



## Original Article

## Injuries in the Greek epics of Homer

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## ARTICLE INFO

## Article history:

Received 1 June 2017

Received in revised form

13 September 2017

Accepted 14 December 2017

Available online 20 February 2018

## Keywords:

Trauma

Injury

Medicine

Military

Sport

## ABSTRACT

Trauma and the need of medical care exist since the beginning of human history. This research is aimed to identify and analyze trauma in antiquity. After a review of bibliography, the first reports of trauma (in Europe) were found in the Greek Epics of Homer. The analysis of these texts showed that injury could be caused to any part of the human body. The main cause of trauma was primarily participation in wars (178 cases), and then participation in sports (6 cases) and other activities (6 cases). This study identified a total of 190 injuries in both Homer epics. The more serious injuries, many of which proved fatal, were observed from participation in military activities.

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## Introduction

Trauma is not irrelevant from the historical period in which it was caused. It is originated from the environment in which it occurred and the activity in which the person was involved in. The citizens of the Greek ancient city-state were not only farmers or athletes but also warriors, in order to defend the city-state from its enemies. They needed to participate in battles, along with the defensive and offensive weaponry at that time, resulted in the genesis of military trauma. In the Homeric epics military and combat trauma prevailed in a percentage of 93.68% over all categories (sport 3.15%, other 3.15%).

## Methods

The present study focuses mainly on the Homeric epics: the Iliad (Trojan War) and the Odyssey (Odysseus' return to Ithaca). The method of citation of Homeric epics follows the internationally approved process of the use of the capital letters of the Greek alphabet for the rhapsodies of the Iliad, and small letters of the Greek alphabet for the rhapsodies of the Odyssey, without accents or other markings, e.g. Ψ 689–697 for the Iliad and χ 326–329 for the Odyssey.

## Results

The Iliad counts 15,693 verses, is the oldest poem in Europe and the first classic work of European literature.<sup>1</sup> The Odyssey counts approximately 12,110 lines of dactylic hexameter. According to the Professor of Surgery of the University of Zurich Stefanos Geroulanos, records of early medical references are found in the Homeric epics, which were written in the mid 8th century BC.<sup>2</sup> The most and more serious injuries recorded in the Homeric epics were caused by participation in war activities. The research regarding trauma was conducted according to: a) the part of the body where the injury was inflicted (e.g. head, torso, shoulder), b) the mean that caused of the injury (e.g. sword, spear, arrow, stone), c) the activity that caused the injury (e.g. battle, sport, and other).

Analysis of the data provided shows that injuries of military nature in the head are mentioned in thirty-one (31) cases, which, in turn, account for the largest percentage (16.31%) of all traumas recorded (a total of 190 cases). The verses which describe trauma in the head are: α 69, Δ 460–461, Δ 502–503, Ε 72–74, Ε 291–296, Ζ 9–11, Α 95–98, Α 109, Μ 183–186, Μ 378–384, Ν 177–178, Ν 433, Ν 576–577, Ν 610–617, Ν 662–671, Ξ 493–495, Ο 429–439, Π 345–350, Π 404–405, Π 411–414, Π 577–580, Π 605–606, Π 740–744, Ρ 295–298, Ρ 616–618, Υ 386–387, Υ 395–400, Υ 473–474, Υ 474–476, Ι 382–394, Ω 523–525. Of the above incidents, the head trauma of Oileus from the spear of Agamemnon stands out. The spear passes through the helmet and the cranium resulting in brain trauma and death: but Agamemnon struck him on the forehead with his spear; his bronze visor was of no avail

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Peer review under responsibility of Daping Hospital and the Research Institute of Surgery of the Third Military Medical University.

