Medico-legal evaluation of deaths due to decapitation

Bahadır Kumral, Yalçın Büyük*, Ümit N.Gündoğmuş, Esat Şahin, M.Feyzi Şahin

Abstract: Decapitation of bodies is a rare event in the civilian setting and is reported to account for approximately 0.1% of medico-legal autopsies. Suicidal decapitation is a very rare method of self-destruction. In suicidal decapitation, the favored method is the one involving trains. Other encountered methods are decapitation in suicidal hanging, vehicle-assisted ligature suicide. Though being encountered rarely decapitation by guillotine was also reported. In this retrospective study, in order to depict characteristic features of deaths with decapitation, we presented the findings of fatalities with decapitation over a 10-year period in a medico-legal autopsy series in Istanbul, Turkey. A total of 36270 forensic autopsies were performed over the period of the study and in 19 cases, the bodies were found to be decapitated (0.05%). The age range of decapitated bodies was 18 to 71 years (average 39.1 years), with a male to female ratio of 13/6. There was only one case of suicide and the way used for suicide was a mechanism like guillotine. In this case, a guillotine-like device designed by male victim had been used for deliberately decapitating the body. The age of the suicide case was 41 years. There was no female suicide case. There were 13 deaths of accidental origin. 6 vehicle crashes and 7 train-pedestrian accidents. The age range of individuals died in accidents was 26 to 68 years (average 36.8 years) with a male to female ratio of 11/2. During the study period the number of the homicide cases with decapitation was 5. The age range of homicide cases was 18 to 71 years (average, 45.2 years), with a male to female ratio of ¼. There were multiple traumas in other body parts of the bodies of homicide cases together with decapitation. In majority of homicide cases, multiple stab wounds were detected. Decapitation level of vertebrae was at the level of 3-4 cervical vertebrae in 9 cases and different levels at cervical region in other cases.

Key Words: decapitation, train-pedestrian accident, suicide, homicide, guillotine, forensic autopsy.

Throughout history, decapitation has been used for execution for the most diverse motives all over the world. Complete decapitation without any further mutilation of the victim in homicides is relatively rare [1].

Decapitated bodies are predominantly associated with decapitation by wheels of trains or with postmortem dismemberment following homicide [2]. Some methods of suicide may also result in decapitation, either as an intended outcome or as a result of some unforeseen complication of the method used [3].

Decapitation of bodies is a rare event in the civilian setting and is reported to account for approximately 0.1% of medico-legal autopsies [4]. Suicidal decapitation is a very rare method of self-destruction. Byard and Gilberd [4] reported only 13 cases of suicide involving death by decapitation in an autopsy series of 16,589 in 17 years period.

Tsokos et.al [5] reviewed 7681 autopsies in 7 years period and reported that only 10 cases of suicidal complete decapitation. In suicidal decapitation, the most favored method is the one involving trains. Other encountered methods are decapitation in suicidal hanging, and vehicle-assisted ligature suicide. Though being encountered rarely, decapitation by guillotine was also reported [3-6].

In this retrospective study, in order to depict characteristic features of deaths with decapitation, we present the findings of fatalities with decapitation over a 10-years period in a medico-legal autopsy series in Istanbul, Turkey.

Council of Forensic Medicine, Istanbul, Turkey
*Corresponding author: Assoc.Prof.Dr.Yalçın BÜYÜK, Council of Forensic Medicine, Ministry of Justice, Bahçelievler/Istanbul, Turkey, E-mail: doctorbuyuk@gmail.com

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MATERIALS AND METHODS

Among the files of the Mortuary Department of Council of Forensic Medicine in Istanbul, Turkey, the cases of decapitation were selected and examined over a 10-years period from January 2000 to December 2009. The autopsy reports and files of death scene investigation were reviewed for the parameters such as, circumstances of death, socio-demographic features of the victims, cause and manner of death, traumatic features other than decapitation, and the nature of decapitating wound (ante, peri- or postmortem).

Council of Forensic Medicine (ATK) provides autopsy services to all medico-legal deaths in Istanbul and its neighborhoods.

RESULTS

A total of 36270 forensic autopsies were performed over the period of the study and in 19 cases, the bodies were found to be decapitated (0.05 %). The age range of the decapitated bodies was 18 to 71 years (average, 39.1 years), with a male to female ratio of 13:6.

There was only one case of suicide and the way used for suicide was a mechanism like guillotine. In this case, a guillotine-like device designed by male victim which had been used for deliberately decapitating the body. The age of the suicide case was 41 years. There was no female suicide cases.

The only reported suicide case was a 41-years-old male. He was found dead at his workplace as decapitated by a guillotine-like device. Technical examination of the device showed the handmade nature of the guillotine-like device. It was composed of two parallel structural steel bars and there was a sliding plaster block. The plaster block weighed about 15-20 kilograms, and at the end it had a blade (Figure 1). The blade was a sheet of steel plate that was sharpened on one edge. The heavy block of plaster was prepared to serve as the needed weight mass. The blade was allowed to fall under gravity when the rope was cut.

The deceased body laid face up to device, with his anterior neck in the line of descent of the blade (Figure 2). When the deceased was found by another worker, he was almost completely decapitated. Only a piece of scalp was left which joining the head to the trunk (Figure 3).

There were 13 deaths of accidental origin, 6 vehicle crashes and 7 train-pedestrian accidents. The age range of individuals died in accidents was 26 to 68 years (average, 36.8 years), with a male to female ratio of 11:2 (Table 1).

