วารสารการแพทย์ฉุกเฉินแห่งประเทศไทย
ปีที่ 2 ฉบับที่ 1 มกราคม - มิถุนายน 2565

Journal of Emergency Medical Services of Thailand
Vol. 2 No. 1, January - June 2022

นิพนธ์ต้นฉบับ

Original Article

Factors Associated with 24 Hours Mortality of Traumatic Patients in Chiang Rai Province, Thailand

Kriangsak Pintatham

Wasinee Plongniras

Emergency Department, Chiangrai Prachanukroh Hospital, Chiang Rai Province, Thailand

Corresponding author: Kriangsak Pintatham: email: birdkriangsak@gmail.com

Date received: 7 Jan 2022 Date revised: 19 Mar 2022 Date accepted: 7 Apr 2022

Abstract

Trauma is a major health problem throughout the world, leading to death and disability. Many resources are being used to treat traumatic patients. If correctable factors can be indentified, the mortality could be reduced significantly. This study aimed to analyze the factors association with mortality in traumatic patients. A retrospective cohort study was conducted in adults ≥18 years old who visited the emergency department with trauma and were triaged to ESI level 1. The samples were divided into 2 groups: a 24-hour survival group and a 24-hour no survival group, which were compared by age, sex, underlying diseases, etiology of trauma, organ of injury, patient transfer method, mechanism of injury, late admission from the onset, and traumatic scores (including GCS, RTS and ISS). Laboratory studies include hematocrit level, platelet level, and INR level. The significant factors were analyzed by using univariable and multivariable analysis in a logistic regression. As for the results, the patients in each group were: the survival group (N=317, 79.25%) and the 24-hour non survival group (N = 83, 20.75%). After adjusting for factors significantly related to the outcome, it was found that death cases due to trauma were more likely associated with diabetes mellitus, head injury, GCS≤8, RTS <4, ISS >15, patient transfer time ≥240 min, hematocrit <30, platelet ≤100,0000 and INR ≥1.5. In conclusion, we identified DM, GCS ≤8, RTS <4, ISS >15 and INR ≥1.5 as possible risk factors associated with traumatic patient mortality.

Keywords: **trauma dead; injury severity score (ISS); revised trauma score (RTS); Glasgow coma scale (GCS)**

Introduction

Trauma is a major health problem throughout the world, leading to death and disability. The most common cause of death for people under 24 year is brain damage. Traffic accidents are the second most common cause of injury in the population between 15-24 years old in the year 2000.[1] The World Health Organization (WHO) has announced that traffic accidents have become the third most common cause of injury in the world in 2020.[2] Each year, roughly 1.2 mil-

lion people die from traffic accidents. Furthermore, more than 50 million people get injured or have a disability as a result of traffic accidents. About 80% of traffic accident mortalities and 90% of disabilities happen in developing countries.[3] According to WHO statistics, the average yearly mortality rate from traffic accidents in Thailand during the period from 2015 to 2018 is 24,326. This is the second highest number worldwide. In 2020 this number decreased to 22,491 which is still a high number of deaths. These deaths are very costly to the Thai hospital system.[4]

The Revised Trauma Score (RTS) is widely used by emergency services worldwide to estimate patient mortality. RTS assesses three parameters: neurological evaluation by Glasgow coma scale (GCS), hemodynamic evaluation by systolic blood pressure (SBP) and respiratory rate (RR). A lower score corresponds to a higher mortality rate. Each of the three factors is rated on a scale of 0 (worst status) to 4 (best status).[5,6] The injury severity score (ISS) is an anatomical scoring that provides an overall score for patients with multiple injuries. ISS rates the severity of each injury per body region (BR). The BRs are BR1 Head/Neck (include middle inner ear), BR2 Face (include eyeballs), BR3 Thorax (chest), BR4 Abdomen and pelvic contents, BR5 Extremities and pelvic girdle, BR6 External and body surface. Each BR gets assigned a value from 1-6 based on the Abbreviated Injury Scale (AIS). 1: minor, 2: moderate, 3: serious, 4: severe, 5: critical, 6: maximal. The three highest-scoring BRs A, B and C are squared and then added up to arrive at the ISS total score:$A^2+B^2+C^2$= ISS.[7,8] Besides these scores, laboratory abnormalities like bleeding time and coagulation disorder affect the mortality in traumatic patients. Coagulopathy is present immediately at admission in 25% of trauma patients and is associated with a 5 fold increase in mortality. Uncontrolled hemorrhage from coagulation dysfunction is one of the main potential preventable causes of mortality.[9] There was a statistically significant difference between the 24-hour survival and the 24-hour non survival groups of patients in coagulation profiles. Platelet (PLT) <173,000/l, prothrombin time (PT) >18.7s, and activated partial thromboplastin time (APTT) >31s are associated with increased mortality with a p-value of 0.001.[10]

