

Postmortem Injuries on Illegal Migrants' Cadavers at the Eastern Land Borders of the European Union-Greece

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Abstract

Over the last five years, 153 cadavers of illegal migrants have been found on the Greek side of the eastern land borders of the European Union. The most common causes of death were drowning and hypothermia. Most of the cadavers were decomposed due to the extensive duration of their remaining at the riverbed or in the remotely located sites in northern Greece.

The vast majority (95 out of 153) of those cadavers bore postmortem injuries of varied severity, depending on the qualitative characteristics of the death site (such as the medium in which the body lies and ambient temperature), type of animals acting upon them and duration of their exposure to the natural environment.

Post-mortem injuries constitute a particular forensic issue as for their differentiation from ante-mortem injuries, especially in illegal migrants' death cases due to the fact that cadavers are usually in progressed putrefaction. As no documents are carried, these cases are even more complicated, as post-mortem injuries render the issue of identification even harder.

Keywords: Forensic science; Post-mortem injuries; Body putrefaction; Body identification; Drowning; Animal attack

Introduction

Among the basic questions and issues that a coroner usually faces during performing post-mortem examination and autopsy, and whose answer is crucial and imperative, is the distinction between ante- and post-mortem injuries. The nature and form of these lesions vary widely. Post-mortem injuries may occur depending on the prevalent surrounding conditions at the death site due to passive movement (dragging) of the cadaver on a sharp surface (such as branches due to the river current or road pavement by a vehicle) or biting with tissue detachment by carnivores, rodents, fish or arthropods during exposure to the environment [1-4]. Hemorrhagic infiltration and swelling of the wound edges, macroscopically, as well as the accumulation of leukocytes and erythrocytes, microscopically, are the indications that characterize and distinguish ante- from post-mortem injuries. Tissue detachment in exposed or covered body parts with rough edges is typical of injuries caused by carnivores. Smaller sized lesions in exposed parts of the body with soft tissue detachment (mainly on the face) are indicative of post-mortem lesions caused by rodents. Superficial injuries of varied forms, dispersedly distributed also in exposed body parts are post-mortem lesions typical of arthropods.

The study of the surrounding area at the cadaver detection site and climatic conditions combined with the macroscopic and microscopic examination of the injury features make the differential diagnosis of ante-mortem from post-mortem lesions feasible. There are numerous factors influencing the induction of post-mortem lesions on a cadaver. The space in which death occurs (open or closed), the environmental conditions that prevail in the particular region (season of the year), the composition of the soil (sandy, rich vegetation, etc.) are some of these factors. The condition of the cadaver is also a key factor. Multiple layers of clothing are an inhibitory factor for the induction of post-mortem lesions in the covered areas of the body. Corpses which emerge from river water, and thus, are already in progressed putrefaction, emit odor

much more intense than other cadavers and therefore animal gathering is faster.

The land borders of Northern Greece are a common entry point for illegal migrants. The usual crossing passage of these people is through Evros River. During the last five years 153 cadavers of illegal migrants were found on the Greek side of the border. The majority of the migrants (129 of 153) died from drowning while trying to pass through Evros River. The rest of the cadavers were retrieved after a long time in rough and inaccessible locations having hypothermia as leading cause of death [5-9]. Evros River is rich in vegetation with turbid water and muddy riverbed. Illegal migrants who die by drowning while swimming through Evros River are found after a time period of weeks or months, due to the entrapment of the body at the riverbed which is muddy and full of tree branches due to the vegetation that exists on its banks. The consistency and natural characteristics of the river in regard to its riverbed and banks is a factor that affects conversely the ascendance of the cadaver to the water surface. Despite survivors' testimonies about people having fallen and having drowned in the river, in numerous occasions, fast detection and retrieval of the bodies was not feasible for the competent authorities.

