

Metin ESER²
Alper KETEN¹
Ferhat İÇME³
İbrahim KILINÇ²
Hamit Sırrı KETEN⁴



RESEARCH

INVESTIGATION OF TRAFFIC ACCIDENTS IN GERIATRIC AGE GROUP

ABSTRACT

Introduction: Traffic accidents are more important in the geriatric age group, since the ability to deal with a trauma is weaker in this population. The objective of this study was to evaluate geriatric patients presented to the emergency department (ED) because of injury due to traffic accidents.

Materials and Method: A total of 118 geriatric patients (at 65 years of age and older) who presented to the Emergency Department of a Research and Training Hospital in Ankara between 01/01/2010 and 01/01/2011 were included in the scope of the study. Sociodemographic data and diagnoses and treatment processes of these cases were analyzed.

Results: Of the 469 traffic accident cases presented to ED, 118 (25.2%) were in the geriatric age group. The mean age was 73.17 ± 7.50 . Of these cases, 44 (37.3%) were female and 74 (62.7%) male. When the type of the accident was analyzed, 66 (55.9%) of the injured patients were passengers and 52 (44.1%) were pedestrians. External injuries were found in 88 (74.6%) cases. In total, 114 (96.6%) cases required radiological examination. Two of the cases were found to be dead on arrival, while 5 cases died during the diagnosis and treatment process.

Conclusion: Traffic accidents are more important in the elderly, because the ability to deal with a trauma is weaker in this population. It is important to consider this fact during the process of diagnosis, treatment and forensic reporting following traffic accidents.

Key Words: Aged; Accident; Traffic; Emergency Medicine; Forensic Medicine.



ARAŞTIRMA

GERİARİK YAŞ GRUBUNDA TRAFİK KAZASI OLGULARININ İRDELENMESİ

Öz

Giriş: Trafik kazaları travma ile başatme yeteneği zayıf olan yaşlı popülasyonda daha önemlidir. Çalışmamızda acil servise trafik kazası yaralanması nedeniyle başvuran geriatric olguların değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntem: Çalışmada Ankara'da bir Eğitim ve Araştırma Hastanesi acil servisine 01.01.2010-01.01.2011 tarihleri arasında trafik kazası yaralanması nedeniyle başvuran 118 geriatric (altmış beş yaş ve üstü) hasta çalışmaya dâhil edildi. Bu olguların sosyo-demografik verileri ile teşhis ve tedavi süreçleri incelendi.

Bulgular: Acil servise başvuran 469 trafik kazası olgusundan 118'i (%25.2) geriatric yaş grubundaydı. Yaş ortalaması 73.17 ± 7.50 idi. Bunların 44'ü (%37.3) kadın, 74'ü (%62.7) erkek olarak belirlendi. Kaza türü değerlendirildiğinde olguların 66'sının (%55.9) araç içi, 52'sinin (%44.1) araç dışı trafik kazasına bağlı yaralandığı gözlemlendi. Olguların 88'inde (%74.6) harici yaralanma bulgusu saptandı. Olguların 114'ünde (%96.6) radyolojik değerlendirmeye ihtiyaç duyulmuştu. Olguların 2'sinin acil servise geldiğinde ölmüş olduğu, 5'inin tanı ve tedavi girişimleri sonrasında yaşamını yitirdiği gözlemlenmiştir.

Sonuç: Yaşlıların travmayla baş edebilme kapasitesi daha zayıf olduğu için trafik kazaları, bu grupta daha önemlidir. Trafik kazası sonrası teşhis, tedavi ve adli raporlama sürecinde bu durumun göz önünde bulundurulması önemlidir.

Anahtar Sözcükler: Yaşlı; Trafik Kazası; Acil Tıp; Adli Tıp.

İletişim (Correspondance)

Alper KETEN
Adli Tıp Kurumu, Adli Tıp, KAHRAMANMARAŞ

e-posta: alperketen@gmail.com

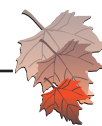
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¹ Adli Tıp Kurumu, Adli Tıp, KAHRAMANMARAŞ
² Atatürk Eğitim ve Araştırma Hastanesi, Genel Cerrahi ANKARA

³ Atatürk Eğitim ve Araştırma Hastanesi, Acil Servis ANKARA

⁴ Sütçü İmam Üniversitesi, Aile Hekimliği KAHRAMANMARAŞ



INTRODUCTION

World Health Organization (WHO) reports that the number of people in the geriatric age group is steadily increasing due to several causes such as improvements in health care services and reduction in the fertility rates. Similarly, geriatric population is also gradually increasing in our country and this population has been reported to be 5.7% in 2005 and it is expected to rise to 17.6% by 2050 (1,2). Physiologic, metabolic and pharmacodynamic changes due to aging decrease the ability to avoid trauma and to deal with the stress resulting from the trauma among these people. Furthermore, emerging metabolic and endocrine responses following a trauma differ in the elderly compared to the young and adults (3-6).