In Thailand, research was conducted in Phuket Hospital about the survival rate in traumatic patients from traffic accidents. The data, collected from January 1st, 2015 to December 31st, 2015, showed that RTS is positively correlated to the survival rate.[11] In this study we wanted to find out which factors are significant. If some of these factors are correctable, it would be possible to reduce mortality rate. There are multiple scoring systems to predict the mortality rate of traumatic patients, such as the ISS (Injury Severity Score), GCS (Glasgow Coma Scale), and the RTS (Revised Trauma Score).[1,12,13]

The objective of this study was to analyze the factors association with mortality in traumatic patients.

Methods

Study Design and Setting

A retrospective cohort study was conducted at the emergency department of Chiangrai Prachanukroh Hospital, a tertiary hospital in the north of Thailand. The data was collected from January to December 2018.

The inclusion criteria ware a traumatic patient who was triaged to Emergency Severity Index (ESI) level

1 and was more than 18 years old. The exclusion criteria were: accidents from burning or hanging, patients who wanted to change to another hospital and incomplete data sets.

For the purpose of this study, the participants were divided into two groups: those who survived the first 24 hours and those who did not. The goal of the study was finding the contributing factors that increase mortality rate.

Data Collection

The data was collected from the medical records and includes baseline characteristics, underlying diseases, physical examination, etiology of injury, patient transfer time, organs of injury, late admission from the onset, and patient transfer method. We calculated the ISS and RTS scores from the physical examination, which included vital signs and GCS, we collected the data from the laboratory, such as hematocrit count, platelet count and INR. After a careful literature review of similar studies these factors were chosen and found which factors were used in most of them.

Outcome Measurements

The primary outcome was finding the factors associated with mortality of traumatic patients who were admitted in Chiangrai Prachanukroh Hospital.

Statistical Analysis

The statistical analysis was conducted using STATA version 12.0 using descriptive statistic models. The dataset was subsequently divided into quantitative and qualitative data. The qualitative data consists of sex, underlying disease, organ of injury and etiology of injuries. The quantitative data consists of vital signs, temperature, respiration rate, blood pressure, pulse rate, oxygen saturation, RTS, ISS, GCS, hemoglobin concentration, platelet concentration and INR. Generally, a statistical significance of $p<0.05$ and no significant interaction between the different variables was assumed. All results are shown with a 95% confidence interval.

The sample size calculation was based on the assumed factors that lead to death in 24 hours of traumatic patients. In the pilot study during November and December 2017, the proportion of dead patients was 20% approximately. The two sided α level is 0.05. We used STATA to calculate two sample comparisons for proportions based on the factors that should be affecting the mortality in traumatic patients. We used INR >1.5, two sample comparisons for proportions. Proportion one = 0.68, proportion two = 1 calculated from STATA, we got N1 = 329, N2 = 66, total 395. We rounded the number of this study to account for all of these factors, so we use N = 400 in this study. For every month, we randomly chose a subset of patients from our data set by alternately selecting one patient and not selecting two patients.