<https://doi.org/10.1016/j.cjtee.2017.09.005>

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against the weapon, which pierced both bronze and bone, so that his brains were battered in and he was killed in full fight.<sup>3</sup>

Injury incidents regarding trauma to the nape and neck are mentioned. Taking the ancient armory parts (helmet, cuirass, linethorax, shield, shin guards) under consideration, it can be ascertained that the cervical spine and neck were fully or partial uncovered. In battle, this fact resulted in injuries of the major neck vessels and extensive haemorrhage. Nape and neck trauma (26 cases) are cited in the following verses: E 656–659, E 584–586, H 11–12, H 260–263, K 455–458, Λ 146, Λ 240, Λ 261, N 202–203, N 387–388, N 542, N 545–548, Ξ 463–466, Ξ 496–499, O 442–451, Π 332–334, Π 339–341, Π 586–587, P 47–49, Y 455, Y 481–483, Φ 403–408, X 327, χ 15–20, χ 327, χ 475. Of the above mentioned neck traumas, the injury caused to Dolon by Diomedes, with the use of his sword is worth mentioning. Diomedes cuts the neck and the neck tendons of the cervical muscles resulting in the decapitation of Dolon: but Diomedes struck him in the middle of his neck with his sword and cut through both sinews so that his head fell rolling in the dust while he was yet speaking.<sup>4</sup>

Major wounds have been cited regarding the shoulder area. The metallic cuirass of the armor, for the sake of movement efficiency of the shoulder joint in battle, does not provide full cover of the shoulder area and therefore major injuries often occurred. The verses, in which trauma of the shoulder region is cited (25 cases), are: Δ 480–482, E 45–47, E 80–84, E 97–100, E 146–147, E 188–189, E 395–400, E 576–579, H 11–12, H 13–14, H 260–262, Θ 325–328, Λ 421, Λ 507, N 518–519, Ξ 450–451, O 341–342, O 541–543, Π 289–290, Π 321–324, Π 342–344, P 309–311, P 598–599, Φ 115–119, χ 279. A fine example is the trauma caused to the subclavian region of Diomedes, by an arrow leading to the rupture of subclavian vessels and thorax bleeding: he aimed an arrow and hit the front part of his cuirass near the shoulder: the arrow went right through the metal and pierced the flesh, so that the cuirass was covered with blood.<sup>5</sup>

Thirteen (13) cases of trauma in the upper limbs are mentioned in the Homeric epics: E 336–340, E 582–583, Λ 145–146, Λ 252–253, M 388–389, N 529, N 595, N 781–783, P 601, Y 478–480, Φ 165–167, χ 277–278, χ 476–477. The incident of Agamemnon cutting the hands and the head of Hippolochus with his sword is one of the bloodiest in the Iliad: Hippolochos fled, but him too did Agamemnon smite; he cut off his hands and his head - which he sent rolling in among the crowd as though it were a ball.<sup>6</sup>

Due to the fact that the chest (thorax) contains vital organs, such as the heart, lungs, stomach, liver, a metal cuirass was used to protect it. But, even with body armor protection, many chest injuries are cited, mainly by spearing, and would, not uncommonly, lead to death. Thirty-four (34) cases of thorax-torso trauma are referred to in the epics: B 265–267, Δ 468–469, Δ 528–529, E 18–19, E 40–41, E 49–57, E 145, E 393–394, Θ 120–121, Θ 258–259, Θ 302–303, Θ 312–313, Λ 108, Λ 143–144, Λ 320, Λ 435–437, Λ 447–448, N 185–186, Ξ 409–439, O 420–421, O 523, O 576–578, O 650–651, Π 311–312, Π 399–400, Π 480–481, Π 597–598, Π 812–814, Y 399, Y 401–403, Y 487–489, χ 82–83, χ 92–93, χ 98.

From the description in the lyrics χ 82–88 of the Odyssey it can be deduced that the writer possesses knowledge of human anatomy. Homer refers to injury of the liver but at the same instant goodly Odysseus let fly an arrow and fixed the swift shaft in his liver.<sup>7</sup> from an arrow, which results in an immediate injury-rupture of the liver, uncontrollable haemorrhage, and thus insufficient blood supply to basic organs such as the brain and heart, which finally results in death.

Many injuries in abdomen and groin are mentioned in the Homer epics. Due to the presence of vital organs affected (liver, urinary bladder), trauma to the iliac is often referred to as a cause of

death. The verses, in which 34 cases of trauma in the abdomen are cited, listed as: Δ 130–147, Δ 490–493, Δ 525–527, Δ 530–531, E 66–68, E 537–539, E 611–617, E 856–871, Z 62–65, H 144–145, Λ 260, Λ 424–425, Λ 577–579, M 189, N 370–372, N 397–399, N 410–412, N 506–508, N 567–570, N 650–652, Ξ 446–447, Ξ 516–519, Π 317–319, Π 465, Π 820–821, P 313–315, P 347–349, P 518–521, P 578–579, Y 413–420, Y 469–471, Y 485–487, Φ 180–182, χ 294–295.

