

Fatal land hunting-related injuries in the Eastern Black Sea region-Turkey

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¹Department of Forensic Medicine, University of Health Sciences, Gülhane Faculty of Medicine, Ankara-Türkiye

²The Council of Forensic Medicine Ankara Group Chairmanship, Ankara-Türkiye

³Department of Forensic Medicine, Recep Tayyip Erdoğan University Faculty of Medicine, Rize-Türkiye

ABSTRACT

BACKGROUND: Hunting requires the use of various weapons or tools as professionals according to the characteristics of the creature to be hunted. Deaths during hunting activities may occur as a result of different reasons (firearm wounds, falling from a height, wild animal attack, or natural, etc.). These events' forensic reports are prepared by the physician who performed the first intervention. Identification of wounds, taking measurement photographs of the wounds before treatment, specifying the shape/sizes of foreign bodies in radiological imaging will be beneficial for determining the type of firearm, the number of shots, and the shooting distance.

METHODS: The cases that performed autopsy between 2007 and 2016 at The Council of Forensic Medicine Trabzon Group Chairmanship were analyzed, retrospectively. Twenty-six (4.1%) deceased were examined. Crime scene investigation reports, hunting equipment, wound characteristics, and causes of death were investigated.

RESULTS: All of our cases consisted of men (92.3%; n=24) with a mean age of 42.5 years (14–81; SD: ± 17.4). It was determined that 42.3% of the incidents occurred in winter, 80.8% (n=21) occurred in the daytime, 69.2% occurred in open areas such as fields, and 26.9% occurred in forested land. It was found that 88.5% of the deaths were caused by shotgun pellet/buckshot injuries, 7.7% (n=2) by falling off a cliff, and 3.8% by wild boar attacks (vascular injury). It was determined that 57.7% of the shots were made from long shooting distance, 19.2% were made from close range, and 11.5% were made from contact distance. It was found that 73.9% of the perpetrators were other hunters and 26.1% were the deceased person himself. It was determined that 42.3% of the injuries occurred in the chest and 38.4% in the head-and-neck region. It was determined that 96.2% of the cases did not undergo first aid intervention even though there were eyewitnesses in approximately ¾ of the cases. Ethyl alcohol was detected in only 3 cases (11.5%).

CONCLUSION: It is thought that similar deaths can be prevented to a certain extent thanks to the hunting and medical first aid training to be given by the local governments. Risk control mechanisms must work properly. Besides, it is necessary to ensure that forensic experts can access the results of the proceedings in such cases. It is thought that this will be more beneficial in terms of developing new behavior styles in similar events.

Keywords: Accidental falls; autopsy; hunting; shotgun; wild animal attack; wounds and injuries.

INTRODUCTION

Hunting, which is a source of nourishment and entertainment in the history of humanity and has the purpose of preparing for war as well, is widely carried out in Turkey and all over the world. Hunting can generally be divided into land hunting and water hunting. It is stated that 13 million people participate in hunting activities annually between 1991 and 2011 in the

United States of America (USA).^[1] There are approximately 230,000 certified hunters registered in hunting associations in Turkey^[2]

Land hunting requires the use of different tools or weapons (firearms, arrows, traps, etc.) according to the characteristics of the creature to be hunted. During hunting activities, injuries or deaths may occur due to many reasons such as

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Address for correspondence: Sait Özsoy, M.D.

Sağlık Bilimleri Üniversitesi, Gülhane Tıp Fakültesi, Adli Tıp Anabilim Dalı, Ankara, Türkiye

Tel: +90 312 - 304 48 67 E-mail: ozsoysmd@gmail.com

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firearm injuries, falling from a height, wild animal attack, or natural death (myocardial infarction, etc.). The incidence of accidental deaths due to firearm injury during hunting activities in the USA is reported to be 0.2–1.6 people in each million population, and 1.95% of those who applied to emergency departments due to firearm injury were injured during hunting.^[3] There are not enough scientific studies in Turkey on the cases of injury/death during hunting activities. The rate of committing crimes with firearms was reported to be 256 for each province in Turkey according to the population of 100,000 in 2000 and this rate increased to 337 in 2008.^[4]

This study aims to contribute to the literature and raise awareness of emergency physicians and surgeons by evaluating the crime scene investigation and autopsy reports of the deaths that occurred during land hunting activities.

