

PREDICTORS OF MORTALITY OF BLUNT POLYTRAUMA PATIENTS ADMITTED TO THE EMERGENCY DEPARTMENT AT ALEXANDRIA MAIN UNIVERSITY HOSPITAL

Ahmed Abdel-fatah Sabry¹, Tamer Nabil Habib², Mina Montasser ³, Mohammed Ali Mussa Al-Azry³

Department of General Surgery¹, Department of Critical Care², Department of, Emergency Medicine³, Faculty of medicine, Alexandria university

Introduction

Trauma is a growing global health issue, exacerbated by increasing vehicular usage and urbanization, presenting diverse challenges in social, economic, and organizational aspects. In Egypt, the emergency medical services are underdeveloped, often leading to delayed hospital arrivals for trauma patients and a lack of resources for effective management. Blunt polytrauma, involving multiple non-penetrating injuries from accidents, falls, or assaults, significantly contributes to morbidity and mortality. Identifying mortality predictors in these patients is crucial for improving outcomes. The incidence and nature of such traumas vary across regions, influenced by factors like socioeconomics and infrastructure. Globally, trauma is a leading cause of death, especially in young adults, with road traffic injuries being particularly significant. In Egypt, road accidents contribute notably to fatalities and disabilities. The Advanced Trauma Life Support (ATLS) protocol has significantly improved trauma care, focusing on rapidly identifying and managing life-threatening conditions. Blunt polytrauma incidence varies by region and demographic factors, with different injury mechanisms and patterns affecting patient outcomes.

Aim of the work

The study aimed at assessing parameters potentially related to in-hospital mortality for patients with blunt polytrauma admitted to Alexandria Main University Hospital.

Patients and Methods

A prospective cohort study was done on a total of 150 adult blunt polytraumatized patients who were presented at the emergency medicine department at Alexandria Main University Hospital. All patients’ data were collected between January 2023 and June 2023 and were followed up until discharge from the hospital or their mortality. Data were fed to the computer and analyzed using IBM SPSS software.

Results

Table (1):Distribution of the studied patients according to mechanism of trauma

Trauma mechanism	Total “n=150”		Outcome				p value
			Survival to discharge “n=122”		Death “n=28”		
	n	%	n	%	n	%	
Motor vehicle accident	85	56.7	71	58.2	14	50.0	0.107
Fall	42	28.0	34	27.9	8	28.6	0.621
Assault	23	15.3	17	13.9	6	21.4	0.271

Table (2) :Distribution of the studied patients according to vital signs on admission

VITAL SIGNS	Total “n=150”	Outcome		p value
		Survival to discharge “n=122”	Death “n=28”	
SBP (mmHg)				
Range	70.0-145.0	90.0-145.0	70.0-115.0	0.002*
Mean	109.6	118.1	96.4	
SD	16.5	17.2	15.0	
DBP (mmHg)				
Range	50.0-115.0	50.0-115.0	50.0-80.0	0.008*
Mean	74.8	82.6	67.9	
SD	16.2	18.0	10.5	
MABP (mmHg)				
Range	56.7-125.0	63.3-125.0	56.7-91.6	0.006*
Mean	91.1	94.4	77.4	
SD	17.8	17.7	10.9	
HR (b/min)				
Range	65.0-117.0	65.0-102.0	100.0-117.0	0.001*
Mean	88.4	83.9	108.0	
SD	13.3	10.2	6.0	
RR (cycle/min)				
Range	18.0-29.0	18.0-24.0	19.0-29.0	0.012*
Mean	22.7	21.2	24.0	
SD	3.01	1.9	3.0	
SaO ₂ (%)				
Range	82.0-98.0	88.0-98.0	82.0-94.0	0.023*
Mean	92.0	92.7	89.0	
SD	3.6	3.1	4.0	
Temp. (°C)				
Range	36.4-38.2	36.5-37.8	36.4-38.2	0.107
Mean	37.2	37.2	37.4	
SD	0.4	0.40	0.6	

Table (3) : Distribution of the studied patients according to arterial blood gases on admission

	Total “n=150”	Outcome		p value
		Survival to discharge “n=122”	Death “n=28”	
pH Range				
Mean	7.13-7.48	7.26-7.48	7.13-7.34	0.021*
SD	7.30	7.39	7.21	
	0.09	0.06	0.11	
HCO ₃ ⁻ mmol/L				
Range	16.0-28.0	16.0-28.0	16.0-22.0	0.019*
Mean	21.82	21.83	18.42	
SD	3.81	3.78	3.95	
PaO ₂ mmHg				
Range	62.0-105.0	62.0-105.0	64.0-103.0	0.304
Mean	83.51	84.01	82.52	
SD	11.60	11.83	11.30	
PaCO ₂ mmHg				
Range	28.0-45.0	28.0-45.0	31.0-45.0	0.042*
Mean	36.01	35.82	38.52	
SD	5.00	5.04	5.14	
SaO ₂ %				
Range	82.0-98.0	88.0-98.0	82.0-94.0	0.031*
Mean	92.0	92.7	88.6	
SD	3.7	3.1	4.0	

Conclusion

This study identified several factors as significant predictors of mortality in blunt polytrauma patients. Higher heart rate, higher respiratory rate, raised random blood glucose levels, longer stays in Intensive Care Units, and extended hospital stays were all associated with higher likelihood of mortality.