

Prevalence of head trauma causes in Bandar Abbas-IranSeyed Ali Alavi^{1*}, Mohsen Taghaviasl², Naimeh Baghr Zadeh Homaii³¹Student Research Committee, Hormozgan University of Medical Sciences, Bandar Abbas, Iran²Obstetrics and Gynecology Department, Shariati hospital, Infertility and Reproductive Health Research Center, Hormozgan University of Medical Sciences, Bandarabbas, Iran³Infectious & Topical disease research center Hormozgzn University of Medical Sciences Bandar Abbas, Iran
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Abstract: Introduction: Traumatic brain injury (TBI) is one of most important causes of neurologic complications. A TBI is caused by a bump, blow, jolt, falling or penetrating wound to the head that disrupts the normal functioning of the brain. In this study we decided to determine the prevalence of head trauma causes in Bandar Abbas-Iran. **Method:** In this descriptive study that conducted from December 21th to March 20th of 2012, documents of 54 patients have been studied. Necessary information extracted from documents according a checklist. Collected data entered to SPSS version 16 Andusedt-test and one-way ANOVA to compare demographic and clinical characteristics. **Results:** prevalence of head trauma considered as 2.73% between all patients with trauma diagnosis. Prevalence of head trauma was meaningfully more in men rather than women. Another considerable result was the prevalence of head trauma in patients with age range between 11 to 30 years old. **Conclusion:** Our findings show that prevalence of head trauma among patients with trauma diagnosis was 2.73% and The most important cause of head trauma in this period of time was vehicle accidents.

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Key words: head trauma, prevalence, TBI.

Introduction

TBI is an extremely common and potentially devastating problem. Today, TBI is a leading cause of death in children and young adults. Overall, TBI-related mortality was estimated to be about 20–30% in various series[1]. Among nonfatal cases, the percentages of TBI severity are typically mild in 80%, moderate in 10% and severe in 10%. Common causes of TBI are falls, motor vehicle crashes, being struck by or against something, assault, and sport or firearm injuries[2, 3].

Studies have estimated that nearly 1.6 million head injuries occur in the United States each year, resulting in over 50,000 deaths and over 70,000 patients with permanent neurological deficits. TBI accounts for up to 10% of the health care budget and an estimated annual cost to society of \$30 billion[4]. Traffic accidents are the major cause for TBI in all age groups except for the group of 75 years and older, in which stumbles occurred in nearly half of those (44.7 %) who suffered from TBI[5]. Earlier studies have showed that elderly persons aged 65 years and older with severe TBI had a higher mortality as compared with their younger counterparts. In the past decade, traffic accidents increased along with the increasing number of vehicles and motor bicycles. Such a pattern was not consistent with other TBI studies in developed countries, in which the second mostcommon cause of TBI was fall-related injury[4, 6]. Though few studies have addressed this issue, available data showed that

men were associated with a higher incidence of TBI in older adults. This is partially due to the fact that men are more likely injured as motorcyclists. In addition, studies involving both animals and patients have shown that women are associated with better outcome after TBI. Further study suggested that the better improvement in women is correlated with the level of estrogen and progesterone, which contribute to the maintenance of adequate cerebral perfusion[7, 8]. However, because other experimental and clinical studies have refuted these findings, the data remain inconclusive at this point[9, 10]. Further studies are needed to illustrate if the effects of these hormones are neuroprotective or effective with other factors, which could have implications for therapeutic intervention in clinic for TBI[1, 9]. There is growing recognition that TBI is a highly variable and complex systemic disorder that is refractory to therapies that target individual mechanisms. It is even more complex in elderly patients, in whom frailty, previous comorbidities, altered metabolism, and a long history of medication use are likely to complicate the secondary effects of head trauma[4, 11]. Studies found that 73 % of elderly TBI patients had a medical condition before injury, compared with 28 % of younger adults with TBI. This significant increase in comorbidity is an important factor to be considered in providing primary and secondary prevention efforts for this group of patients. The relative risk of fall in older adults with diabetes mellitus is twice that of with

without diabetes mellitus[2, 4]. Evidence shows that trauma is not only followed by physical limitations, but also by psychological, social and functional problems, as well as chronic pain. All of these factors affect the patients' health-related quality of life after trauma[12]. As said before, traumatic head injury and its disastrous Sequels are common and preventable. Thus collecting data about prevalence of its causes is necessary to prevent that. In this study we decided to evaluate the prevalence of traumatic brain injury causes in Bandar Abbas-Iran during 3 last month of 1391.

Method:

In this descriptive study, 54 documents of patients who were admitted in Shahid Mohammadi hospital with head trauma diagnosis from December 21th to March 20th of 2012 have been studied. Because of heavy traffic and high load of travels in 3 last months of the year in Iran, we choose these months to find out the prevalence head trauma causes. Study protocol approved in ethic committee of Bandar Abbas medical science university. All patients' documents with head trauma diagnosis considered as target group. Incomplete and legally inaccessible documents have been excluded from study. Necessary data extracted from documents according to a checklist that contained demographic (name, gender, gender and...) and clinical (cause of injury, cranial hemorrhage and...) information. Because of documents accessibility, two researchers every 3 days have been studied 10 documents. To classify the causes of head trauma, ICD-10 international classification have been used by researchers. According to this classification, head trauma causes divided to 4 major parts. 1. Traffic accident 2. Falling 3. Assault 4. Other reasons. After collecting information, data enrolled to SPSS statistic software version 16. Descriptive data were reported using mean, SD and percentage. Due to normal distributions, the parametric tests were used in the analyses. We used t-

test and one-way ANOVA to compare demographic and clinical characteristics in studied group. P value >0.05 was considered statistically significant.