Ethical Consideration

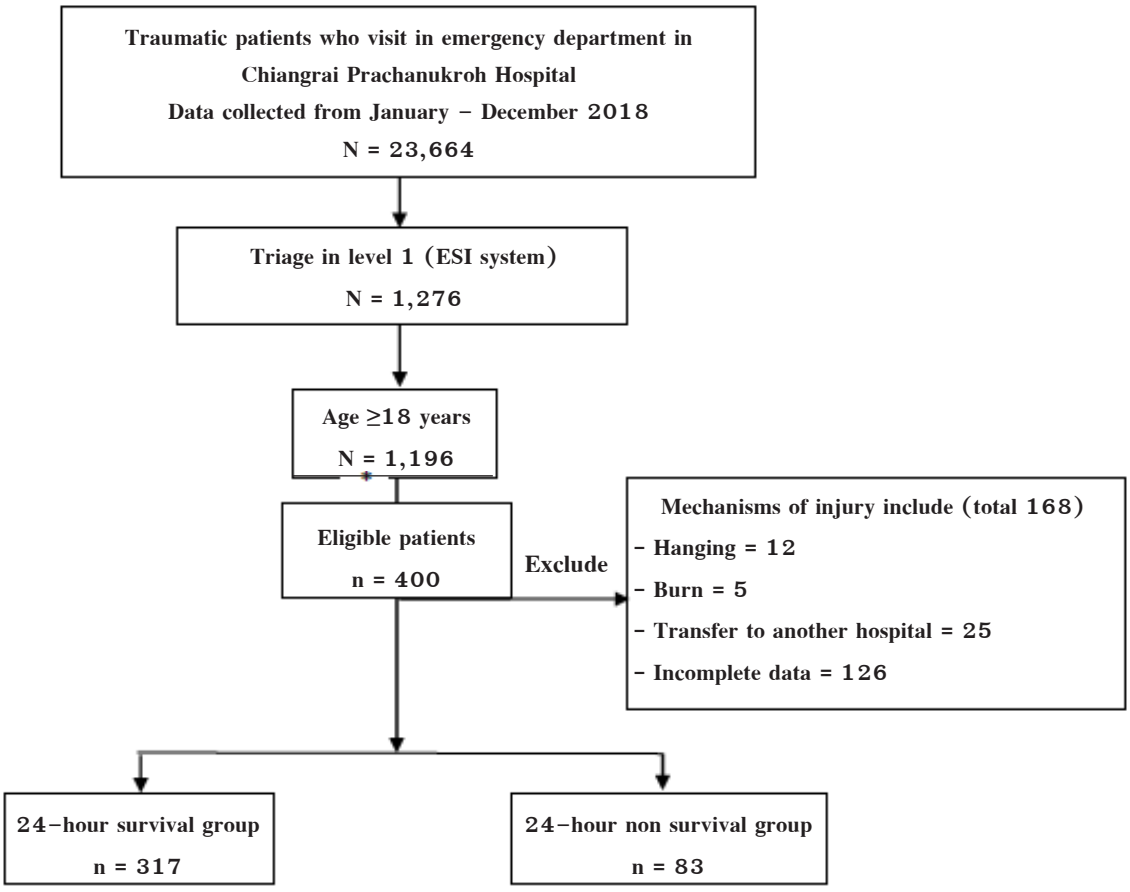
Ethics approval was obtained from the Institutional Ethics Committee Board of Chiangrai Prachanukroh Hospital (EC CRH 018/63). According to the Institutional Ethics Committee Board of Chiangrai Prachanukroh Hospital approval, the requirement for informed consent was not applicable because the study was purely retrospective, introducing no risks at all to the participants and involved no procedures for which written consent is normally required. The study protocol is performed in accordance with the relevant guidelines.

Results

Initially, a total of 1,196 patients with traumatic accidents who were admitted at Chiangrai Prachanukroh Hospital and who met the criteria were considered. Because of the exclusion criteria, this number was reduced to 1,029 patients. Out of those, 400 patients were selected randomly (Figure 1). The study group was composed of 318 males and 82 females. The mean age was 42.91 years old for the 24-hour survival group and 46.11 years old for the 24-hour non survival group. The most common cause of injury was traffic accidents of passengers or drivers (326 cases or 81.50%). The second most common cause of injury was physical assault (47 cases or 11.75%). Accidents by falling were 14 cases (3.50%), and injury of pedestrians from traffic was 13 cases (3.25%). The most common organ of injury was the head at 283 cases (70.75%), chest at 144 cases (36%), abdomen at 78 cases (19.50%) and pelvis or femur fracture at 27 cases (6.75%).

