



Mechanism and Type of Ear Injuries among Iranian Veterans during Iraq-Iran War

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Abstract

Introduction: Determining distribution of war injuries and the related mechanisms could provide attitudes in order to lower risks and expenses of war injuries as well as mortality. Ear injuries are of a high importance among battle-related injuries because of their dramatic impressions on quality of life of militants. So we aimed to determine the mechanism and type of ear injuries among Iranian veterans during Iraq-Iran war.

Methods: In this cross-sectional study 207 cases of Iranian veterans with ear injuries during the Iraq-Iran war have been evaluated retrospectively between June and September 2016. We included veterans with ear injuries in association or absence of other organs injuries, randomly. Frequency and mechanism of injuries were recorded as well as chief complaints of patients. Mean, standard deviation and percentages were determined by descriptive analysis.

Results: Eventually 207 male veterans with mean age of 52.18 ± 5.28 years were included in the study. Mean duration of war participation was 2.60 ± 1.91 months. Shock wave was the most prevalent mechanism of injury with 202(97.6%) cases followed by direct bullet injury 3(1.4%) and blast injury (0.5%). Decreased hearing and vertigo were the most common (83%) chief complaint of patients followed by decreased hearing alone (56%) and tinnitus (2.9%).

Conclusion: Our findings showed that decreased hearing is the most prevalent pathology among Iranian veterans with ear injuries during Iraq-Iran war. Tinnitus did not comprise a remarkable part of chief complaints. Also we found that shock wave is the most prevalent mechanism of ear injury.

Keywords:
Tinnitus;
Hearing loss;
War; Iran; Iraq

Introduction

Previous studies have reported an increasing incidence for war-related injuries in the 21st century [1]. According to its special construction and effect on quality of life, auditory system is an important part of the body. Searching the literature, we found no precise and enough information about prevalence,

etiology, mechanism and incidence of different war injuries. Mortality, risk and incidence of war injuries can be better estimated by assessment of their distribution.

With about 000 800 injuries, Iraq-Iran war is one of the most important large-scale wars and a convenient source of assessing war-related

injuries [2]. This conflict is categorized as “minor conventional war” based on Eiseman’s classification. Blast injuries are the most common mechanism of injury in battles worldwide which are responsible for a notable proportion of hearing injuries [3]. Vertigo, Tinnitus and hearing impairments are among common complaints of veterans attending to clinics.

The aim of the present study was to identify the prevalence, mechanism and type of ear injuries in Iranian veterans during Iraq-Iran war with accordance to the available records in Iranian great commission of injured troops.

Method

This cross-sectional study was conducted between June and September 2016 at great commission of injured troops, Tehran, Iran. The study was registered at ethics committee of Baqiyatallah University of Medical Sciences, Tehran, Iran. Iranian veterans with registered records of war-related ear injuries at great commission of injured troops were assessed for eligibility. We randomly selected 207 profiles and assessed them retrospectively. Veterans with incomplete records and concurrent injuries to other parts of the body were excluded from the study. No mortality was recorded.

Demographic information as well as mechanism of injury, duration of war

participation, chief complaints, tympanic membrane injuries, pre- and post-injury audiograms were recorded in a pre-designed checklist.

Data were analyzed using statistical package for social sciences (IBM Corp. Released 2013. IBM SPSS Statistics for Windows, version 22.0. Armonk, NY: IBM Corp). Descriptive analyses were used to determine mean, standard deviation and percentage.

Results

Eventually 207 male veterans with a mean age of 5.28 ± 52.18 years were included in the analysis. Mean duration of war participation was 1.91 ± 2.60 months. Shock wave was the most prevalent mechanism of injury with (%97.6)202) cases followed by direct bullet injury (%1.4)3) and blast injury (%0.5). Shock wave was the most prevalent mechanism of injury with (%97.6)202) cases followed by direct bullet injury (%1.4)3) and blast injury (%0.5). Decreased hearing and vertigo were the most common (%83) chief complaint of patients followed by decreased hearing alone (%56) and tinnitus (%2.9). Only one post-injury audiogram was available which indicated conducting hearing loss in both ears. In the post-healing audiograms (Table 1) sensorineural hearing loss of both ears was the most (%86.5) pathology and left sensorineural/right conductive (%3.9) was in the following rank.

Audiogram patterns	frequency	percent
Bilateral SNHL	179	86.5
Left SN and Right Conductive	8	3.9
Right SN and Left Conductive	6	2.9
Bilateral Conductive	3	1.4
Other patterns	6	2.9
No audiograms	5	2.4

Table 1. Distribution of patterns in post-healing audiograms

Discussion:

We found that shockwave is the most prevalent mechanism of ear injury in Iranian veterans during Iraq-Iran conflict. Also we realized that diminished hearing and vertigo

were the most common chief complaint of veterans with ear injuries. Evaluating the post-healing audiograms, we concluded that bilateral sensorineural hearing loss is the most prevalent pattern of ear injuries among Iranian veterans.

Breeze et al. in a similar study reported that ear injury was recorded in %5 of all British servicemen sustaining war-related injuries [1]. They have also mentioned that tympanic membrane rupture was occurred in %8 of all blast injuries. Unfortunately we found no data on prevalence of tympanic membrane rupture among our cases.

In another study Dougherty et al. reported that the prevalence of ear injuries was %30.7 among all evaluated US military personnel. Inner and middle ear injury accompanied with tinnitus as well as tympanic membrane rupture were the most common diagnoses [4]. The authors have suggested hearing protection for all military personnel who are in risk for blast exposure.

Ritenour et al. evaluated the prevalence of tympanic perforation and hearing loss among US servicemen from Iraq and Afghanistan conflicts [5]. They reported that %15 of patients had tympanic membrane perforations with central and anterior-inferior locations of tympanic membrane as the most prevalent ones. The most common symptoms among patients were diminished hearing (%70), which is in line with the results of present study, and tinnitus (%50). Tinnitus was reported in about %3 of our patients which may be justified by the difference in most common mechanism of injury (shock wave) in our study.

The present study had some limitations. According to retrospective identity of study we had no access to patients and had to use recorded data which caused some shortages in reporting results. Also there were no precise criteria for examination and diagnosis as well as recording data in the profiles.

Conclusion

Our findings showed that decreased hearing is the most prevalent pathology among Iranian veterans with ear injury during Iraq-Iran war. Tinnitus did not comprise a remarkable part of chief complaints.

Also we found that shock wave is the most prevalent mechanism of ear injury.

Authors' Contributions

AHG and ZK designed the study, gathered the data, analyzed and drafted the manuscript. All authors have approved the final version of manuscript.

Conflict of Interest Disclosures

There are no conflicts of interest in terms of the present manuscript.

Ethical approval/Consideration

This study was registered at ethics committee of Baqiyatallah University of Medical Sciences, Tehran, Iran. All the personal information remained anonymous.

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