



ELSEVIER

Contents lists available at ScienceDirect

International Emergency Nursing

journal homepage: www.elsevier.com/locate/aaen

Prehospital management of traumatic brain injury patients – a gender perspective



Ann-Charlotte Falk RN, PhD (Senior Lecturer in Nursing)^{a,*},
Annika Alm RN (Universitet Lecturer in Nursing)^a,
Veronica Lindström RN, PhD (Director of Nursing Studies)^b

^a Department of Neurobiology, Care Sciences and Society, Karolinska Institutet, Stockholm, Sweden

^b Section of Emergency Medicine Södersjukhuset, Department of Clinical Science and Education, Karolinska Institutet, Stockholm, Sweden

ARTICLE INFO

Article history:

Received 14 August 2014

Received in revised form 6 January 2015

Accepted 7 January 2015

Keywords:

Prehospital emergency care

Needs assessment

Early interventions

Nursing care

Gender

Severe brain injury

ABSTRACT

Background: Studies show that there are differences between men and women when it comes to several aspects of health care. But the research on equal care in a prehospital setting for patients with severe traumatic brain injury (TBI) has been sparsely investigated. The aim of this study is to describe prehospital care from a gender perspective.

Method: This is a retrospective study of (n = 651) patients (>15 years) with severe TBI requiring intensive care at a University Hospital in Sweden during the years 2000–2010. Outcome was measured by survival and Glasgow Outcome Scale (GOS) scores at discharge.

Result: Our results show differences, though not significant, in the initial assessments and performed interventions between male and female TBI patients. Female patients received more assessments and performed interventions compared to men during prehospital care. Men received more interventions with I.V. fluid but significantly less airway interventions (endotracheal intubation) compared to female patients. More men were transported directly to neurosurgical specialist care as compared to females. No difference in outcome was found.

Conclusion: Our results show differences, however not significant in the assessments and performed interventions between gender, with female patients receiving more assessments and interventions compared to male patients during prehospital care. Future research should focus on gender differences in initial early signs of TBI to improve early identification.

© 2015 Elsevier Ltd. All rights reserved.

1. Background

According to WHO's Health Care Act ([The National Board of Health and Welfare, 1982](#)), the goal of health care is to ensure good health and care on equal terms for the entire population. WHO (1982) describes that a jointly funded care with high availability for all citizens, both men and women, is one of the most important factors in a health care system that provide equitable health care ([Swedish Association of Local Authorities and Regions, 2007](#)).

In previous studies, gender differences in severe traumatic brain injury (TBI) patients have been shown in relation to outcome measurements. Results show that young men have higher mortality rates immediately at the scene, but with increasing age the difference is reduced, with both men and women affected to the same extent

([Flaada et al., 2007](#); [Tagliaferri et al., 2006](#); [Vagnerova et al., 2008](#)). Research suggests that male and female nervous systems respond differently after a TBI, with female hormones having a protective effect on a brain injury, which probably reduces associated mortality and morbidity ([Flaada et al., 2007](#); [Leitgeb et al., 2011](#); [Slewa-Younan et al., 2008](#); [Tagliaferri et al., 2006](#); [Vagnerova et al., 2008](#)). Other results show that the recovery after TBI differs between men and women, where women over 30 years had significantly poorer outcome in the physical recovery compared to men ([Leitgeb et al., 2011](#); [Vagnerova et al., 2008](#)). However, the presence and meaning of differing physiological responses in males and females following TBI have not yet been fully investigated but could be related to both differences in description and/or exhibition of symptoms and/or differences in health care staff's assessment of initial symptoms during care ([Kirkness et al., 2004](#); [Slewa-Younan et al., 2008](#)).

Variables that predict outcome after TBI have been presented, such as the Glasgow Coma Score (GCS), pupil reaction, age at injury and head-computed tomography (CT) scan findings ([Brain Trauma Foundation, 2007](#)). However, the majority of these variables are measured on arrival in the primary hospital, not in the pre-hospital

* Corresponding author. Department of Neurobiology, Care Sciences and Society, Karolinska Institutet/Karolinska University Hospital, 181 43 Huddinge, Sweden. Tel.: +46 851772368; fax +46 76 0504674.

E-mail address: ann-charlotte.falk@karolinska.se (A.-C. Falk).

setting (Pozner et al., 2004). This happens despite the fact that the personnel in the Emergency Medical System (EMS) are the first health care providers and make the first assessment and perform interventions at the scene of an injury.

Guidelines for the initial management of the brain-injured patient have been published with the aim of preventing secondary brain insults by avoiding hypoxia and/or hypotension, and thereby minimizing the impact of long-term disabilities (Bellander et al., 2008; Boer et al., 2012). However, the guidelines have not taken into account any differences according to gender on the suggested initial prehospital management (Brain Trauma Foundation, 2007). So despite knowledge on gender differences in physiological responses to a TBI, little is known on how this reflects initial assessments and interventions during pre-hospital care. Therefore, the aim of this study is to describe prehospital care from a gender perspective.

2. Method

This is a retrospective study with data collected from the Brain Trauma injury database with all adult (>15 years) patients with severe TBI with Glasgow Coma Scale (GCS) \leq 8 measured on admission to hospital and requiring neuro-intensive care during the years 2000–2010. No patients were excluded. The Regional Ethical Review board approved the study (Dnr: 2010/1925–31/3).