It was found that there were many factors related to the mortality in traumatic patients, as shown in Table 1. The significant factors (p-value <0.05) were patients with diabetes mellitus, transfer time >240 minutes, head injuries, higher ISS scores and lower GCS and RTS scores. Furthermore, Hb <30, platelet <100,000 and INR >1.5 were found to be significant factors as well. Baseline characteristics could be found

Figure 1 Study flow diagram



* For every month, a subset of patients was chosen from the data set by systematic random sampling of every third patient

Table 1 General characteristic of factors associated with mortality in trauma patients (N=400)

Characteristic		24-hour Survival		24-hour non Survival		p-value
		Number	%	Number	%	
Number of patients		317	79.25	83	20.75	
Age (year)	<60	246	77.60	58	69.88	0.150
	≥60	71	22.40	25	30.12	
	Mean±SD	42.91±18.59		46.11±19.57		
Gender	Male	252	79.50	66	79.52	1.000
Etiology	IPDTA	261	82.33	65	78.31	0.428
	IDTA	12	3.79	1	1.20	0.318
	Falling	10	3.15	4	4.88	0.499
	Physical assault	34	10.73	13	15.66	0.250
Underlying disease:	No underlying	279	88.01	71	85.54	0.576
	Diabetes mellitus	6	1.89	7	8.43	0.008
	Hypertension	19	6.01	1	1.20	0.091
	Dyslipidemia	2	0.63	2	2.41	0.192
	CKD	1	0.32	1	1.20	0.372
	Other	19	5.99	6	7.23	0.618
Organ of injury	Head injury	209	66.93	74	89.16	<0.001
	Chest injury	115	39.28	29	34.94	0.898
	Abdominal injury	60	18.93	18	21.69	0.641
	Pelvis /femur fracture	21	6.62	6	7.23	0.808
	More than 1 system	100	31.55	33	39.76	0.190
Patients transfer method	EMS	63	19.87	17	20.48	0.879
	Refer	240	75.71	63	75.90	1.000
	Walk in	3	0.95	0	0.00	1.000
	First responder	11	3.47	3	3.61	0.737
Trauma score	GCS (Mean ±SD)	9.53±4.36		4.78±2.92		<0.001
	RTS (Mean ±SD)	6.20±1.35		3.95±2.05		<0.001
	ISS (Mean ±SD)	21.59±9.89		31.20±1.28		<0.001
Patient transfer time	≥240 minutes	103	32.49	13	15.66	0.003
Late admission from onset	>360 minutes	100	31.55	18	21.69	0.104
Hematocrit level	<30	66	20.82	35	42.17	<0.001
Platelet level	≤100,0000	18	5.68	25	30.12	<0.001
INR	≥1.5	19	5.99	37	44.58	<0.001

Remark: IPDTA = Injury of passenger or driver from traffic sccident
IPTA = Injury of pedestrian from traffic accident
GCS = Glasgow coma score
RTS = Revised trauma score
ISS = Injury severity score

in Table 1. Through univariable analysis, it was found that the estimated risk of death due to trauma is impacted by the following significant (p<0.05) factors: patient with the underlying disease of diabetes mellitus is 4.77 with odd ratio (95%CI=1.56-14.62), patient transfer time >240 minutes with odd ratio 0.99 (95%CI=0.96-1.00), head injury with odd ratio 4.24 (95%CI=2.04-8.15). The scoring system consists of the following scores: ISS >15 with odd ratio 18.75 (95%CI=2.55-137.46), RTS <4 with odd ratio 17.42 (95%CI=7.79-38.93) and lastly GCS ≤8 with odd ratio 10.79 (95%CI=4.82-24.12). The laboratory parameters that have statistical significance are Hematocrit <30 with the odd ratio of 2.77 (95%CI=1.66-4.63), platelet <100,000/dl with odd ratio of 7.01 (95%CI=3.67-13.96), INR ≥1.5 with odd ratio of 12.62 (95%CI=6.69-23.79) (Table 2).