MATERIALS AND METHODS

The files of 8695 cases that underwent autopsy between 2007 and 2016 years at the Council of Forensic Medicine Trabzon group chairmanship were retrospectively reviewed. A total of 623 cases who died as a result of shotgun injuries were considered. Twenty-six cases (0.3% of total, 4.1% of shotgun deaths) who died during hunting-related were included in the study. The toxicological examination was performed on all cases, but the histopathological examination was not. The cases were evaluated according to their demographic characteristics, crime scene investigation reports, hunting equipment, type of incident and injuries, wound characteristics, autopsy and laboratory results, and causes of death.

RESULTS

The hunting-related deaths we examined were sent from six different provinces (Fig. 1). It was found that 69.2% (n=18) of the incidents occurred in open areas such as fields next to the villages, 26.9% (n=7) occurred in forested land, and 3.8% (n=1) occurred a near stream.

It was determined that the shotgun was used as hunting-related equipment in all deaths. According to the statements of the witnesses, it was determined that the cases left their homes to hunt different types of animals (boar hunting: 12, coyote: 7, rabbit: 2, and bird: 2). For what purpose the remaining 3 cases (11.5%) took the hunting rifle with them could not be determined (Fig. 2).

It was observed that 24 of our cases (92.3%) were male and the mean age was 42.5 years (min.: 14; max.: 81 years; SD: ± 17.4). Eleven cases (42.3%) of the events occurred in winter, 15.4% (n=4) in spring, 19.2% (n=5) in summer, and 23.1% (n=6) in autumn (Fig. 3). It was determined that 80.8% (n=21) of the incidents occurred during the day and 19.2% (n=5) occurred during the night. Nineteen cases (73.1%) of the incidents had an eyewitness, 23.1% (n=6) had no eyewitness but

were informed by their relatives that the person went hunting whereas 3.8% (n=1) had no eyewitness and their relatives had no information about the incident, and it was determined that this last incident was evaluated according to the crime scene results.

It was stated that the gendarmerie and police were informed by eyewitnesses (73.1%; n=19) and the bodies were found as a result of searches by their relatives (26.9%; n=7). It was determined that 96.2% (n=25) of the cases did not receive medical first aid, including the events with eyewitnesses. External examinations of the bodies revealed 88.4% buckshot (n=15) and birdshot (n=8) entry wounds, 7.7% (n=2) penetrating wounds, and 3.8% (n=1) blunt force trauma-related wounds (Figs. 4–7).

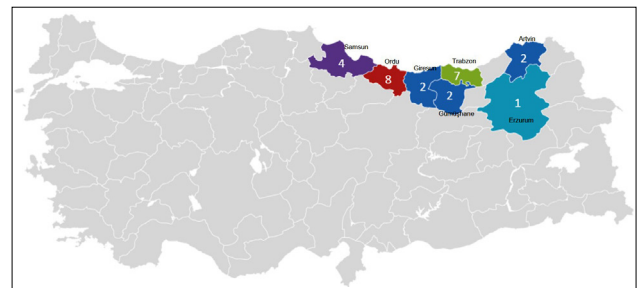


Figure 1. Distribution of cases by provinces in the region.

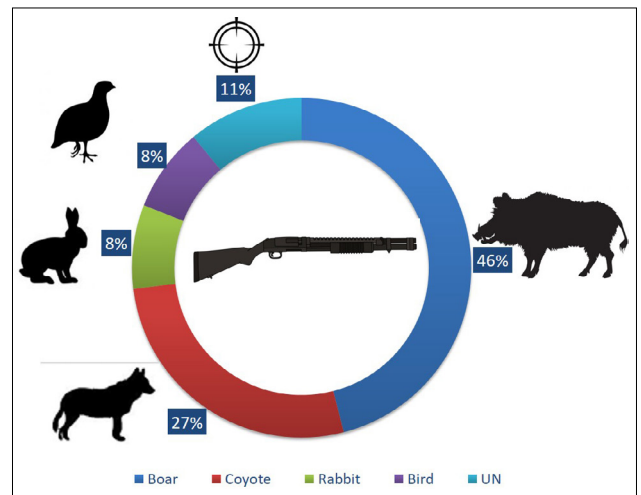


Figure 2. Animals planned to be hunting.