The multiple layers of clothing worn by illegal migrants are an additional factor that contributes to the immersion and entrapment of the bodies at the river bed. The high degree of river pollution and high

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Received September 01, 2018; **Accepted** October 17, 2018; **Published** October 24, 2018

Citation: Pavlidis P, Chatzifotiou E, Karakasi MV, Koutsoukis S, Nerantzaki M, et al. (2018) Postmortem Injuries on Illegal Migrants' Cadavers at the Eastern Land Borders of the European Union-Greece. J Forensic Res 9: 429. doi:10.4172/2157-7145.1000429

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concentration of organic substances in the water are precipitating factors to the development of septic phenomena. In addition, the prolonged stay of the cadavers underwater results into the progression of sepsis and development of post-mortem lesions due to biting damage caused by the river fish. The emergence of the body to the surface attracts birds and insects, while its entrapment on the river banks makes the cadaver prone to carnivores [5-10]. More specifically, the post-mortem lesions are observed in exposed body parts, specifically, fish biting injuries in the soft tissues of the head and limbs, due to the existence of multiple layers of clothing in the rest of the body (Figures 1 and 2). The even further stay of the cadaver in the river results in its unclothing and in more extensive post-mortem lesions to be caused (Figure 3).

The cadavers usually emerge to the surface after floods or when they are in state of advanced putrefaction, and thus - without clothing - are released from tree brunches and drifted by the river currents. As the body is dragged and hauled along the river bottom by river currents, lacerations and even detachment of body parts are brought about when the cadaver is in advanced putrefaction. The emergence of the cadaver to the surface causes additional post-mortem injuries in consequence of being bitten by insects and birds. In these cases post-mortem lesions of various degrees and kinds are observed depending on the portion



Figure 1: Soft tissue detachment in exposed parts of the body (post-mortem).



Figure 2: Advanced putrefaction and post-mortem lesions in various parts of the body.



Figure 3: Detachment of a body member in a cadaver with advanced putrefaction.

of the body that floats over the water surface. The parts of the cadaver being immersed underwater undergo biting by river fish, while in the body parts floating on the water surface, post-mortem injuries caused by birds are observed (Figures 4 and 5). In cases of cadaver emergence and entrapment at the riverbanks, post-mortem lesions are larger in size as -besides fish- birds, insects, rodents or even carnivores act upon the body of the deceased extracting large parts of the cadaver (Figure 6) [1].

Cadavers with hypothermia as cause of death are spotted in remote and inaccessible locations after a time period of days or weeks. These cadavers bear post-mortem lesions caused by rodents, carnivores (wolves, dogs) or both. The post-mortem injuries are larger in size compared to those that are observed on a cadaver when it has remained in the water for the same period. Rodent raid onto the cadaver results in characteristic post-mortem lesions observed in the uncovered body parts (head, hands) (Figures 7-9) while the raid of larger animals (wolves, dogs) causes cleavage of the clothes and partial to even full gobbling of the deceased (Figure 10) [1].

Materials and Methods

The present study involves border-related fatalities which were detected only within the Greek territory. All fatal incidents were collected by the military or police authorities and were transferred for examination to the laboratory of forensic sciences in Democritus University of Thrace for post-mortem forensic examination and autopsy. The decedents' sex, age and origin were recorded (where possible), as well as anthropometric characteristics, anatomical peculiarities, tattoos, personal belongings, and clothing. The estimation of age was performed by using the Gustafson dental method of aging. Biological material (DNA) was obtained from all cadavers in order to assist or confirm their identification. Additional information was provided by the relevant military-police authorities and border guard agencies as well as eyewitnesses [11,12].

Tissue specimens obtained from the edges of injuries were examined histologically to investigate and clarify whether their occurrence was ante-mortem or post-mortem.

Results

This study aims to highlight the large percentage of post-mortem injuries that have occurred on the cadavers involved in border-related



Figure 4: Post-mortem gnawing by carnivores with detachment of large portions of the body.



Figure 7: Hand in decomposition.



Figure 5: Complete globbling of the cadaver.



Figure 8: Postmortem arm marks.



Figure 6: Missing-eye body.



Figure 9: Body in decomposition missing a big part of its right side.



Figure 10: Postmortem scar injuries.

fatalities in the land frontiers of Greece. The post-mortem lesions observed resulted from the prolonged exposition of the cadavers to the fluid medium or the environment and were directly dependent on the exposition duration. In the liquid medium (river water), post-mortem injuries were primarily caused by fish, while in the terrestrial environment they were induced by birds, rodents and carnivores.

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