In a multivariable analysis, found the factors with the lowest overall p-value by far were patients with underlying diabetes mellitus, GCS ≤8, RTS <4, ISS >15, INR ≥1.5, and patient transfer time >240 min-

Table 2 Estimation of risk of death due to trauma through univariable analysis

Variation		Odd ratio	95%CI	p-value
Age	<60	1		
	≥60	1.49	0.87-2.56	0.144
Gender	Male	0.99	0.55-1.82	0.996
Mechanism of injury	IPDTA	0.77	0.43-1.41	0.402
	IDTA	0.31	0.04-2.42	0.264
	Falling	1.55	0.77-3.08	0.216
	Physical assault	1.57	0.48-5.15	0.453
Underlying disease	Diabetes mellitus	4.77	1.56-14.62	0.006
	Hypertension	0.99	0.36-2.72	0.984
	Dyslipidemia	3.81	0.53-27.50	0.184
	CKD	3.85	0.24-62.27	0.342
	Other	1.12	0.47-3.16	0.679
Organ of injury	Head injury	4.24	2.04-8.15	<0.001
	Chest injury	0.94	0.57-1.56	0.821
	Abdominal injury	1.19	0.66-2.15	0.572
	Pelvis /femur fracture	1.10	0.43-2.81	0.845
	More than 1 system	1.14	0.87-2.36	0.16
Patients transfer method	EMS	1		
	Refer	0.97	0.53-1.78	0.929
	Walk in	N/A		
	First responder	1.01	0.25-4.04	0.988

Table 2 Estimation of risk of death due to trauma through univariable analysis (cont.)

Variation		Odd ratio	95%CI	p-value
GCS	≤8	10.79	4.82-24.12	<0.001
RTS	<4	17.42	7.79-38.93	<0.001
ISS	>15	18.75	2.55-137.46	0.004
Patient transfer time	≥240 minutes	0.99	0.96-1.00	0.012
Late admission from onset	≤360 minutes	0.60	0.34-1.07	0.082
Hematocrit level	<30	2.77	1.66-4.63	<0.001
Platelet level	≤100,0000	7.01	3.67-13.96	<0.001
INR	≥1.5	12.62	6.69-23.79	<0.001

Remark: IPDTA = Injury of passenger or driver from traffic accident
IPTA = Injury of pedestrian from traffic accident
ISS = Injury severity score
GCS = Glasgow coma score
RTS = Revised trauma score
N/A = not valid data

utes (Table 3). This indicates that those factors are the most reliable indicators of all the ones tested in regard to mortality rate in trauma patients.

Discussion

The present study evaluated the risk factors associated with mortality in trauma patients who arrived at the ED of Chiangrai Prachanukroh Hospital during one year period from January 2018 to December 2018. The most common cause of trauma was commonly related to traffic accidents. According to a global report on road safety, Traffic accidents are increasing every year in the developing world. Thailand has the highest rank for the number of fatalities from traffic accidents.[14] There were some studies about the relation between diabetes and trauma. The study of Katherine He, et al. on complications and resource utilization in trauma patients with diabetes found out that diabetes is a risk factor for adverse outcomes in trauma patients, such as infection, sepsis, cardiac complications, acute renal failure, ventilator-days, ICU days and total length of stay.[15]

Table 3 Multivariable logistic regression for estimating risk of death of trauma patients

Variation	Odd ratio	95%CI	p-value
Patient with diabetes mellitus	7.47	1.97-28.26	0.003
GCS ≤8	7.37	2.89-18.78	<0.001
RTS <4	5.60	2.23-14.05	<0.001
ISS >15	9.38	1.11-79.06	0.040
INR ≥1.5	8.83	3.98-19.56	<0.001
Patient transfer time >240 minutes	2.30	1.03-5.12	0.042

According to the study of Guzman-Matinez A. about morbidity and mortality of trauma patients with DM, patients with DM are associated with a two fold increase in complications leading to a longer hospitalization. This indicates that diabetic Hispanic trauma patients may need earlier and more aggressive intervention to reduce their risk of developing complications.[16] The study of Khan A. et al. found out that diabetic patients with trauma have higher hospital morbidity from longer intensive care unit stay and develop more complications, but could not show an increase in mortality.[17]

