Deaths in Turkish Military Services, 1998–2000

Guarantor: Gurol Canturk, MD
Contributors: Gurol Canturk, MD*†; Nesime Yayci, MD‡; Nergis Canturk, MD§‖

The aim of this study was to evaluate the causes of death in the military in Turkey and to evaluate the previously obtained data relating to the characteristics peculiar to the army in those cases of death that have acquired a juridical attribute. In this study, the cases presented in the years 1998 and 2000 have been investigated retrospectively. Seventy military cases investigated within a period of 3 years were all men. Except for the 20 cases in which the cause of death could not be determined, 30 of 50 cases in our study are included in the group of "natural deaths" and 20 are included in the group of "forced deaths." In conclusion, natural causes are still the leading cause of death in Turkey, and regarding this, it can be suggested that these deaths could be preventable by better health care and more careful premilitary health examinations.

Introduction

The population of Turkey is 65 million. Each healthy 20-year-old Turkish man must serve in the military. Except for a very small number of women who mostly serve as junior officers, the military is almost an entirely male institution.

The First Specialization Board of the Institute of Forensic Medicine, as a specialized upper Board, takes on cases where causes of death could not be determined, even after an autopsy. The board tries to resolve these cases using all available forensic evidence and court documents. This Board, made up of specialist physicians from various branches, evaluates an average of 2,000 cases annually.

The lifestyle of the military population, especially those who actually serve in the army, is considerably different from that of other sections of the community.[1] With regard to physical and psychological status, military service generates a particular state of health. In each country or society, it has been observed that various factors cause various juridical events and deaths in the military. In the forensic literature, it has been reported that death may also occur in sports activities during military service.[2–5]

The aim of this study was to evaluate the causes of death in military cases and to evaluate the previously obtained data relating to the characteristics peculiar to the army in those cases of death that have acquired a juridical attribute.

*Institute of Forensic Medicine, Ministry Of Justice, Istanbul, Turkey.
†Current address: Forensic Medicine Department, Ankara University School of Medicine, Cebeci, Ankara, Turkey.
‡Assistant Professor, Marmara University, Marmara Medical Faculty, Forensic Medicine Department, Istanbul, Turkey.
§Istanbul University, Cerrahpasa Medical Faculty, Forensic Medicine Department, Istanbul, Turkey.
‖Current address: Institute of Forensic Medicine, Ministry of Justice, Ankara, Turkey.

This study was presented at the 16th Meeting of the International Association of Forensic Sciences, 2002, Montpellier, France, as a poster presentation.
This manuscript was received for review in March 2003 and was accepted for publication in June 2003.

Reprint & Copyright © by Association of Military Surgeons of U.S., 2004.

Materials and Methods

In this study, the cases presented to the First Specialization Board of the Institute of Forensic Medicine between the years 1998 and 2000 have been investigated. The cases that were interrogated for the precise cause of death have been included in this study. Military death cases, autopsied or unautopsied, have been included in the study. The cases have been evaluated relating to their sociodemographic features and causes of death.

Results

Seventy military cases investigated within a period of 3 years were all men. These cases were distributed between the age range of 20 to 31 years, with 28 cases (40%) at 21 years of age, 26 cases (37.14%) at 20 years of age, and 6 cases (8.57%) at 22 years of age. Of all the cases, 85.71% were between the ages 20 and 22, and the average age was found to be 21.428.

As the cases were evaluated in respect to their military services, 49 cases (70%) were determined to be from the Turkish Land Forces Command, 10 cases (14.30%) were from the Turkish Air Forces Command, 6 cases (8.56%) were from the Turkish Naval Forces Command, and 5 cases were from the General Command of Gendarmerie.

Sixty-two (85.5%) of 70 cases were autopsied, and 8 cases, including 5 cases resulting in death from firearm injury, 2 cases with brain injury from a traffic accident, and 1 case who was under treatment in the hospital because of acute respiratory distress syndrome, were not autopsied. In the external physical examination of 61 cases, except for 5 cases from a firearm injury and four cases from traffic accidents, no evident external traumatic change was observed.

In 52 of 62 cases that were autopsied, tissue samples were collected and investigated from the histopathological point of view. The reason for the lack of histopathological investigation in 10 cases was tissue decomposition due to putrefying.

In 53 of 62 cases, toxicological analysis was performed in blood and tissue samples, and no substance was found in 38 cases, a benzodiazepine derivative was found in 1 case, and ethanol below the lethal level was found in 12 cases. In two cases, death was considered to be the result of methanol intoxication, for methanol levels were determined to be 111 and 154 mg/dL in these two cases.

