

= Abstract =

Distribution of Time to Death in Trauma Patients: A Review of 11 years' Experience at a Tertiary Care Teaching Hospital

Hoon Lim, M.D., Wen Joen Chang, M.D.*, and Seung Ho Kim, M.D.

Department of Emergency Medicine, Yonsei University College of Medicine,
Department of Emergency Medicine, SungAe Hospital*

Background: Traumatic death occupies a high ranking in the annual national report on causes of death and causes a significant burden to society. To reduce traumatic death, an area-wide trauma care system is urgently needed, and basic mortality data will be an essential component in designing such a system. The purpose of this study was to review the experience of trauma death in a hospital to determine the pattern of time to death and the effect of the emergency medical services(EMS) system in traumatic death.

Methods: A retrospective analysis of 495 traumatic deaths experienced from 1990 to 2000 was performed. Time to death, mechanism of injury, injury severity, and cause of death were reviewed. The influence of the EMS system before 1995 was compared with its influence after 1995.

Results: The mean age of the 495 patients was 41.1 ± 18.9 and the mean injury severity score(ISS) was 37.1 ± 17.8 . The distribution of time to death showed DOA(including found dead) in 39% of the cases, within 48hr in 38.4%, between the 2nd and 7th days in 9.9%, and later than the 7th day in 12.7%. The majority of early deaths occurred within 4 hr of injury, but a minor increase was noted during the 2nd week. After 1995, the ambulance transportation rate increased significantly without any difference in pre-hospital interventions.

Conclusion: Our results showed a bimodal distribution of time to death, which reflected geographic, mechanism of injury, and trauma care system differences. We also noted deficiencies in prehospital trauma care in our EMS system. We recommend nationwide trauma registry initiatives to provide basic trauma data and to implement a quality trauma care system.

Key Words: Trauma death, Modal distribution

: 2001 10 10 : 2001 11 13

: 134

Tel : 02) 361-5790, Fax : 02) 362-3715, E-mail : edksh@yumc.yonsei.ac.kr

I.

II.

1999

1990 1 2000 12 11

가

3 ¹⁾.

689

39 1 , 40 2

495 . 495

가

(DOA)

²⁾.

1983 Trunkey가
trimodal distribution

1995 1995 1995

AIS-85 condensed chart

Injury Severity Score(ISS)4)

³⁾.

(acute care),

(epidemiology)

, DOA

DOA, (48), (48
~7), (7) 5

11

none

가

, minimal

erate

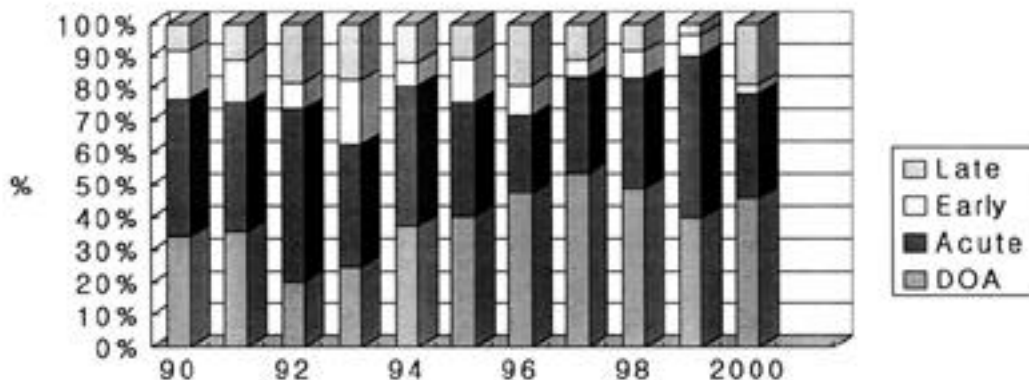
, mod-

6가

1) - , , 3

1.

		Year										Total (%)	
		' 90	' 91	' 92	' 93	' 94	' 95	' 96	' 97	' 98	' 99		' 00
(DOA)	()	16	16	10	10	25	15	20	29	23	12	17	193 (39.0)
	(48)	20	18	26	15	29	13	10	16	16	15	12	190 (38.4)
	(2~7)	7	6	4	8	5	5	4	3	4	2	1	49 (9.9)
	(7)	4	5	9	7	8	4	8	6	4	1	7	63 (12.7)
Total(%)		47 (9.5)	45 (9.1)	49 (9.9)	40 (8.1)	67 (13.5)	37 (7.5)	42 (8.5)	54 (10.9)	47 (9.5)	30 (6.1)	37 (7.5)	495 (100)



1.

, 2) - , 3)

, 4) - .

, , 5)

, 6) - 1. (1, 1)

, , . 11 495 .