While in our literature review, we found much evidence that points to both morbidity and mortality being linked to diabetes, the reason why diabetes is associated with 24 hour mortality has to be studied further. The association between pre-hospital time and outcome following trauma has been widely studied. It is believed that a reduction in time between injury and definitive treatment (golden period) will increase survivability.[18] In contrast, the study of Khan A. et al[17] from the international Journal of Surgery shows there were no significant differences in mortality between patients presenting early and those who arrived more than one hour later (OR was 0.9, 95%CI was 0.60-1.50). According to this study, the patient transfer time less than 240 minutes has 0.39 odd ratio (95%CI was 0.20-0.73).

The most common body region of injury in our study was the head, followed by chest injuries and abdominal injuries. Head injuries were present in 66.93% and 89.16% of the patients who survived and died, respectively. This is in line with other studies. Severe head injury is associated with both high mortality and high morbidity.[13,19] Nowadays, it is understood better why traumatic brain injuries often lead to death. It is not just the primary brain damage from the destructive forces in an accident, but also the secondary brain injuries.[20] Overall, the results of this study agree with Mahnaz Yadollahi [21] in that ISS has a significant correlation to the mortality rate of trauma patients. On the other hand, lower scores in GCS and RTS indicate a higher risk of death in trauma patients.

This study agrees is concordant the research on multiple blunt trauma patients by M Ustundag[13], who established that low GCS and RTS are reliable mortality indicator. The study of Li H, et al[5] in Hongkong Journal of Emergency medicine shows RTS was significantly better than ISS in predicting mortality of trauma patients (AUC: 0.93 vs 0.880, p-value <0.001). This is compatible with our study showing that GCS, RTS, and ISS are statistically significant. M Ustundag[13] found that 26.13% of the fatalities had anemia. Specifically, he states that blood loss is one of the most common causes of mortality in trauma patients without adequate hemorrhage and replacement. This is confirmed by Sarper Türker[22], who further specified that a loss of 4-5 liters of blood has a significant effect on mortality. Also, a coagulogram with INR $\geq$1.5 predicts mortality. This is in line with a study done by Yaun et al.[23], who found in a multivariable regression analysis that INR >1.25 was associated with higher in-hospital mortality. However, the patients in the dataset that was used in this study are all adults. In the future, it would be advisable to perform additional analytics on data sets that contain children as well. Another limitation is that some causes of death, like hanging and burning, were excluded in this study. For future work, it could also

be studied how mortality rate differs in the time period after 24 hours have passed, for example in the time period up to 48 hours or more.

Conclusion

In conclusion, we found that the predicting factors associated with mortality of traumatic patients are underlying disease of DM, GCS ≤8, RTS <4, ISS >15 and INR ≥1.5.