Results:

Out of 1971 patients who admitted in Shahid Mohammadi hospital of Bandar Abbas from December 21th to March 20th of 2012 with the diagnosis of "Trauma", 54 patients admitted due to head trauma. It means 2.73% of patients in this time period have been taking in count in traumatic brain injury group. From patients with head trauma diagnosis, 44 (81.48%) patients were men and 10 (19.52%) patients were women. Numbers of men were meaningfully more than women. Results of analysis showed that there is a significant relation between gender and occurring head trauma ($P < 0.001$). Mean age between men was 28.43 years old and in women group was 27.4 years old. There was no significant difference between men and women in mean age ($P > 0.05$). Based on our study, traffic and vehicle accidents are the most common and important causes of head trauma. About 55.6% (30 patients) of head trauma caused due to traffic and vehicle accidents. Causes of head trauma showed in table 1. Prevalence of head trauma in the range of 11-30 years old patients was more than other age groups. 37.37% (20 patients) of patients were belonged to this group. As we said before, the most common cause of head trauma in this group was traffic and vehicle accidents. Causes of head trauma regarding the age group have been shown in table 2. About 18.5% (10 patients) of patients after head trauma developed to intracranial hemorrhage. 6 patients due to traffic and vehicle accidents, 3 patients due to falling and 1 patients due to other causes. 4 (7.4%) patients died because of head trauma and its complications (death due to underlying diseases have been not take in count). 1 death reported in the patients with the age range of 11-30 years old, 2 death in the age range of 31-50 years old and 1 death in the patients more than 50 years old.

Table 1. Frequency of head trauma causes

Cause	frequency	Present
Traffic and vehicle accidents	30	55.6
Falling	13	24.1
Assault	1	1.9
Other causes	10	18.5

Table 2. Causes of head trauma in age ranges

Trauma mechanism / age	Traffic and vehicle accidents	Falling	Assault	Other causes	Total
Under 10 years old	4	8	0	1	13 (24%)
11 to 30 years old	14	1	1	4	22 (40.74%)
31 to 50 years old	7	3	0	1	11 (20.37%)
Above 50 years old	5	1	0	4	10 (18.51%)

Discussion

Head injuries are one of the most common causes of death and disability in the United States. Every year, almost a quarter million people are hospitalized because of traumatic injuries to the brain, and 50,000 people die[4]. Each year, 80-90,000 people because of a brain injury sustain long-term or lifelong disabilities. Children are not excluded, with more than 2,500 deaths and almost a half million emergency department visits per year for head injuries[13]. Head trauma complications are such as Epidural hematoma (the bleeding is located between the dura mater and the skull), Subdural hematoma (hematoma is located beneath the dura mater (sub=below), between it and the arachnoid mater), Subarachnoid bleed (bleeding occurs in the space beneath the arachnoid layer where the CSF is located), Intracerebral bleed (bleeding occurs within the brain tissue itself), Sheer injury (there is no obvious bleeding in the brain, but instead the nerve fibers within the brain are stretched or torn), Edema and skull fracture[14, 15]. This study presents a small sample of patients with head trauma diagnosis in Shahid Mohammadi hospital of Bandar Abbas-Iran. This study demonstrates that prevalence of head trauma in this city is about 2.73%. Our results show that the most important cause of head trauma is traffic and vehicle accidents. In agree with our study, Yosufzadehchabok and colleagues and also Azimi and colleagues in two separated study got that head trauma is the most common cause of head trauma in Iran[16, 17]. There are some obviously preventable methods to reducing head trauma related with motor vehicle accidents. Compliance with traffic rules (using seat belts, improving cars and roads immunity level and alcohol use prevention) is a fundamental way to diminishing frequency of head trauma caused by vehicle accidents. Studies show prevalence of head trauma according gender is different. It means men have more chance to develop to head trauma because of their hazardous activities. In our study, 81.48% of patients were men and there was a significant relation between gender and prevalence of head trauma ($p= 0.0132$). Falling stands in second place of head trauma causes. Other studies also support this result. They reported that prevalence of head trauma in men is 3 to 5 fold more than women in Iran. Another variant that we evaluated was age of patients. In this study, age of patients ranged into 4 groups. 1. under age 10, 2. 11 to 30 years old, 3. 31 to 50 years old and 4. Above 50 years old. Group of 11 to 30 years old was more crowded than other groups (40.74%). That means people in this range of age are more suspicious than others. Yosufzade Chabok in a

study mentioned that head trauma prevalence in 3rd period of life is more common[16]. As we mentioned before, intracranial hemorrhage is an important complications after head trauma. In our study, 10 (18.5%) patients after head trauma develop to intracranial hemorrhage. Among them, 2 patients died while in other patients (without intracranial hemorrhage) 2 patients have been died.

Conclusion:

Based on our findings, prevalence of head trauma in patients with trauma is 2.73%. The most important cause of head trauma in this period of time was vehicle accidents. Also we found that there is a significant relation between gender and prevalence of head trauma (men>women).

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