Homer describes injuries in the battles of the Trojan War with realistic details.<sup>2</sup> The great poet refers to the fatal injury of the liver of a Trojan warrior from Achilles' sword, where the rupture caused from the trauma was so extended that the liver came out and flooded his body with dark blood.

Achilles drove his sword into his liver, and the liver came rolling out, while his bosom was all covered with the black blood that welled from the wound. Thus did death close his eyes as he lay lifeless.<sup>8</sup>

In three (3) cases trauma to the ischium (hip) is cited in the Iliad in the following verses: E 302–309, Λ 338–339, Π 314–316. The injury of the buttock by a spear causes rupture of the blood vessels in the area, bleeding, and finally the death of the warrior: where the muscles are thicker than in any other part; the spear tore through all the sinews of the leg, and his eyes were closed in darkness.<sup>9</sup>

Injuries to the lower limbs are cited in twelve (12) cases: Δ 517–523, E 65–68, E 660–662, Λ 377–378, Λ 583–584, Λ 809–813, Λ 829, N 210–212, Π 308–311, Y 458, X 396–397, χ 476–477. An example of the above is the reference to the (Achilles) tendon, where Achilles pierced the tendons of dead Hector at the point between the tendon, the calcaneus, ankle, and the long flexor muscle of the big toe and passed ox-hide thongs he pierced the sinews at the back of both his feet from heel to ankle and passed thongs of ox-hide through the slits he had made.<sup>10</sup>

Homer provides useful information for trauma in sports, particularly in the Iliad where reference is made to a boxing match between Epeus and Euryalus. Euryalus is bleeding heavily from the mouth because of the punches that he has received.<sup>11</sup> It is likely that his haemoptysis, is a result of the skinning of the surface of the epithelial tissue of the mouth, due to friction from the hard surface of the dorsal metacarpal.<sup>12</sup> Injuries are recorded in wrestling, where, according to Homer, rival athletes, Ajax and Odysseus, after being engaged in vigorous physical contact, presented thlasia of the soft tissues of the body that resulted in bruising: while many a blood-red weal appeared on their shoulders and ribs.<sup>13</sup> In the Iliad Achilles organized chariot races (funeral games) to honour Patroclus. The yoke of the chariot horses of Eumelus breaks, so he falls to the ground.<sup>14</sup> Eumelus' elbows, mouth, and nostrils were all torn, and his forehead was bruised above his eyebrows.<sup>12</sup> In the Odyssey Homer refers to a boxing match between Irus and Odysseus.<sup>15</sup> Odysseus manages a blow in the area under the acoustic source (temple bone) and perhaps in the mandible.<sup>12</sup> The blow results in severe trauma: Fractures “εθλασεν” in the affected area and haemoptysis.<sup>12</sup>

Other non-military and non-sports injuries cited in the epics are: a) crushing of all the cranium bones due to a falling of a ship mast: The mast fell upon the head of the helmsman in the ship's stern, so that the bones of his head were crushed to pieces,<sup>16</sup> b) Fracture of the cervical spine from falling off a roof, which resulted in death: so he tumbled right off the roof and broke his neck, and his soul went down to the house of Hades.<sup>17</sup> c) Injury of the neck from hanging, resulting in death.<sup>18</sup> d) Three cases of trauma from wild boar bites into the leg.<sup>19–21</sup>

Table 1 presents that in both Homeric epics, a total of 190 traumas, of which 178 were of military-combat nature, were identified. Consequently, military trauma constitutes the major percentage (93.68%) of all injuries in the Homeric epics (164