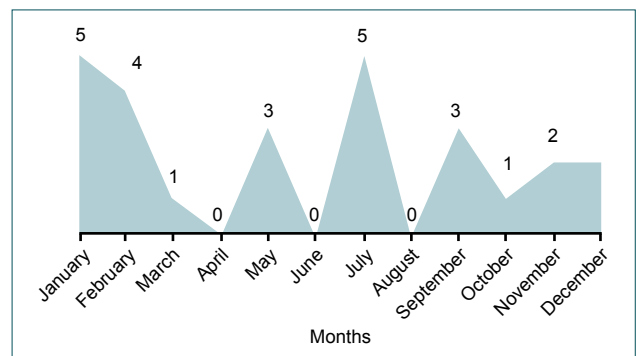


Figure 3. Distribution of cases.



Figure 4. Wounds with shotgun birdshot from a long distance (uniform spread with no central hole over about 10 m).



Figure 7. The male boar that killed the hunter.

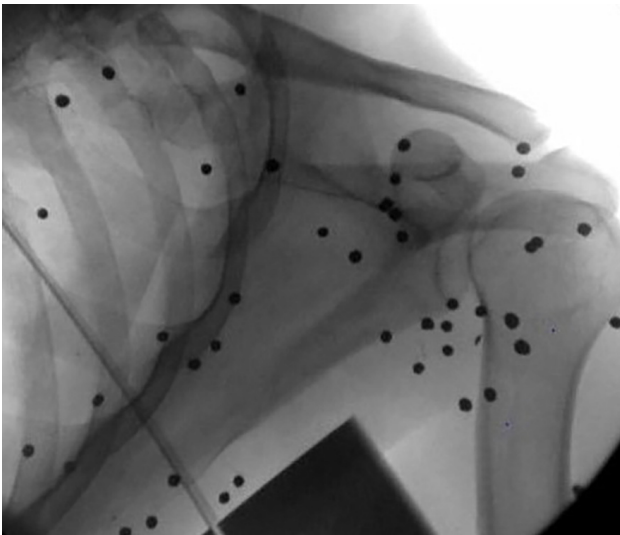


Figure 5. Postmortem radiological views (same case).



Figure 6. Penetrate wounds caused by wild boar.

It was determined that the perpetrator of 23 cases who died by being injured by buckshot/pellets was another hunter in 17 (73.9%) cases and the deceased himself in 6 cases (26.1%). It was found that 42.3% (n=11) of the cases had isolated chest injuries, 38.4% (n=10) had isolated head-and-neck injuries,

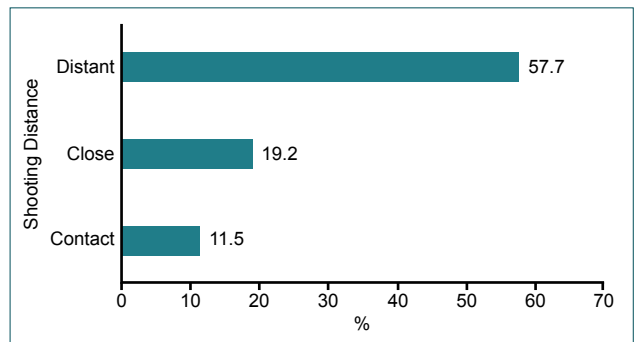


Figure 8. Shooting distances.