During the study period, the number of the homicide cases with decapitation was only 5. The age range of homicide cases was 18 to 71 years (average, 45.2 years), with a male to female ratio of 1:4. There were multiple traumas in other parts of the bodies of homicide cases together with decapitation. Multiple stab wounds were detected in majority of homicide cases.

Figure 1. Handmade guillotine-like device

Figure 2. Position of decedent at death scene

Figure 3. Decapitating wound at the level of cervical 3-4 vertebrae
There was no presence of findings of a sexual crime in homicide cases.

Toxicological analysis of samples of the cases revealed presence of ethanol in blood ranging from 120-375 mg/dl in 4 accident cases. In two of the cases of road traffic accidents, the blood ethanol levels were 211 and 228 mg/dl respectively; in two of the train pedestrian accident cases, the levels of ethanol were measured as 120 and 375 mg/dl, respectively. No other toxic substances were detected.

Decapitation level of vertebrae was at the level of 3-4 cervical vertebrae in 9 cases and in different levels at cervical region in other cases.

Decapitation is a rare event in civilian populations. In forensic practice, decapitated bodies are usually associated with accidental explosions or vehicle crashes [7-9]. Decapitation has been reported to occur also in suicidal and homicidal deaths. In suicides, decapitation can be found occasionally in hanging deaths and train-pedestrian fatalities. However, suicidal deaths by a guillotine like mechanism and vehicle-assisted suicide cases have also been reported [3, 10]. As an accidental origin, train-pedestrian fatalities or car crashes might be responsible for decapitation. In some rare instances, it might be difficult to distinguish between the different modes of death in cases of decapitation. In the suicidal mode of death, decapitation resulting from violent methods is almost always a potential for confusion with homicide.

In the present study, the majority of the deaths were associated with accidents and homicides. In the homicide cases, decapitation was almost always together with other lethal wounds such as multiple stab wounds. In these cases, timing of the decapitating wound (ante- or peri-mortem) gains legal importance. During the study period, the number of the homicide cases with decapitation was 5. In all of these cases, a sharp tool had been used, as indicated by the clear-cut wound margins and there were vital signs in different degrees around the margins of decapitating wound in all cases. The final autopsy diagnosis for the timing of the decapitating wounds in 5 cases was reported as peri- or ante-mortem, excluding the post-mortem.

The vital findings around the margins of decapitating wound must be evaluated for the timing of decapitation. Although the absence of vital signs around the margins will almost definitely be regarded as the finding of postmortem activity, vital signs may be present in different degrees in decapitations done after a short time following death [11, 12]. So, as shown in our 5 cases, the role of decapitation in death process together with other traumatic findings (mostly the multiple stab wounds) can not be ruled out. It is easier to make this distinction in mutilated bodies in which the mutilating activity is usually inflicted after a certain period of time in order to make the body ready for disposal. In most of the homicidal activities with multiple stab wounds, decapitation takes place as the final attack to the body even at the time of agonal period or shortly after death [1].

In train-pedestrian fatalities, decapitation has been reported to be highly suggestive of suicide. But, accidental deaths are also possible, particularly for the persons who are under the influence of alcohol or other drugs. In suicidal hanging deaths, blood aspiration as a vital sign has been suggested to be used in order to rule out the postmortem mutilation. But, in some cases of decapitation, the differentiation between the modes of death may not be so easy.

In differentiation of homicide cases, some features were offered as classic of homicide: postmortem decapitation must be considered highly suggestive of a homicidal mode of death [1]. In one of our cases, the head had been cut off after death, characterized by absence of vital signs around the wounds of decapitation. In all these cases, a sharp tool had been used, as indicated by the clear-cut wound margins, the vertebral column being disconnected either between 2nd or at the level of 1st cervical vertebrae.

Postmortem mutilation has been reported to be inflicted with different kinds of motives. In defensive mutilation, the reasons/cases is to get rid of the body and/or make its identification more difficult. In aggressive mutilation, postmortem mutilation follows an act of outrageous killing of the victim. Offensive mutilation can result either from a necrophilic urge to kill and carry out sexual activities with the dead body or an urge to carry out sexual activities while inflicting pain, in both constellations associated with possible postmortem mutilation. The fourth motive for postmortem mutilation would be necromaniac mutilation, carried out on a dead body, where the mode of death is not necessarily homicide [13, 14].

Deaths with decapitation lead to a complex forensic investigation in which the forensic pathologist plays a major role as a point of reference in the execution of a full and correct inquest. The main, specific question posed in these deaths relates to the differential diagnosis of death by decapitation due to suicide, accident, homicide or mutilation of a body after death by another cause. In any case, there is a common consensus in the literature
that complete decapitation as the only fatal injury in an otherwise unharmed body is strongly indicative of suicide, as it is not only unusual in, accidents and homicides, but in such cases is always associated with injuries to other body areas. The body’s position on the rails can also be important in reconstructing the event: a prone or supine position with the neck resting on one of the rails is strongly indicative of suicide [15,1].

The suspicion of homicide is strongly confirmed if autopsy reveals vital decapitation as the cause of death. Accompanying injuries inflicted before or after death are other classic features of a homicidal mode of death.

In conclusion, the combination of death scene findings and autopsy results will in most decapitation cases provide valuable evidence in distinguishing between homicidal and other modes of death.

References