliação de Programas e Instrumentos de Pesquisa.

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