

TRAUMA SCORE IN OUR PRACTICE - RETROSPECTIVE STUDY

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Summary

For a better management of critically ill patients we use a modified trauma score applied from 2007 with ranges between 6 to 27 points. It allows dividing a case in critical or non-critical and improving the reaction time and the use of emergency resources. It has inherent limitations in pediatric aged dog group and must be improved in the future.

Key words: trauma, triage, dog.

Trauma is a major health problem and a leading cause of death in small animals. Many deaths can be prevented through an organized approach to care, which includes a careful evaluation, prompt resuscitation and definitive treatment (4, 5, and 7). For triage, especially for identification of most severely injured patients, and for prognosis it is used a trauma score. In human medicine at the current time the issue of which is the best trauma scoring model remains unresolved (1, 2, 3, and 6). The application of trauma evaluation score, modified and adapted for small animals, has introduced in our department since 2007. The goal of this retrospective study is to assess its applicability and to identify its limitations.

Materials and methods

In this retrospective, of year 2007, study were included 126 dogs with multiple trauma injuries arrived in the Surgery Department in the first 3-4 hours time interval after the moment of trauma insult occurring. The table below (table 1) provides a brief summary of the cases.

Table 1

Summary of cases, trauma score and illness severity (n = 126)

	Male				female			
	< 1 year	1 - 5 years	5-10 years	> 10 years	< 1 year	1 - 5 years	5-10 years	> 10 years
Class I	3	-	3	-	6	-	-	1
Class II	8	5	-	-	6	4	-	-
Class III		1	1	-	-	1	-	-
Class IV	25	12	13	7	11	7	2	10

Physiological variables (heart rate, respiratory rate, systolic blood pressure, oxygen saturation) are measured, central nervous system function was evaluated, abdomen and thorax were palpated and all results were used to calculate a score.

Based on trauma score (table 2) patients are included in one class of illness severity (5, 9): catastrophic (I), critical and most urgent (II), urgent (III) and less seriously ill (IV). At a certain threshold an urgent and a critical care is applied. Score of each patient was compared with his final outcome at the time of discharge from the Surgery Department.

Table 2

Modified prognostic trauma score			
Trauma	Value/status	Points	
Respiratory rate	10 to 20	4	
	20 to 30	3	
	> 30	2	
	< 5	1	
Respiratory effort	shallow or normal	1	
	labored	0	
Systolic blood pressure	> 90	4	
	70 to 90	3	
	50 to 69	2	
	< 50	1	
Capillary refill time	normal in 2 seconds	2	
	delayed > 2 seconds	1	
	none/no refill	0	
Oxygen saturation (pulseoximetry)	> 90	2	
	85-89	1	
	< 85	0	
Abdomen and thorax	normal	2	
	with high sensibility at palpation	1	
	rigid abdomen, flail chest, paradoxal movement	0	
CNS function scale	1. Mentation	alert	4
		stuporous	3
		comatose	2
	2. Eye opening	spontaneously	4
		to voice	3
		to pain	2
	3. Motor response	will not open	1
		responds to voice	5
		purposeful movement (pain)	4
		withdraw (pain)	3
		flexion (pain)	2
		no response	1

Results and discussions

In 2007 were admitted to surgery department with multiples injuries 78 male and 48 females. 59 dogs were aged less than one year, 30 dogs aged 1 to 5, 19 aged 5 to 10, and 18 aged more than 10. Most of the traumas, 82%, arose from car accidents. Mean trauma severity score is summarized in the table 3. Ranges were between 6 to 24,16.

Table 3

Mean trauma severity score

	male				female			
	< 1 year	1 - 5 years	5-10 years	> 10 years	< 1 year	1 - 5 years	5-10 years	> 10 years
Class I 6-9 points	6.66	-	7.33	-	6.5	-	-	6
Class II 10-16 points	11	12	-	-	12.83	14.5	-	-
Class III 17-22 points	-	18	19	-	-	19	-	-
Class IV 23-27 points	22.44	24.16	23.46	22.28	22.45	23.28	22.5	22.4

Among the patients, the trauma score of 13 patients was less than 9 points (class I), from these patients four have died and two were euthanatized; 23 from 10 to 16 points (class II) and from this group one was euthanatized; 3 from 17 to 22 (class III) and 87 from 23 to 27 (class IV). Among the patients of class I, 2 had severe brain contusion, pelvic fractures and abdomen hemorrhage, 8 pneumothorax, myocardial contusion, diaphragmatic hernias, rib and legs fractures and 3 spine fractures. A review of trauma score show us that a score below of 7.33 indicates a high mortality risk (78%), but in one patient of class II (with a trauma score 13 and aged under one year) evolution was unfavorable despite of appropriate applied resuscitative therapy, in the final he died. His evolution indicate us that is necessary an age specific scoring system with more variables and with age-specific threshold values for physiological parameters. Attempting to summarize the severity of injury in a patient with multiple traumas with a single number is difficult.

Trauma score is a quantitative measure of trauma severity and prognosis. The ideal system for management of trauma remains controversial. In human medicine scoring systems used in trauma can be classified into: physiologic such as the „The Revised Trauma Score” (RTS), „Glasgow Coma Scale” (GCS), „The Acute Physiology and Chronic Health Evaluation” (APACHE); anatomical such as the „Abbreviated Injury Scale” and „The Injury Severity Score” and combined score such as the TRISS method („Trauma Score and the Injury Severity Score”). Based on these scores and combined with trauma score presented by Tranquilli W. J. (8) we develop a modified prognostic trauma score because the triage must be based on fairly criteria which allow to divide a case in critical or non-critical (class III and

IV) dictating finally the reaction time and the use of emergency resources (supporting the circulation and preserving the airway and ventilation).

All dogs with fatal trauma, including the patient of class II, were aged less than one year. The survivors of class I were aged under one year (three), over 10 year (one) and between 5 and 10 years (three). The trauma score for survivors was higher than the score for non-survivors. It is difficult to asses at this moment, because a little number of cases, by statistical instruments the true precision of used trauma score on predicting survival or assessing mortality risk in critically ill patients especially for those aged under one year. Based on current collected data we think that for a better evaluation weight, existence of open wound, skeletal trauma (open, closed, multiple or single fracture) and age-specific threshold values must be included in pediatric aged dogs.

Conclusions

1. The used trauma score was found to be simple, with easy measurable parameters, useful in case classification in critical or non-critical.
2. The applied trauma score has its inherent weakness but it can be modified further for better results in pediatric aged dog group.
3. Because a little number of cases it is difficult to asses the true precision of used trauma score on predicting survival from trauma.

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