SPSS 10.0 365 , 132

t-Test ANOVA with Duncan's 2.75:1 41.4±18.9 , 40.2

comparision test, chi-square ±17.5 , 44.1±18.8

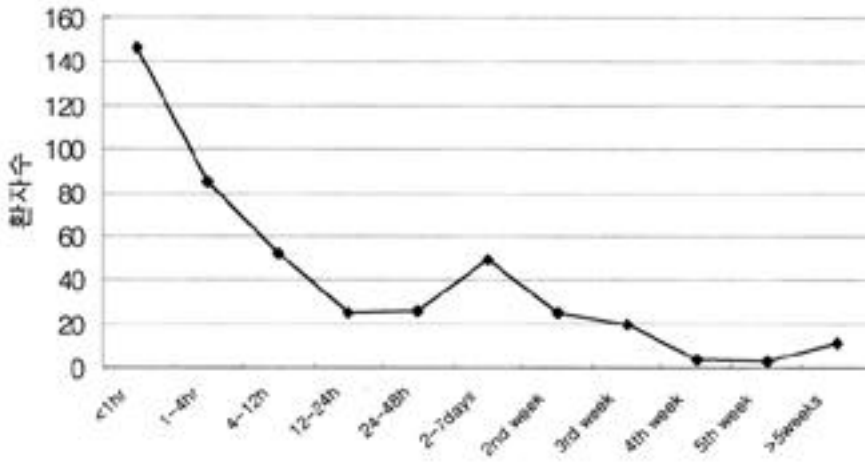
Fisher's exact test . 495 49 DOA†

193 (39.0%), 190 (38.4%),

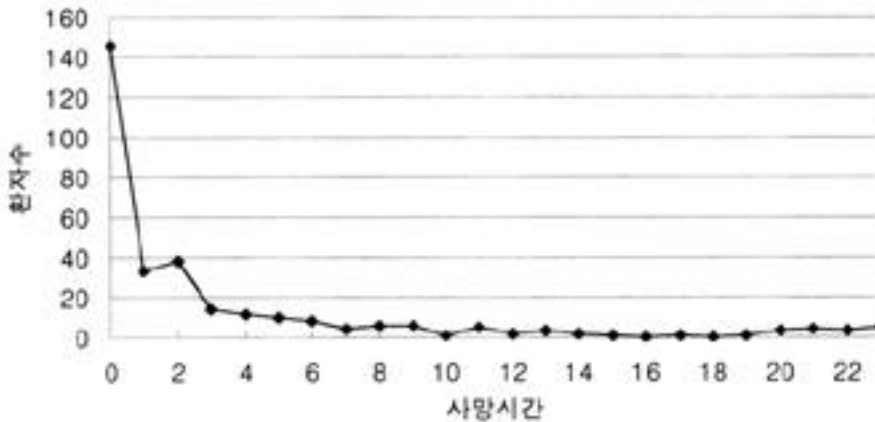
49 (9.9%), 63 (12.7%) .

			49	446	146
		(32.7%)	1	, 4	231
		(51.8%), 24		308 (69.1%)	
2.	(2, 2,3)	. 24		308	
			1	47.4%, 1~2	
2.	()	. N=446			

<1h	1-4 h	4-12 h	12-24 h	24-48 h	2-7 days	2nd week	3rd week	4th week	5th week	> 5weeks	Total
146	85	52	25	26	49	25	20	4	3	11	446
(32.7)	(19.1)	(11.7)	(5.6)	(5.6)	(11.0)	(5.6)	(4.5)	(0.9)	(0.7)	(2.7)	



2. () . N=446



3. 24 () N=308

가 98.5%

4. (4)

495

342

1995

IV.