Traffic accidents hold an important fraction among the studies investigating the causes of presentations to emergency departments among geriatric patients (7,8). Traffic accidents are considered to be one of the important causes of mortality and morbidity in our country similar to other countries in the world. It was reported that 850,000 males and 320,000 females died because of traffic accidents worldwide in 1998 (6,9,10). According to 2002 data from the State Institute of Statistics, 4,093 citizens (rate to the mean annual population is 0.06%) died and 116,412 (rate to the mean annual population is 1.68%) were injured in a total of 439,777 accidents which occurred in that year. In 2006, 4,633 citizens (rate to the mean annual population is 0.06%) died and 169,080 (rate to the mean annual population is 2.32%) were injured in 728,755 accidents (11).

The objective of this study is to evaluate the geriatric patients presenting to the emergency department (ED) due to injury from traffic accidents.

MATERIALS AND METHOD

This study was conducted with the approval of Atatürk Training and Research Hospital (ATRH) Training Planning and Coordination Board dated 17/02/2011, and numbered IK 02. In the study, records of 469 patients who presented to the ED of ATRH due to injuries related to traffic accidents dated between 01/01/2010 to 01/01/2011 were analyzed. Of these, 118 cases aged 65 and over were enrolled in the study. These cases were evaluated in terms of age, gender, date and type of the accident, presence of external lesions, requested consultations, radiological findings, clinic of hospitalization, duration of hospitalization, surgical intervention status and mortality.

Descriptive statistics and Fisher’s exact test were used as statistical methods. The data were expressed as the percentage of mean (\pm) standard deviation and frequency distribution. The level of statistical significance was considered as $p < 0.05$.

RESULTS

Among 469 traffic accidents who presented to the ED, 118 (25.2%) were in the geriatric age group. These patients were aged between 65 and 118 with a mean age of 73.17 ± 7.50 . Of these cases, 44 (37.3%) were females and 74 (62.7%) were males.

When the type of the accident was analyzed, 66 of the patients were passengers (55.9%) and 52 (44.1%) of them were pedestrians. External injuries were found in 88 (74.6%) of the patients, while 30 (25.4%) were reported not to have any external lesions.

On the evaluation of the cases in terms of consultations, the most common request for consultation was found to be made to Neurosurgery clinic with 42 (35.6%) cases. (Table 1)

In 114 (96.6%) of the patients at least one type of radiological examination was needed. X-ray examination was obtained in 87 (73.7%), ultrasound imaging in 77 (65.2%) and computed tomography examination in 82 (69.5) of the patients. Radiologic pathologies were present in 59 (50%) of these cases. (Table 2)

Thirty-two (27.1%) of the patients were hospitalized for the treatment. When the hospitalized cases were analyzed, the mean duration of hospitalization was found as 10.7 ± 10.8 days (min:2; max:58). These cases were admitted most commonly to the orthopedics clinic (Table 3).

Seventeen of the patients underwent a surgical intervention, while no surgical intervention was needed in 101

Table 1— Distribution of Consultations Requested for the Patients

Department	n	%
Neurosurgery	42	35.6
Orthopedics	34	28.9
General Surgery	21	17.8
Thoracic Surgery	20	16.9
Otorhinolaryngology	10	8.5
Urology	7	5.9
Ophthalmology	4	3.4
Cardiology	3	2.5
Plastic and Reconstructive Surgery	1	0.8
None	48	40.7
Total	118	100

**Table 2—** Radiological Pathologies of the Patients

Radiologic Pathology	n	% (n=118)
Bone pathology	49	41.5
Intracranial pathology	13	11.0
Visceral pathology	12	10.2
Total	74	62.7

patients. Two of the cases were depicted as death on arrival (doa), while 5 cases died in the course of diagnosis and treatment. Mortality was significantly higher among male patients ($p<0.0.5$). Six of the cases were referred to another center for the completion of their treatments.

DISCUSSION

Ageing of the societies leads to an increase in the frequency of elderly patients receiving health care services. Rates of all admissions to EDs are expected to rise up to 25% by 2050 compared to the current rate of 15% in the geriatric age group. On evaluation of the statistical data, direct effects of ageing of the society on the emergency health care services are expected to increase (12).

Traffic accidents are the incidents in which one or more vehicles moving or standing on highways or people are involved, resulting in death, injury and pecuniary loss (13). Main causes of these accidents include accumulation of a large portion of transportation on the highways, insufficient infrastructure of the highways, insufficiencies in traffic management, audits and implementations and violations of the rules by the drivers and pedestrians (14). The first known accident in the history occurred in England in 1896. In this incident, a 44 year-old woman was reported to be hit by a car with a velocity estimated as 4 km/h and she died as the result of this accident (15). After this first event, traffic accidents have occurred with an increasing frequency during the last century.

