بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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قسم

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MONA MAGHRABY

Evaluation of incidence of acute coronary syndrome in elderly ICU patients with severe head trauma; a cohort study

A Thesis

Submitted for partial fulfillment of M.S in Intensive Care

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Amr Mohamed Essa Ahmed

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List of Abbreviations

Abb.	Meaning
TBI	Traumatic brain injury
SAH	Subarachnoid hemorrhage
CNS	Central nervous system
ACS	Acute coronary syndrome
ECG	Elctrocardiography
ICU	Intensive care unit
ICP	Intracranial pressure
GCS	Glasgow coma scale
CBF	Cerebral blood flow
CPP	Cerebral perfusion pressure
MAP	Mean arterial pressure
CSF	Cerbro spinal fluid
CTE	Chronic traumatic encephalopathy
CT	Computerized tomography
TEG	Thromboelastography
ROTEM	Rotational thromboelastometry
FFP	Fresh frozen plasma
PCC	Prothrombin complex concentrate
DVT	Deep venous thrombosis
ARDS	Acute respiratory distress syndrome
LH	Luteinizing hormone
FSH	Follicle-stimulating hormone
AVP	Arginine vasopressin
ANP	Atrial natriuretic peptide
DHEAS	Dehydroepiandrosterone sulfate
IGF-1	Insulin-like growth factor 1
AKI	Acute kidney injury

List of Abbreviations

Abb.	Meaning
cAMP	Cyclic adenosine monophosphate
LV	Left ventricle
CBN	Contraction-band necrosis
AIS	Abbreviated injury scoring
PV	Pulmonary vein
AF	Atrial fibrillation
DNA	Deoxyribonucleic acid
ROS	Reactive oxygen species
TnT	Troponin t
TnI	Troponin i
HsTnT	High-sensitive troponins
BNP	The brain natriuretic peptide
NT-proBNP	N-terminal-probrain natriuretic peptide
CK-MB	Creatine kinase-mb
GRACE	The global registry of acute coronary events
HR	Heart rate
BP	Blood pressure
RBCs	Red blood cells
ALT	Alanine transaminase
AST	Aspartate transaminase
INR	International normalized ratio
PTT	Partial thromboplastin time
NA	Sodium
K	Potassium

INTRODUCTION

Traumatic brain injury (TBI) is one of the major causes of death and disability, and contributes to 30% of all injury related mortality ***(Carney et al., 2017).***

Temes and colleagues (2010), documented that many authors have reported that there is some sort of brain-heart interactions in the case of subarachnoid hemorrhage (SAH), ischemic or hemorrhagic cerebrovascular strokes, status epilepticus, central nervous system (CNS) infections, brain tumors and various stressful events.

Although brain-heart interactions were previously reported in many CNS conditions, only few studies highlighted the link between cardiac injury and TBI. In cases of traumatic brain injury (TBI), neurocardiogenic injury was documented in few case-reports ***(Riera et al., 2010)*** and case series ***(Bahloul et al., 2006)*** with no information about patient outcome. Only one study reported cardiac injury in TBI patients; however, its retrospective design might preclude its ability to define the actual incidence rate and outcome of cardiac injury in this population ***(Hasanin et al., 2016).***

One of major presentation of cardiac injury is Acute coronary syndrome (ACS). Acute coronary syndrome (ACS) is a syndrome (set of signs and symptoms) due to decreased

blood flow in the coronary arteries resulting in the heart muscle is unable to function properly or dies ***(Amsterdam et al., 2014).***

The most common symptom is chest pain, often radiating to the left shoulder or angle of the jaw, crushing, central and associated with nausea and sweating. Many people with acute coronary syndromes present with symptoms other than chest pain, particularly, women, older patients, and patients with diabetes mellitus ***(Canto et al., 2000)*** and many signs such as changes in ECG, increase serum Troponin I and detection of wall abnormalities in echocardiography.

AIM OF WORK

The aim of this study is prospective observational study is to determine incidence of acute coronary syndrome and related mortality in elderly ICU patients with severe head trauma.Primary outcome is to calculate the incidence of acute coronary syndrome in elderly patients with severe isolated TBI , whereas the secondary outcome include incidence of morbidity and mortality as predicted by GRACE score.

Chapter (1)

TRAUMATIC BRAIN INJURY

Traumatic brain injury (TBI) is defined as an alteration in brain function, or other evidence of brain pathology, caused by an external force ***(Menon et al., 2010).*** It varies in severity from mild TBI (which includes concussion) to moderate and severe TBI. Severe TBI has a high mortality rate, estimated at 30–40% in observational studies on unselected populations ***(Rosenfeld et al., 2012).*** Survivors experience a substantial burden of physical, psychiatric, emotional, and cognitive disabilities, which disrupt the lives of individuals and their families. Such disabilities are not restricted to severe cases, but also occur frequently after moderate or mild TBI ***(Maas et al., 2017).*** TBI is a growing public health problem of substantial proportions. More than 50 million TBIs occur internationally each year ***(Feigin et al., 2013).***

Across all ages, TBI represents 30–40% of all injury-related deaths, and neurological injury is projected to remain the most important cause of disability from neurological disease until 2030 (2–3 times higher than the contribution from Alzheimer's disease or cerebrovascular disorders) ***(WHO, 2006).***