1995

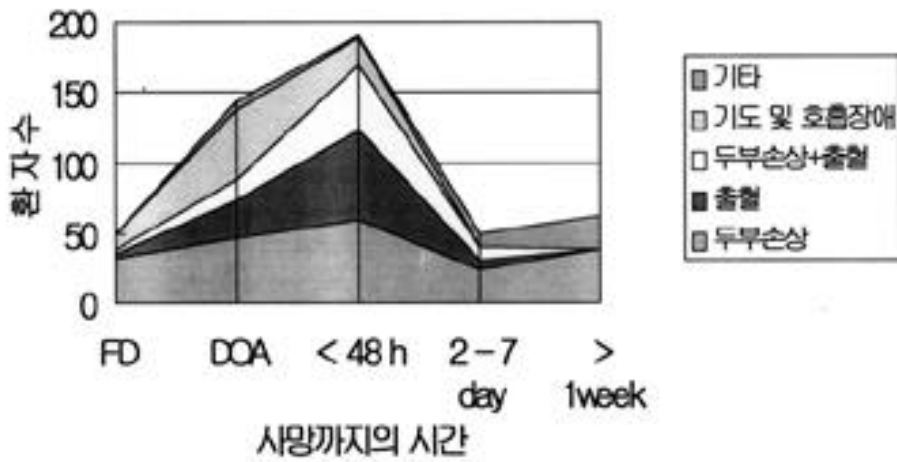
. 119 가

25.3% 77.8% 3.3

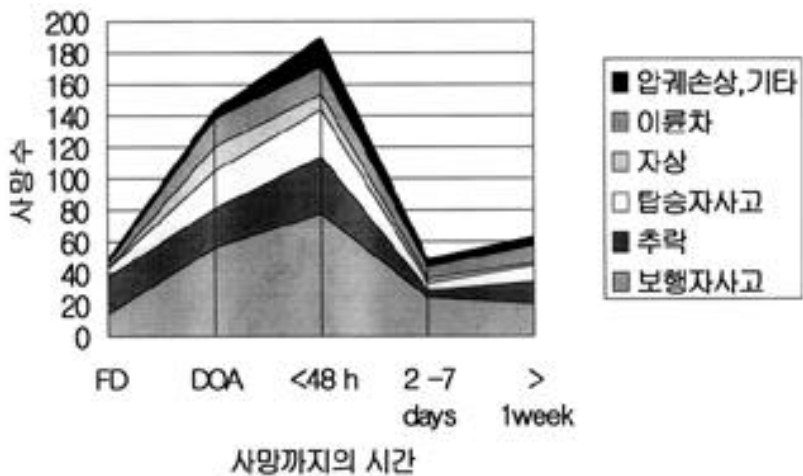
가 (p<0.01).

1995

가



4.



5.

4. (,)

		1990 ~ 1994	1995 ~ 2000	Total(%)	P value	
		40.0 ± 17.3	41.2 ± 18.7		NS	
ISS (injury severity score)	Mean ± SD	34.1 ± 16.1	35.1 ± 13.7		NS	
	1-15	2(1.2)	0(0.0)	2(0.6)	NS	
	16-24	39(23.5)	30(17.0)	69(20.2)		
	25-40	78(47.0)	90(51.1)	168(49.1)		
	>40	47(28.3)	56(31.8)	103(30.1)		
		42(25.3)	137(77.8)	179(52.3)	<0.01	
(-)		73(44.0)	17(9.7)	90(26.3)		
		51(30.7)	22(12.5)	73(21.3)		
		DOA	60(36.1)	68(39.2)	128(37.4)	NS
		<48h	74(44.6)	78(44.3)	152(44.4)	
		2 ~ 7day	20(12.0)	17(9.7)	37(10.8)	
		>1 week	14(8.4)	11(6.3)	25(7.3)	
(-)	#	None	165(99.4)	172(97.7)	337(98.5)	NS
		Minimal	1(0.6)	4(2.3)	5(1.5)	
		Moderate	0(0.0)	0(0.0)	0(0)	
	Total		166(48.5)	176(51.5)	342(100.0)	

: None : No treatment
 Minimal : IV, dressing, splinting, spine immobilization
 Moderate : Intubation, CPR

Trunkey 80%가 4 Trunkey 3
 trimodal distribution ³⁾
 1 50%
³⁾ (immediate death) , ,
 ,
 가 가
 , (early death)
 30% ,
⁵⁾ , ,
 , 가
 가가
 Baker
 1980 50% (late death) 가
 , 61.5% 48 , 73.2% 1 80%가 Baker
 , 1 ,
 (78%) ⁶⁾ ,
⁶⁾ , Trunkey³⁾ 1970 ,

가 , 80%가 24 , 83.1%가 48 ,
 가 90.8%가 1 , 9.2% 1
 7-9).
 trimodal distribution
 Advanced Trauma Life Support(ATLS) 7-9).

bimodal distribution
 가 10). 1990
 bimodal distribution ,

가 ,
 가 ,
 bimodal distribution

, ,
 7,8). (39.4%), (20.6%),
 (14.9%), (11.5%)
 11-13), 94.1%
 가 35 ~ 57%
 7-9).
 2 46.9%

32.7%가 1 , 51.8%가
 4 , 69.1%가 24
 6) 50%

49
 9.9%(49/495), 1 DOA 139
 188 38.0%(188/495)

94.1% DOA 146 DOA가 139
 가 36.3% 31.5%
 가
 48 77.4%, 24
 72.1% 24 가

2 1 ~ 4
 3 ~ 4
 가 가 2 ~ 3 가 , 48 ,
 24 3
 1 3 ~ 5 ATLS

trimodal 가
 bimodal distribution
 1995 , , 119

가 가 가
 1995 MTOS(Major Trauma Outcome
 가 Study)
 3.3 가 가
 가 , DOA,
 가 가 ISS
 가 , 11
 119 가
 1996 4.2 2001 3.7
 , 14.6 V.

2001 11
 15). Barquist 1. 4 가
 가 3~7 가
 bimodal distribution
 16). 2. 가
 3. 가
 Jurkovich 가 , , 3 가

가 17).
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