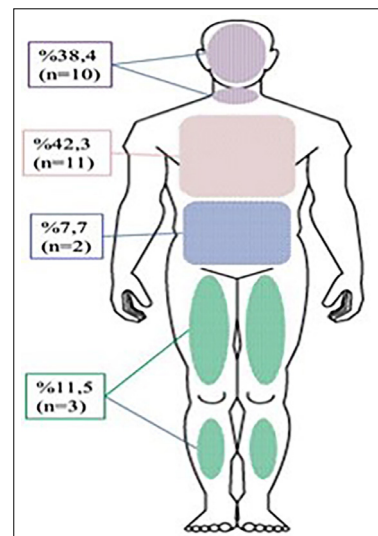


Figure 9. Injury areas on the body.

and 26.9% (n=7) had multiple injuries when the distribution of wounds according to body regions was examined. It was found that the causes of death were brain injury (34.6%), lung/heart injury (26.9%), vascular injury (26.9%), abdominal organs injury (7.7%), and multiple organ injuries (3.8%) in the cases. Shotgun shooting distances and injury areas are shown in Figure 8 and Figure 9.

Ethanol was detected in the blood in only 11.5% (n=3) of the cases as a result of the toxicological examination. One of the cases with ethanol was found to have died as a result of falling from height and two of them were injured with birdshot from a distance.

DISCUSSION

There are varieties of single-barrel or two-barrel (double or superposed) shotguns that are typically used in simple hunting.^[5] People often acquire shotguns to protect themselves, their gardens, or beehives from wild animals, so deaths due to shotgun injuries are more common in rural areas compared to cities in rural areas.^[6] All the events we investigated occurred in rural areas. Different rules exist in different countries around the world regarding the possession and use of shotguns. There are very strict rules on the possession of these rifles applied in Denmark, Sweden, and Japan.^[7-9]

We determined that the majority of the cases (46.1%) in our study were hunted with wild boar hunting. Studies also show that boar and deer hunting constitute the largest part of hunting tourism in Turkey.^[10] While wild boars are hunted for their meat in hunting tourism, they are hunted due to damage to the fields and agricultural products in our study.

Hunting is a male-dominated activity in Turkey as well as all over the world. There are many studies showing that the cases of firearm injuries are generally male in Turkey.^[11-13] It was found that 72% of hunters were between the ages of 31 and 50, 18% were between the ages of 20 and 30, and 11% were older than 50 in a demographic study on hunting. The data reveal that the proportion of those interested in hunting increases until the age of 50.^[11] About 92.3% of our cases were male and the mean age was 42.5 years (14–81±17.4 years).

In Turkey, according to the laws, it is necessary to have completed the age of 21 to obtain a gun license and it is necessary to have completed the age of 18 to shoot alone in shooting ranges.^[9] There is only one case <18 years age and there is no information about whether this case is accompanied by an adult while going hunting in our study. However, in rural areas, children may have to carry rifles to protect themselves and their animals while grazing animals in rural regions. In our study, no hunting dog was used in any of our cases. Because hunting dogs are expensive and special to care for, they are often used by professional hunters.

In our study, we found that although there were eyewitnesses in the vast majority (73.1%) of the incidents, almost none of them (96.2%) were given first aid. Factors such as the fact that shotgun injuries can lead to death in a short time due to multiple internal organ and vascular injuries that it is not possible for the first and emergency aid team to reach the hunting area in a short time due to geographical reasons, and that 70.8% of primary or secondary school graduates do not

have sufficient information about first aid may explain the inadequacy of medical first aid.^[14]

Hunting of wild animals in Turkey is generally permitted during the winter months, regarding the breeding season of animals.^[14] In our study, 42.3% of the events occurred during the winter months and 80.8% during the daytime. It was found in our study that 50% of the deaths occurred as a result of injury with large pellets called “buckshot” or “buck.” Buckshot ammunition is preferred in the hunting of, especially wild boars. It was determined that wild boar hunting was frequent in relation to the geographical structure of the region and “buckshot” was the most preferred in shotgun cartridges. The caliber of the shotgun varies according to how many spheres of equal diameter are obtained from 1 pound (453.6 g) of lead mass. Shotgun pellets are spheres made of lead or steel. Coarse pellets produced in Turkey and known as boar pellets have a diameter of 8.60 mm and there are nine pieces in a cartridge. Clinicians do not need to know the number of shotgun pellets. However, describing or photographing the entry wound before the treatment of the injured is very important for the determination of the shooting distance. In addition, if a pellet is removed from the body, it must be handed over to the hospital police as evidence.