In a study by Bilgin et al. (7), investigating the geriatric age group presented to the ED, 28.39 % of the cases were

Table 3— Distribution of the Patients According to Clinics of Hospitalization

Clinic	n	% (n=118)
Orthopedics	16	13.6
Neurosurgery	12	10.1
General Surgery	2	1.7
Thoracic Surgery	2	1.7
Total	32	27.1

reported to be due to the traffic accidents, while this rate was 46.4% in a similar study by Kandış et al. (8). In the study, 25.2% of the traffic accident cases presented to the ED were in the geriatric age group.

In this study, 74 (62.7%) of the patients were males. In the study by Kandış et al (8), the rate of the male patients was reported to be 66.4%. Likewise, according to the traffic statistics in Turkey, 28.1% of the injured were females while 71.9% were males. (16). The results of our study seems to be consistent with the literature. This might be explained by men taking more active places in the social life compared to women nowadays.

In the studies investigating the traffic accidents among elderly people, different results were found in terms of the type of the accidents. Özdoğan et al. reported that 10% of the victims of the accidents were passengers while remaining were pedestrians (9). Kandış et al. reported that 92.4% of the victims were passengers (8). However, in the present study, the majority (55.1%) of cases were injured passengers. The rate of injured passengers was higher than elderly pedestrians, which might be explained by our hospital's being one of the closest health centers to the Ankara highway.

External injuries were found in 87 (73.8%) of the cases, while 31 (26.2%) patients did not have any injuries. Five of 31 patients without any lesions needed hospitalization between 2 to 12 days. Of the hospitalized patients, 1 was admitted to the intensive care unit and one patient died during the treatment course. This suggests that examinations and further medical investigations should be considered in the geriatric age group even in the absence of any overt external lesion.

Of the cases in ED, 69 (58.5%) were consulted to one or more clinics. Radiological examinations were needed in 113 (95.8%) patients. Radiological pathology was found in 58 (49.1%) of the cases . Physical and metabolic changes in the elderly decrease the ability to avoid a trauma. Likewise metabolic and endocrine responses emerging following a trauma differ in the elderly compared to the young and adults (4,8,17). Therefore, a multidisciplinary approach should be developed in the evaluation of elderly people, and a more sensitive attitude should be adopted in consultation and radiological examination in this age group.

Thirty-two (27.1%) of the patients were hospitalized. When the hospitalized patients were examined, the mean duration of hospitalization was found to be 10.8 days. The conducted studies reveal that the number of elderly people who were admitted to a hospital is higher than the young people. In addition, the duration of hospitalization is longer, because the immune system response against trauma is weak-



er in the elderly, and healing of the wounds is prolonged, the secondary infections are incorporated to the clinical picture as well as the conditions including imbalances of fluid and electrolytes which might be mortal, metabolic acidosis, septicemia, renal failure, pulmonary embolism and deep-vein thrombosis (18,19). In our study, 16 (13.6%) of the hospitalized patients were followed up by orthopedics clinics, 14 (11.8%) by neurosurgery clinics and 2 (1.7%) cases by general surgery and thoracic surgery units. Similar results were obtained in the studies examining the emergent geriatric traumas (7).

Traffic accidents are among the most important causes of deaths both in our country and worldwide (13). Regardless of the severity or mechanism of the trauma, mortality increases among the people aged over 50, and the mortality rate increases as the age increases (11). In several previous studies conducted in our country, the rates of mortality due to trauma differed between 3.6 and 23.7% (7-9).

In our study, 2 (1.7%) of the 7 (5.9%) cases who were confirmed as exitus were noted to die on arrival. In a study by Montazari investigating the deaths due to traffic accidents in Ireland, 57% of the cases were reported to die before arrival to the hospital (20). In our country, accident victims are lost most frequently at the scene of the accident due to lack of information and experience concerning first aid and transportation techniques (21).

Six (5.1%) of the cases had been referred to another health care center for completion of their treatment. On reevaluation, it was ascertained that these patients had been referred due to conditions requiring thoracic surgery. This was attributed to lack of inpatient thoracic surgery services in the health care center at the time of the study.

In conclusion, traffic accidents are more important in the geriatric age group, since the ability to deal with a trauma is weaker in this population. It is important to take this fact into consideration in the processes of diagnosis and treatment following the traffic accidents. In addition, because of the conditions related to aging including senility, imperception, decreased sensory functions such as hearing and vision, decreased reflexes and impairment of balance and motion coordination, elderly specific protective policies should be developed for minimal affection in this population.

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