Conflict of Interests

None

References

1. Heydari-Khayat N, Sharifipoor H, Rezaei MA, Mohammadinia N, Darban F. Correlation of revised trauma score with mortality rate of traumatic patients within the first 24 hours of hospitalization. Zahedan J Res Med Sci 2014;16(11):33-6.
2. Brown TR. Pre-hospital care of road traffic injuries in Chiang Mai [Internet]. [cited 2020 Oct 10]. Available from: http://who.int/world-health-day/previous/2004/en/traffic_facts_en.pdf
3. Reinhard E. Traffic facts [Internet]. 2014 [cited 2020 Oct 10]. Available from: https://www.who.int/world-health-day/previous/2004/en/traffic_facts_en.pdf
4. World Health Organization. Review of Thailand's status against voluntary global targets for road safety risk factors and service delivery mechanism. Geneva: World Health Organization; 2020.
5. Li H, Shen WF, He XJ, Wu JS, Yi JH, Ma YF. Evaluation of the revised trauma score in predicting outcomes of trauma patients. Hong Kong J Emerg Med 2013; 20(4):234-9.
6. Alvarez BA, Razente DM, Lacerda DA, Lother NV, Von-Bahten LC, Stahlschmidt CM. Analysis of the revised trauma score (RTS) in 200 victims of different trauma mechanisms. Revista do Colégio Brasileiro de Cirurgiões 2016;43(5):334-40.
7. Javali R, Krishnamoorthy, Patil A. Comparison of injury severity score, new injury severity score, revised trauma score and trauma and injury severity score for mortality prediction in elderly trauma patients. Indian J crit Care Med 2019;23:73-7.
8. Bolorunduro OB, Villegas C, Oyetunji TA, Haut ER, Stevens KA, Chang DC, et al. Validating the injury severity score (ISS) in different populations: ISS predicts mortality better among Hispanics and females. J Surg Research 2011;166(1):40-4.
9. Brohi K, Cohen M, Ganter M, Schultz M, Levi M, Mackersie R, et al. Acute coagulopathy of trauma: hypoperfusion induces systemic anticoagulation and hyperfibrinolysis. J Trauma Acute Care 2008;64(5):1211-7.
10. Fawzy A, Lolah M, Ibrahim S, Hassan A. Coagulation profile tests as a predictor for adult trauma patients' mortality. Int Surg J 2020;7(1):1-9.
11. Wongvatanakij P, Tadadej C, Meyai A, Suriyawongpaisal P. Relation of factor on survival outcomes among traumatic patients at the tertiary care hospital admitted for traffic accidents in Phuket Province. Srinagarind Medical Journal 34(1):52-9.
12. Yumoto T, Naito H, Ihoriya H, Yorifuji T, Nakao A. mortality in trauma patients admitted during, before, and after national academic emergency medicine and trauma surgery meeting dates in Japan. PLoS One 2019;14(1):1-11.
13. Ustundag M, Aldemir M, Orak M, Guloglu C. Predictors of mortality in blunt multi-trauma patients: a retrospective review. Hong Kong J Emer Med 2010;17(5): 471-6.
14. Suriyawongpaisal P, editor. Key facts on road safety situations in Thailand. 1st edition. Bangkok: Roads Safety Fund, Department of Land Transport; 2015.
15. He K, Hemmila MR, Cain-Nielsen AH, Machado-Aranda DA, Frydrych LM, Delano MJ. Complications and resource utilization in trauma patients with diabetes.

PLOS ONE 2019;14(8):1-13.

16. Guzman-Martinez AM, Garcia-Rodriguez O, Ramos-Melendez EO, Guerrios-Rivera L, Rodriguez-Ortiz P. Morbidity and mortality of Hispanic trauma patients with diabetes mellitus. Euro J Trauma & Emerg Surg 2018;46(4):887-93.
17. Khan A, Zafar H, Naeem SN, Raza SA. Transfer delay and in-hospital mortality of trauma patients in Pakistan. Int J Surg 2010;8(2):155-8.
18. Yattoo GH, Tabish A. The profile of head injuries and traumatic brain injury deaths in Kashmir. J trauma Management & Outcomes 2008;2:5-9.
19. Ahmad R, Cherry RA, Lendel I, Mauger DT, Service SL, Texter LJ, et al. Increased hospital morbidity among trauma patients with diabetes mellitus compared with age- and injury severity score-matched control subjects. Arch Surg 2007;142(7):613-8.
20. Schwartz GR, Schwartz GR, Mayer TA, Goldman HW. 18-2 Head Injuries: Specific Emergency Department Management Issues. In: Roth PB, Cohen JS, editors. Principle and practice of emergency medicine. 4th edition. Philadelphia: Lippincott, Williams & Wilkins; 1998. p. 232-4.
21. Yadollahi M. A study of mortality risk factors among trauma referrals to trauma center, Shiraz, Iran, 2017. Chin J Traumatol 2019;22(4):212-8.
22. Türker FS. Hemorrhagic shock. Clinical Management of shock - the science and art of physiological restoration [Internet]. [cited 2020 Oct 10]. Available from: https://doi.org/10.5772/intechopen.82358
23. Yuan F, Ding J, Chen H. Predicting outcomes after traumatic brain injury; the development and validation of prognostic models base on admission characteristic, The J Trauma Acute Care Surg 2012;73:137-45.