**Table 1**  
Table of trauma in Homer.

Category	Anatomy	Rhapsody Lyrics
Military	Head	α 69, Δ 460–461, Δ 502–503, E 72–74, E 291–296, Z 9–11, Λ 95–98, Λ 109, M 183–186, M 378–384, N 177–178, N 433, N 576–577, N 610–617, N 662–671, Ξ 493–495, O 429–439, Π 345–350, Π 404–405, Π 411–414, Π 577–580, Π 605–606, Π 740–744, P 295–298, P 616–618, Y 386–387, Y 395–400, Y 473–474, Y 474–476, ι 382–394, ω 523–525
Sport	Head	Ψ 395–397, Ψ 690, Ψ 697, σ 95–99
Other	Head	μ 411–414
Military	Nape-Neck	E 656–659, E 584–586, H 11–12, H 260–263, K 455–458, Λ 146, Λ 240, Λ 261, N 202–203, N 387–388, N 542, N 545–548, Ξ 463–466, Ξ 496–499, O 442–451, Π 332–334, Π 339–341, Π 586–587, P 47–49, Y 455, Y 481–483, Φ 403–408, X 327, χ 15–20, χ 327, χ 475
Other	Nape-Neck	κ 558–559, χ 471–473
Military	Shoulder	Δ 480–482, E 45–47, E 80–84, E 97–100, E 146–147, E 188–189, E 395–400, E 576–579, H 11–12, H 13–14, H 260–262, Θ 325–328, Λ 421, Λ 507, N 518–519, Ξ 450–451, O 341–342, O 541–543, Π 289–290, Π 321–324, Π 342–344, P 309–311, P 598–599, Φ 115–119, χ 279
Military	Upper limbs	E 336–340, E 582–583, Λ 145–146, Λ 252–253, M 388–389, N 529, N 595, N 781–783, P 601, Y 478–480, Φ 165–167, χ 277–278, χ 476–477
Sport	Upper limbs	Ψ 395–397
Military	Thorax-torso	B 265–267, Δ 468–469, Δ 528–529, E 18–19, E 40–41, E 49–57, E 145, E 393–394, Θ 120–121, Θ 258–259, Θ 302–303, Θ 312–313, Λ 108, Λ 143–144, Λ 320, Λ 435–437, Λ 447–448, N 185–186, Ξ 409–439, O 420–421, O 523, O 576–578, O 650–651, Π 311–312, Π 399–400, Π 480–481, Π 597–598, Π 812–814, Y 399, Y 401–403, Y 487–489, χ 82–83, χ 92–93, χ 98
Sport	Upper limbs	Ψ 714–717
Military	Abdomen-lumbus	Δ 130–147, Δ 490–493, Δ 525–527, Δ 530–531, E 66–68, E 537–539, E 611–617, E 856–871, Z 62–65, H 144–145, Λ 260, Λ 424–425, Λ 577–579, M 189, N 370–372, N 397–398, N 410–412, N 506–508, N 567–570, N 650–652, Ξ 446–447, Ξ 516–519, Π 317–319, Π 465, Π 820–821, P 313–315, P 347–349, P 518–521, P 578–579, Y 413–420, Y 469–471, Y 485–487, Φ 180–182, χ 294–295
Military	Ischium-hip	E 302–309, Λ 338–339, Π 314–316
Military	Lower limbs	Δ 517–523, E 65–68, E 660–662, Λ 377–378, Λ 583–584, Λ 809–813, Λ 829, N 210–212, Π 308–311, Y 458, X 396–397, χ 476–477
Other	Lower limbs	τ 393, τ 450–451, ψ 74

traumas in the Iliad and 14 in the Odyssey). Athletic traumas are cited in five cases in the Iliad: a) Ψ 395–397 (head, upper limbs), b) Ψ 690 (head), c) Ψ 697 (head), d) Ψ 714–717 (thorax-torso). Lyrics Ψ 395–397, count twice because they present injury in upper limbs and head. In the Odyssey athletic trauma is presented in one case, σ 95–99 (head). In total, the percentage of sport trauma is

3.20%. Other type of trauma presented no cases in the Iliad, but six cases in the Odyssey: a) μ 411–414 (head), b) κ 558–559 (nape-neck), c) χ 471–473 (nape-neck), d) τ 393, e) τ 450–451 f) ψ 74. Totally the percentage of other trauma is 3.20%. The result of 178 military traumas, in a total of 190, is reasonable, considering that the Iliad recites the battles of the Trojan War between Greeks and Trojans and the way they conducted (“melee”).