It is important to determine the shooting distance to determine the occurrence of the incident in firearm injuries. The shooting distance varies depending on the characteristics of the shotgun and cartridge. Flame can reach 20 cm, smoke 30 cm, and unburnt powder grains can reach 100 cm from the end of the barrel on average in long-barrel weapons.^[5] If there is a live target within this distance, findings related to shot residues occur around the entry wound (on clothing and/or body surface). If the injury occurred in the area with the clothing, the clothing should also be handed over to the police as evidence. However, for the insane not to perish, the blood-soaked clothes must be dried before handing the police.

Shots made from a distance of between 75 and 100 cm with long-barrel weapons such as shotgun and rifle are called close/intermediate shots, and shots made from a distance farther than this distance are called long shots.^[5] Deaths during hunting usually occur in forested land and as a result of shooting from a distance, considering that the moving creature is any wild animal.^[15] If the person has not set up a mechanism to fire the gun, he cannot shoot himself from a distance. These procedures are important to determine whether the incident is an accident, murder, or suicide. In our study, the perpetrator of 73.9% of the 23 cases was the other hunter and 26.1% (n=6) was the deceased person himself. We found that 57.7% of the shots were fired from distance, 19.2% of them were close, and 11.5% of them were fired from the contact range. Since the court results could not be reached in the deaths we examined, we could not obtain information about the manner of deaths (accident, homicide, and suicide).

The possibility of an accident is avoided if the body has more than one entry wound in cases of death due to shotgun injuries. It is very important to evaluate the possibility of an “intermediate target” in firearm injuries occurring in the forested land. The absence of gunshot residue on the target in firearm injuries may not necessarily mean that the shot is always fired from a distance.^[15,16] Injuries are usually seen with muzzle-to-target (contact) or close range (intermediate) shooting distances and in certain parts of the body in suicidal cases. Wounds are usually seen in the right or left temporal region, chest or abdomen, or under the chin in suicidal cases. It is seen that all body areas may be affected, but injuries usually occur on the upper part of the body in hunting accidents occurring with shotguns.^[17-21]

It was determined in our study that a hunter died due to large vessel, lung, and heart injuries as a result of tusk injuries after an attack by a wild boar wounded by a shotgun. Especially wild male boars in Turkey can reach up to 350 kg and this animal, known as monster wild boar, in world hunting, can lead to serious injuries thanks to its huge body structure, sharp, and long tusks in this respect.^[10,22-24] In all penetrating injuries require careful examination and description of the wounds. It should not be forgotten that similar wounds can be also produced by sharp-edged tools such as an ax, or a machete, and false stories can be made up to deceive the physician.

Conclusion

Hunting is an activity that requires first the necessary training and also requires a high level of attention and focus and may result in death in any irresponsible action since hunting involves a killing activity by its nature. Shotguns and cartridges should be stored by taking precautions to ensure that they are not easily accessible at home, as with all firearms. Measures such as carrying the rifle with the barrel tip facing the ground, not firing without the target being fully visible, periodic gun maintenance, and the use of special high visibility garments that enable the person to be noticed during hunting activities will largely prevent injuries.^[3]

Even though there are many legal regulations, it is necessary to mandatory education programs before taking a hunter's license, and systematically warn the hunters against possible accidents with brochures, warning signs in hunting areas. Risk control mechanisms and inspections must be properly. A good crime scene investigation is the priority in solving the manner of death (accident, homicide, and suicide). Besides, identification of entry and exit wounds, taking measured photographs of the wounds before treatment, specifying the shape and sizes of foreign bodies in radiological imaging will be more beneficial for determining the type of firearm, the number of shots, and the shooting distance. In this way, it will be easier to decide whether the incident is an accident, homicide, or suicide as a result of the firearm investigation and prosecution.

Finally, it is necessary to ensure that forensic experts can access the results of the proceedings in such forensic death cases. It is thought that this will be more beneficial in terms of developing new behavior styles in similar events.