The distribution of cases according to the causes of death is shown in Table I. Despite the autopsies performed in 20 (28.57%) of 70 cases, the precise cause of death could not be reached.

Discussion

All of the 70 military cases investigated in a period of 3 years were men. Considering that all of the cases included in two diverse studies[1,3] previously carried out between 1988 and 1991 and between 1884 and 1993 in our country, this can be explained by the

Downloaded from https://academic.oup.com/milmed/article/169/5/400/4647687 by ANKARA user on 11 December 2021

TABLE I

DISTRIBUTION OF CASES ACCORDING TO THE CAUSES OF DEATH

Cause of Death	*N* (%)
Lack of precise cause of death	20 (28.57)
Natural deaths	
Respiratory disorder	11 (15.71)
Cardiovascular disorder	10 (14.28)
Peritonitis	4 (5.71)
Central nervous system disorder	4 (5.71)
Sepsis	1 (1.43)
Forced deaths	
Firearm injury	8 (11.43)
Brain injury due to traffic accident	4 (5.71)
Electric shock	3 (4.29)
Falling from a high level	2 (2.86)
Methyl alcohol intoxication	2 (2.86)
Heat exhaustion	1 (1.43)
Total	70 (100)

obligation of military service only for healthy men—women are not drafted in Turkey. One of the studies conducted in the United States, referring to the soldiers who committed suicide, demonstrated a male percentage of death as 95%. In another study from this country related to the deaths that occurred during basic military training course found this percentage to be 94% and in another one, it was reported to be 95%.[6–8] In our country, females have also been allowed to be officers since the 1990s. However, there are no female officer deaths reflected in this study.

Of all of the cases, 85.7% ranged between 20 and 22 years of age, and the average age was calculated to be 21.4. The average age was also 21.4 in the first study, whereas it was reported that 81.25% of cases was between 20 and 22 years of age in the second study.[1,3] This situation can be explained by the drafting age of 20 and by the 18-month duration of military service. Studies conducted in countries other than Turkey have reported that 60% of deaths recorded within the period of basic military training in air forces was between the ages of 17 and 19 years, and 48% of suicidal cases were between the ages of 17 and 24 years.[7,9]

Forensic medicine literature generally demonstrates that authorities have classified death types differently, either as forced deaths or natural deaths. Forced deaths wholly concerning forensic medicine are those resulting from murders, suicides, and accidents. Natural deaths comprise a type of death that occurs in individuals who completed their normal physical life spans or those who had a mortal disease. Generally, it is also called "pathological death" because it depends upon a disease. Nevertheless, most of these types deaths also occur as cases requiring juridical prosecutions. Juridical cases of death in the military population are subject to articles 78, 79, and following 80, 81, 82, and 83 of Turkish Criminal Law, as in the civil population.[1] Except for the 20 cases in which the cause of death could not be determined, 30 of 50 cases in our study were included in the group of "natural deaths" and 20 were included in the group of "forced deaths."

In our study, in two cases where the manner of death was determined to be suicide, both deaths were found to be the result of a firearm injury. Deaths resulting from firearm injury, which make up 11.43% of our cases, were found to be as high as 56.25% and 33.11% in two different studies previously conducted in our country.[1,3] The reason for the low percentage obtained in our study may be the higher number of presentations of those cases, which are more complex and difficult to analyze than the cases of firearms injury, which are easy to analyze and to conclude regarding the reason of death.

In a study from the United States conducted to evaluate deaths resulting from an injury in the army, the overall death rate due to unintentional injuries was 62.3 per 100,000 person-years. The suicide rate was found to be 12.5, the homicide rate was 5.0, and the death rate due to an illness was found to be 18.4. Also, it has been concluded that injuries (unintentional injuries, suicides, and homicides) are the leading cause of death among active duty members of the U.S. Armed Forces and accounted for about four of five deaths.[10] In the U.S. Air Force, in a study related to basic training and covering a period between 1956 and 1996, it was reported that 13% of deaths were the result of a suicide attempt.[7] In our study, there were only 20 cases of forced death. In these cases, 18 were determined to be an accident and only 2 (2.8%) were of suicidal origins. Natural causes of death are the leading causes in Turkey.