บทคัดย่อ

ปัจจัยที่มีผลต่อการเสียชีวิตใน 24 ชั่วโมงในผู้ป่วยอุบัติเหตุที่เข้ารับการรักษาโดยได้รับการนอนในโรงพยาบาลเชียงรายประชานุเคราะห์

เกรียงศักดิ์ ปินตาธรรม; วศินี ปล้องนิราศ

กลุ่มงานเวชศาสตร์ฉุกเฉิน โรงพยาบาลเชียงรายประชานุเคราะห์

วารสารการแพทย์ฉุกเฉินแห่งประเทศไทย 2565;2(1):66-76.

การบาดเจ็บเป็นปัญหาสุขภาพที่สำคัญทั่วโลก ซึ่งนำไปสู่ความตายและความทุพพลภาพ มีการใช้ทรัพยากรมากมายในการรักษาผู้ป่วยที่ได้รับบาดเจ็บ หากสามารถระบุปัจจัยที่แก้ไขได้ ก็จะสามารถลดอัตราการตายได้อย่างมาก การศึกษานี้มีวัตถุประสงค์เพื่อวิเคราะห์ปัจจัยที่สัมพันธ์กับอัตราการเสียชีวิตของผู้ป่วยอุบัติเหตุที่ 24 ชั่วโมง การศึกษาครั้งนี้เป็นการศึกษาย้อนหลัง ดำเนินการในผู้ใหญ่อายุ 18 ปีขึ้นไปที่มีอาการบาดเจ็บและเข้ารับการรักษาที่ห้องฉุกเฉิน โดยได้รับการประเมินระดับ 1 ในระบบ ESI ทั้งสองกลุ่มถูกแบ่งออกเป็นกลุ่มที่รอดชีวิตใน 24 ชั่วโมงและกลุ่มที่เสียชีวิตภายใน 24 ชั่วโมง โดยเปรียบเทียบตามอายุ เพศ โรคประจำตัว สาเหตุของการบาดเจ็บ อวัยวะของการบาดเจ็บ วิธีการมาโรงพยาบาลของผู้ป่วย กลไกของการบาดเจ็บ รวมทั้ง GCS, RTS และ ISS การศึกษาในห้องปฏิบัติการ ได้แก่ ระดับฮีมาโตคริต ระดับเกล็ดเลือด และระดับ INR ปัจจัยที่มีนัยสำคัญคำนวณโดยใช้การวิเคราะห์แบบตัวแปรเดียวและหลายตัวแปรในการถดถอยโลจิสติก ผู้ป่วยถูกแบ่งออกเป็นสองกลุ่ม: กลุ่มรอดชีวิตภายใน 24 ชั่วโมง (N = 317, 79.25%) และกลุ่มที่เสียชีวิตภายใน 24 ชั่วโมง (N = 83, 20.75%) หลังจากควบคุมปัจจัยที่เกี่ยวข้องกับผลลัพธ์อย่างมีนัยสำคัญ การเสียชีวิตจากการบาดเจ็บมีแนวโน้มมากขึ้นในผู้ป่วยเบาหวาน (DM) อาการบาดเจ็บที่ศีรษะ GCS ≤8, RTS <4, ISS >15 เวลาย้ายผู้ป่วย ≥240 นาที ค่าฮีมาโตคริต <30 เกล็ดเลือด ≤100,0000 และ INR ≥1.5 สรุปได้ว่าภาวะ DM, GCS ≤8, RTS <4, ISS >15 และ INR ≥1.5 เป็นปัจจัยเสี่ยงที่ทำให้ผู้ป่วยอุบัติเหตุเสียชีวิตภายใน 24 ชั่วโมง

คำสำคัญ: **การเสียชีวิตจากอุบัติเหตุ; ความรุนแรงของการเกิดอุบัติเหตุ คะแนน injury severity score (ISS); คะแนน revised trauma score (RTS); คะแนน Glasgow coma scale (GCS)**

ติดต่อผู้เขียน: เกรียงศักดิ์ ปินตาธรรม, email: birdkriangsak@gmail.com