Regarding the cause of trauma, in the Iliad, 109 injuries were induced by spear, 11 by stone, 18 by sword, 16 by arrows, 9 by decapitation, while for 153 the cause of death or the anatomic part of the wound is not fully referred to. In the Odyssey 7 injuries were induced by spear, 4 by sword, 2 by arrows, 1 by decapitation, while for 48 the cause of death or the anatomic part of the wound is not fully referred to.

## Discussion

Military trauma is cited more than any other, because it was usually more severe and resulted to death. There were many other forms of trauma, but less serious and considered common so the author or authors of the Homeric epics chose not to provide full detail to their description. Furthermore, injury functions as a literal inscription of a number of heroes,<sup>22</sup> a fact which prompted Homer to provide detailed descriptions of the battle-induced injuries. Homer is not a physician, perhaps not even a real historical person (Homeric question), but the information provided by him for trauma in antiquity is important. The Homeric epics provide knowledge about the frequency, the type, the cause and the mechanism of trauma. A lot of medical terms, such as “θυμός” (heart), phrenes (chest or diaphragm), hypochondrium, head or cranium, brain, intestines, liver etc support the idea that Homer was a knowledgeable poet.<sup>23</sup>

An analysis of Homer's Iliad shows that a significant number of anatomic references are contained in the text: encephalon, spinal cord, trachea, lung, heart, liver, bowel, urinary bladder, tongue, diaphragm, cranial bones, and aorta.<sup>24</sup> The modus that Homer uses to describe and analyze the induced traumas, indicated that he had attended ancient games or known the mechanism of generation of sport trauma.<sup>12</sup>

The armatures of the Mycenaeans were mainly swords, spears, arcs, shields that were made of copper.<sup>1</sup> According to an article of Apostolakis et al. (2010), the most often used weapons (for chest wounds in Iliad) were the spear (63%), the stones (7.4%), the arrow (5.5%) and the sword (5.5%).<sup>23</sup> Tamara Neal writes: “Of the 25 non-fatal wounds that occur in the Iliad, 15 are caused by spear casts, six are caused by arrows, and four are the result of stone-blows”.<sup>22</sup> The type of weapon (spear, sword, arrow) and its kinetic energy when the injury was inflicted, the affected anatomic area (e.g., abdomen, head), the entry angle of the weapon into the body, the warrior's defensive armor and his physical condition were all significant in determining the nature of trauma. It is concluded that military trauma is a result of the interaction between factors such as the socioeconomically situation of each era, the warrior's technique-physical condition, the defensive equipment (e.g. armor, shield, etc), that protected the warrior and the offensive equipment used (e.g. sword, spear, etc).

The author of the Homeric epics had knowledge of anatomy, and the causing mechanism of trauma in antiquity. Consequently, the Homeric epics contain valuable information about trauma, which may provide a complete overview to the contemporary researcher of the nature and type of trauma in the ancient world. Trauma is not extraneous to the era in which it caused, it is the result of it and studies of epidemiological character can lead to the identification of causes of incidents in the modern world. This data will systematically support the decision progress of preventive standards for a

non trauma era. The present study found that, from ancient trauma, we can learn a lot about the modus, the mean (mainly with spear, 109 cases of injuries), and the anatomical region (34 cases of trauma incidents occurred in thorax-torso region) with which an injury occurred. It can be concluded that from injury in antiquity (Homeric texts of the Iliad and Odyssey) a serious number of anatomic references can be derived (for human body parts) such as cranium, trachea, and aorta.

The etymology of medical cognitive fields proves that the majority of the fields of medicine and sciences derive their onomatology-terminology from antiquity. Terms such as: Traumatology, Anatomy, Physiology, Pathology, Angiology, Hematology, Radiology, Allergology, Anesthesiology, Andrology, Anosology, Aphrodisiacs, Biopathology, Gastroenterology, Geriatrics, Gynecology, Dermatology, Dietetics, Embryology, Endocrinology, Epidemiology, Hepatology, Histopathology, Cardiology, Microbiology, Neurology, Oncology, Urology, Rheumatology, Toxicology, Pharmacology and Otorhinolaryngology, originate from Greek language. The above mentioned substantiate the scientific hypothesis of the tremendous impact of ancient Greek texts in modern medicine.

### Acknowledgement

Special thanks to Dionysios Chorafas MSc., for the linguistic editing of the manuscript.

### Appendix A. Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.cjtee.2017.09.005>.

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