The death of a healthy person in a sudden manner and without any reason is regarded as a sudden death. The World Health Organization defines "sudden death" as a death lasting a maximum of 24 hours from the beginning of the death process until the death moment. "Unexpected death" is a death type that takes place suddenly or over a long period, but generally witnessed by nobody. Sudden and unexpected deaths make up approximately 30% of natural deaths. Studies on natural sudden deaths demonstrate that the primary reason for unexpected sudden deaths is ischemic heart disease. Sudden deaths caused by heart ischemia resulting from coronary arteriosclerosis are in the first place among deaths.[11–17] We could not find a precise cause of death in 20 of our cases. All of them were sudden and unexpected deaths; however, some of them had ischemic heart disease that we could not establish.

In our study, 62 (85.5%) of 70 cases were autopsied. A total of eight cases, including five resulting in death with a firearm, two resulting in death from a brain injury due to a traffic accident, and one resulting in death from acute respiratory distress syndrome during treatment in the hospital, were not autopsied. Therefore, in 20 of 62 autopsied cases, the causes of death could not be determined. This percentage seems to be relatively high. However, due to the insufficient number of forensic medicine specialists in our country, the autopsies were performed by other physicians. In our study, in 34 of 62 autopsied cases, autopsies were performed by a forensic medicine specialist. A cause of death was determined in 25 of these cases.

Military service causes a physical and psychological (stress) effect in individuals. In each country or community, various factors were reported to cause different juridical cases and deaths among the military population. In our study, as the cases were evaluated regarding the cause of death, 10 cases were found to be the result of cardiovascular disease. These deaths appear to be sudden and natural deaths; however, the effort spent during physical training or duties triggered the disorders that were already established in the individual and thus lead to death. In the routine of premilitary health examinations, cardiovascular disorders established in the candidates of military service were not diagnosed. In the United States, the number of sudden cardiac deaths is reported to be over 300,000 annually.[18]

Downloaded from https://academic.oup.com/milmed/article/169/5/400/4647687 by ANKARA user on 11 December 2021

As causes of death, pulmonary infection was detected in 6 of 11 cases and pulmonary edema was detected in 5 of 11 cases because of a respiratory disorder. As for the four cases resulting from peritonitis, the causes of this peritonitis were peptic ulcer perforation in three cases and appendix perforation in one case; no cause of primary sepsis could be detected in one patient who died from sepsis. Therefore, one can suggest that all of these deaths could have been prevented.

In conclusion, natural causes are still the leading cause of death in Turkey and, regarding this, it can be suggested that these deaths could be prevented by a better health care system and more careful premilitary health examinations.

Acknowledgments

This study was performed with the permission of the Institute of the Forensic Medicine (Istanbul, Turkey).

References

1. Koc S, Yılmaz A, Oztek I, Yıldırım S, Cingil H: Deaths in soldiers. Bull Sea Medical 1993; 26: 2–3.
2. Knight B: Forensic Pathology, Ed 2, pp 487–515. New York, Arnold, 1997.
3. Koc S, Albek E, Kolusayın O, Oztek I: Young soldier deaths: 208 autopsy cases. I. Forensic Medicine Congress, April 12–15, 1994 poster presentation.
4. Rothberg JM, Bartone PT, Holloway HC: Life and death in the US Army. J Am Med Assoc 1990; 264: 2241–4.
5. Raschka C, Parzeller M, Banzer W: Sudden sports deaths in the armed forces of Germany. Sporverletz Sportschaden 1998; 12: 42–3.
6. Hourani LL, Warrack AG, Coben PA: Suicide in the U.S. Marine Corps, 1990 to 1996. Milit Med 1999; 164: 551–5.
7. Neuhauser KM, Neuhauser TS, Drehner D, Blackwood GV: Death among U.S. Air Force basic trainees, 1956 to 1996. Milit Med 1999; 164: 841–7.
8. Helmkamp JC, Kennedy RD: Causes of death among U.S. military personnel: a 14-year summary, 1980–1993. Milit Med 1996; 161: 311–7.
9. Helmkamp JC: Suicides in the military: 1980–1992. Milit Med 1995; 160: 45–50.
10. Powell KE, Fingerhut LA, Branche CM, Perrotta DM: Deaths due to injury in the military. Am J Prev Med 2000; 18(Suppl 3): 26–32.
11. Polat O: Forensic Medicine, pp 15–32. Istanbul, Der Publications, 2000.
12. Polat O, Akca S, Gunhan O, Finci R: Sudden natural deaths. J Forensic Med 1989; 5: 165–9.
13. Simpson K, Knight B: Forensic Medicine, Ed 9. UK, 1985.
14. Greengold MC: Sudden death. J Am Med Assoc 1995; 19: 273.
15. Paul O, Schatz M: On sudden death. Circulation 1971; 43: 00–00.
16. Soysal Z, Cakalır C: Forensic Medicine I, pp 175–82. Istanbul, 1999.
17. Forensic Medicine Specialists Organizations: Forensic Medicine Handbook, pp 62–4. Ankara, Turkey, Forensic Medicine Specialists Organizations, 1999.
18. Phelps SE: Left coronary artery anomaly: an often unsuspected cause of sudden death in the military athlete. Milit Med 2000; 165: 157–9.