Ethics Committee Approval: This study was approved by the T.C. Ministry of Justice Forensic Medicine Institute Presidency Ethics Committee (Date: 13.12.2017, Decision No: 21589509/2017/636).

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Conflict of Interest: None declared.

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ORIJİNAL ÇALIŞMA - ÖZ

Doğu Karadeniz Bölgesi'nde ölümlle sonuçlanan kara avcılığı ilişkili yaralanmalar

Dr. Sait Özsoy,^{1,2} Dr. Hüseyin Çetin Ketenci,³ Dr. Mehmet Askay³

¹Sağlık Bilimleri Üniversitesi, Gülhane Tıp Fakültesi, Adli Tıp Anabilim Dalı, Ankara

²Adli Tıp Kurumu Ankara Adli Tıp Grup Başkanlığı, Ankara

³Recep Tayyip Erdoğan Üniversitesi Tıp Fakültesi, Adli Tıp Anabilim Dalı, Rize

AMAÇ: Avlanma, avlanacak canlının özelliğine göre çeşitli silah veya aletlerin profesyonel şekilde kullanılmasını gerektirir. Avlanma esnasında farklı sebeplerle (ateşli silah yaralanması, yüksekten düşme, vahşi hayvan saldırısı veya doğal vb.) ölümler meydana gelebilir. Bu olguların adli olgu bildirimini ilk müdahaleyi yapan hekim tarafından yapılmalıdır. Giriş ve çıkış yaralarının tespiti, tıbbi tedavi öncesi yaraların fotoğrafının çekilmesi, radyolojik görüntüleme yabancı cisimlerin şekil ve büyüklüklerinin net olarak belirlenmesi ateşli silahın cinsi, atış sayısı ve atış mesafesinin saptanmasında faydalı olacaktır.

GEREÇ VE YÖNTEM: Adli Tıp Kurumu Trabzon Grup Başkanlığı'nda 2007–2016 yılları arasında otopsi yapılmış olgular geriye dönük olarak incelendi. Av faaliyetleri sırasında ölen 26 (%4.1) olgu değerlendirmeye alındı. Tüm olgulara toksikolojik inceleme yapılmıştır. Olay yeri inceleme tutanakları, avcılık malzemeleri, yara özellikleri ve ölüm nedenleri incelendi.

BULGULAR: Olguların tamamı erkek (%92.3; n=24), ortalama yaş 42.5 yıl (14–81; SD:±17.4) idi. Olayların %42.3'ünün kışın, %80.8'inin (n=21) gündüz saatlerinde, %69.2'sinin tarla gibi açık alanlarda ve %26.9'unun ormanlık alanda meydana geldiği saptandı. Ölümlerin %88.5'inin av tüfeği saçma tanesi/şevrotin (iri saçma) yaraları, %7.7'sinin (n=2) uçurumdan düşme ve %3.8'inin yaban domuzu saldırısı (vasküler yaralanma) nedeniyle olduğu belirlendi. Atışların %57.7'sinin uzak, %19.2'sinin yakın ve %11.5'inin bitişik atış mesafesinden yapıldığı belirlendi. Faillerin %73.9'u başka bir avcı iken %26.1'inde ölen kişinin kendisi olduğu tespit edildi. Yaralanmaların %42.3'ü göğüs ve %38.4'ünün baş-boyun bölgesinde meydana geldiği belirlendi. Olguların ¾'ünde görgü tanığı olmasına rağmen olguların %96.2'sine ilk yardım yapılmadığı belirlendi. Sadece üç olguda (%11.5) etil alkol tespit edildi.

TARTIŞMA: Avcılık ve tıbbi ilk yardım eğitimlerinin benzer olayları azaltabileceği düşünülmektedir. Gerekli denetim mekanizmalarının çalışması önemlidir. İlave olarak, adli tıp uzmanlarının yargılamaya sonuçlarına ulaşabilmesinin benzer olaylarda yeni davranış tarzlarının geliştirilmesi açısından faydalı olacağı düşünülmektedir.

Anahtar sözcükler: Av tüfeği; avcılık; kazara düşme; otopsi; yabani hayvan saldırısı; yaralar.

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