

THE VALUE OF EARLY GLASGOW COMA SCALE AND PUPILS CHANGES ON OUTCOME IN TRAUMATIC BRAIN INJURED PATIENTS.

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Introduction

Low Glasgow Coma Scale (GCS) score and early neuroworsening after traumatic brain injury (TBI) are associated with poorer outcome.

Objectives

To examine the influence of early trajectories (deterioration vs. improvement) on 6-months outcome after TBI.

Materials and Methods

Multicenter data from 2261 patients admitted in 3 NeuroIntensive Care Units (NICU) were prospectively collected from 1997 until 2012. Detailed prehospital, hospital admission and outcome data have been analyzed. Lost to follow up and “mistakenly severe”¹ patients have been excluded from the database leaving 1950 patients available for statistical analysis. We explored the association between the initial motor GCS, pupils reactivity and their changes until admission and dichotomized outcome (Glasgow Outcome Scale (GOS); favorable = 4-5; unfavorable = 1-3). We also described CT scan findings and need of urgent neurosurgery in neuroimproved (GCSm ≥ 2 points and/or normalization of pupils), neuroworsened (GCSm ≤ 2 points and/or pathological variation of pupils) and stable course (GCSm ± 1 point and no variation of pupils).

Results

Results are resumed in the two tables below.

		OUTCOME			p value
		Course	Fav (N, %)	Unfav (N, %)	
GCSm	Improved	188 (53.1)	166 (46.9)	0.0116	
	Stable	701 (51.8)	652 (48.2)		
	Worsened	106 (43.6)	137 (56.4)		
Pupils	Improved	52 (45.6)	62 (54.4)	0.0433	
	Stable	827 (52.7)	741 (47.3)		
	Worsened	72 (41.8)	100 (58.2)		
Neurological state	Improved	225 (52.3)	205 (47.7)	0.0170	
	Stable	618 (52.6)	557 (47.4)		
	Worsened	152 (44)	193 (56)		

Table 1. Trajectories of GCS and pupils compared to outcome

		CLINICAL NEUROLOGICAL TRAJECTORIES				p value
		Categories	Impr (N, %)	Stab (N, %)	Wors (N, %)	
CT Marshall	1 - 4	240 (55.8)	584 (49.7)	105 (31.9)	< 0.0001	
	5 - 6	190 (44.2)	591 (50.3)	240 (68.1)		
Neurosurgery	Yes	138 (36.1)	451 (42.4)	193 (60.3)	< 0.0001	
	No	244 (63.9)	613 (57.6)	127 (39.7)		
Age	0 - 29	153 (38.2)	364 (34.6)	91 (29.4)	< 0.0001	
	29 - 54	140 (35.0)	320 (30.5)	80 (25.9)		
	54 - 94	107 (26.8)	366 (34.9)	138 (44.7)		

Table 2. Characteristics of population compared to Clinical Neurological trajectories

Discussion

Early trajectories of neurological state are associated with 6-months outcome.

¹*Stocchetti et al. J Neurotrauma (2004); 21(9): 1131-1140*