HELP YOUR DOCTOR
HELP YOU
IN THREE EASY STEPS.

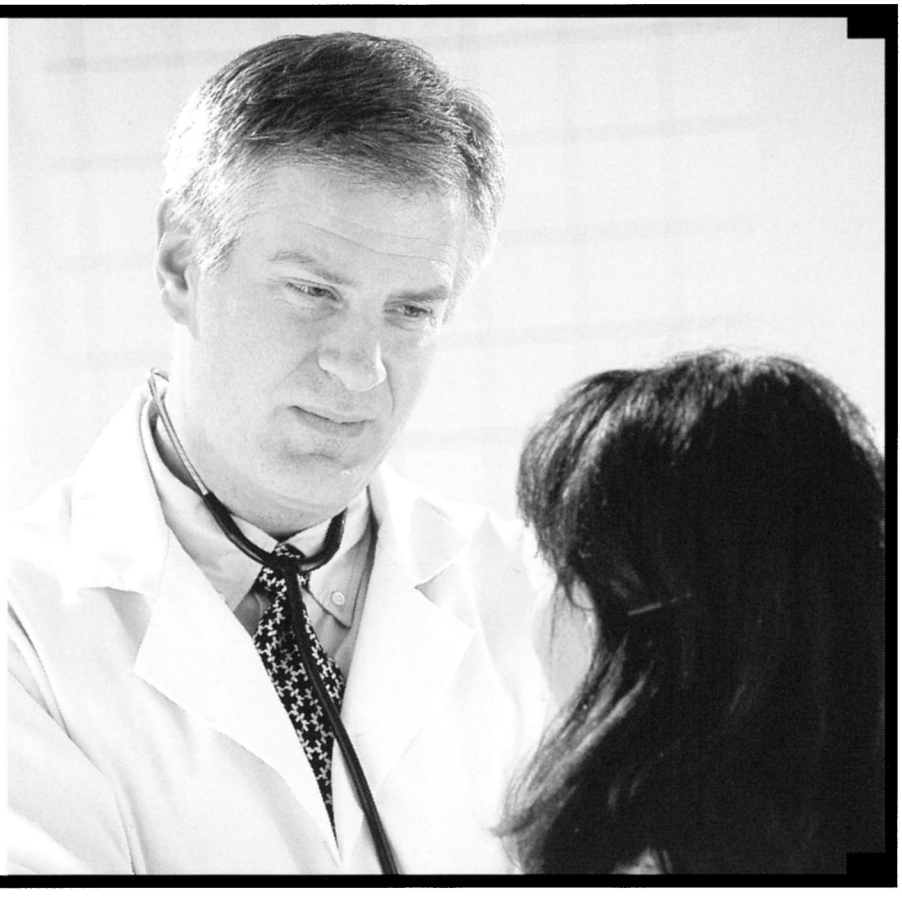
When you have a chronic illness, getting smarter about your condition helps your providers to do their very best for you.

Ask questions.
There's no faster way to understand your symptoms and your treatment. Remember, your doctor, nurses, and therapists are there to listen and answer your questions.

Educate yourself.
Read up on your illness and your medicines. Your library and the Internet have a wealth of information.

Network with others.
Whatever your illness, there are groups like the American Cancer Society and hundreds more out there to help you.

It's your health. You call the shots.



NATIONAL HEALTH COUNCIL

For assistance or more information, visit www.NationalHealthCouncil.org or write the National Health Council at 1730 "M" Street NW, Suite 500, Washington, DC 20036-4505.

This message made possible by an educational grant from the Pfizer Health Literacy Initiative.

Downloaded from https://academic.oup.com/milmed/article/169/5/400/4647687 by ANKARA user on 11 December 2021