2.1. Setting

The Emergency Medical Services (EMS) in the Stockholm area cover approximately 2.1 million inhabitants and the incidence of brain injury in the region during the study period was 126–160 per 100 000 inhabitants/year. The transport-time in the region is less than 60 minutes. The regional County Council is responsible for the EMS, and the service is provided by the organizations within the county and private companies contracted by the County Council. During the study period, the ambulance service was provided by one organization within the county and three private companies contracted by the County Council. During the study period, the ambulance fleet consisted of 55 vehicles. The ambulances consist of two persons – a Prehospital Emergency Care Nurse and an Emergency Medical Technician (EMT), both recertified every other year. The Prehospital Emergency Care Nurse has Advance Life Support (ALS) competence and the EMT has Basic life support knowledge (BLS). Two anesthesia-nurse manned emergency cars and one physician-manned helicopter were also available to assist the ambulance crew during the study period. These are dispatched when a physician or anesthesia-nurse is assumed to be of added value in the emergency response and care of the patient. Typical medical cases when these vehicles are dispatched are assumed airway threats or suspicion of severe trauma.

The ambulance personnel are required to follow pre-determined medical guidelines written by the medical supervisors in the County (Stockholm County of Council, 2012). In accordance with these medical guidelines, the ambulance personnel should, after assessment and necessary treatment, transport the severely injured TBI patient to the Emergency department at a hospital with neurosurgical competence. The guideline concerning transport to hospital with neurosurgical competence was established in 1993.

2.2. Measures

In-hospital demographic variables are age, gender and type of injury. Pre-hospital variables are direct transportation to neurospecialist care, performed assessment of vital signs (airway, saturation, blood pressure and initial GCS) and interventions concerning airway (endotracheal intubation) and circulation (intravenous (IV) fluid). The GCS measures the level of consciousness by scoring eye opening, motor response and verbal response. The GCS is grouped between 3 and 8 (severe brain

Table 1

Prehospital management of patients with severe TBI (GCS \leq 8) according to gender.

	Men n (%)	Female n (%)	p-value
All	503 (77)	148 (23)	
Age at injury	Mean 47.8 years	Mean 47.8 years	p = .53
GCS at the scene of the injury			p = .15
3–8	335 (67)	100 (68)	
9–12	82(16)	24(16)	
13–15	86(17)	24(16)	
External cause of injury			p = .30
Fall <3 m	293 (59)	93(63)	
Fall >3 m	36 (7)	7 (5)	
RTA	107 (21)	35 (23)	
Other	67 (13)	13 (9)	
Direct transport to specialist care	248 (49)	61 (41)	p \leq .05
Prehospital assessments			
BP	326 (65)	99(69)	p = .35
SaO2	320(64)	105(71)	p = .06
Respiratory rate	178 (35)	62 (42)	p = .09
Prehospital secondary insults	100 (20)	26 (18)	p = .30
SAT <90%	73 (73)	12 (46)	p = .009
BP <90 mmHg	37 (37)	15 (58)	p = .58
Prehospital interventions			
Endotracheal intubation	82 (16)	38 (26)	p \leq .01
I.V. fluid	138 (27)	35 (24)	p = .35
ICU length of stay	Mean 10.1 days	Mean 8.6 days	p = .27
GOS at discharge			p = .21
Favorable GOS	445 (88)	135 (91)	
Unfavorable GOS	58 (12)	13 (9)	
In-hospital mortality	153 (30)	41 (28)	p = .28

injury), 9 and 13 (moderate brain injury), and 14 and 15 (mild brain injury). For this study, severe TBI was defined as a patient with GCS \leq 8 on admission to hospital.

2.3. Outcome

Outcome measures were: in-hospital mortality, length of Intensive Care Unit (ICU) stay and the Glasgow Outcome Scale (GOS). The GOS is frequently used to assess general outcome after TBI; the 5 outcome categories range from death to good recovery (Jennett and Bond, 1975). The GOS was registered at discharge. For this study, we used the dichotomized GOS (favorable GOS – 4/5 versus unfavorable GOS – 1/2/3).

2.4. Analysis

Descriptive statistical procedures were computed using the IBM SPSS version 22.0 for Windows, Chicago, IL, USA. Collected materials were analyzed using descriptive and comparative statistical methods. Categorical variables were compared by means of Fisher's exact two-tailed test and Pearson chi-square tests. Associations between categorical variables (gender and performed interventions) were calculated by logistic regression (before and after adjustment for confounding variables). Odds ratios (OR) and 95% confidence intervals (CI) are reported. A probability below 0.05 was accepted as statistically significant.

3. Result

A total of 651 patients with a severe traumatic brain injury were included in this study (77% men and 23% females, mean age: 48 years, range 15–94).

The external cause of injury was similar between gender, with the most common cause being falls from less than three meters (Table 1).

There was no gender difference found between the initial severity of injury according to initial GCS (Table 1) and presence of other injuries (females 23% vs. males 20%).

Download English Version:

<https://daneshyari.com/en/article/2609207>

Download Persian Version:

<https://daneshyari.com/article/2609207>

[Daneshyari.com](https://daneshyari.com)