Research Article (Araştırma Makalesi)

The Impact of Coronavirus-19 Lockdowns on The Number of Cranial and Spinal Trauma Cases in Geriatric Patients

Koronavirüs-19 Pandemi Dönemi Kısıtlamalarının Geriatrik Hasta Grubunda Kafa ve Spinal Travma Sayıları Üzerine Etkisi

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Özet

Amaç: Osteoporoz ve sedatif yaşam nedeniyle geriatrik hastalar travma sonrası yaralanmaya daha açıktırlar. Özellikle düşme sonrası kafa travması ve spinal kemik kırıkları oluşmaktadır. Koronavirüs-19 (Covid-19) pandemisi döneminde ülkemizde alınan önlemlerden ilki 65 yaş ve üzeri sokağa çıkma kısıtlaması olmuştur. Bu çalışmanın amacı sokağa çıkma kısıtlaması olan 21 mart-3 haziran 2020 tarihleri arasında evlerinde kalmak zorunda olan 65 yaş ve üzeri yaş grubunda bir önceki yıla göre kafa travması ve spinal travma sayılarının değişimini değerlendirmektir.

Gereç ve Yöntemler: Kafa ve omurga travması nedeniyle şehrimizdeki iki travma merkezi acil servisine ve beyin cerrahisi kliniğine 21 Mart-3 haziran 2020 ve 21 Mart-3 haziran 2019 tarihleri arası başvuran 65 yaş ve üzeri hastalar çalışmaya dahil edildi. Hastalar yaş cinsiyet travma tipi ve tedavi şekli olarak retrospektif olarak değerlendirildi.

Bulgular: Çalışmamızda 21 Mart–3 Haziran 2019 tarihleri arasında 95 hasta hastaneye başvururken 21 Mart–3 Haziran 2020 tarihleri arasında 12 hasta hastaneye başvurmuştu ($p<0.001$). 2019 yılının aynı döneminde hastaneye başvuran toplam 83 hastanın 4'ü erkek 40'ı ise kadın hasta iken 2020 yılında başvuran 12 hastanın 4'ü erkek iken 8'i kadın hastaydı ($p=0.232$). 2019 yılında başvuran hastaların 37'si izole kranial travma, 27'si izole spinal travma ve 19'u ise spinal+ortopedik travma iken; 2020 yılında başvuran 12 hastanın 3'ü izole kranial travma, 6'sı izole spinal travma ve 3'ü ise spinal+ortopedik travma şeklindeydi ($p=0.33$). 2019 yılında ve kısıtlamaların olduğu dönemlerdeki geriatrik yaralanmaların en önemli sebebi düşmeydi.

Sonuç: Çalışmamızda gördüğümüz üzere travma en çok ev dışında meydana gelmektedir. Bu sebeple bu yaş grubu popülasyonunun ev dışı travmaya maruziyetinin sebepleri araştırılmalı ve ona göre önlemler alınarak travmayı azaltacak çalışmalar yapılmalıdır.

Anahtar kelimeler: Covid-19, Geriatri, Pandemi, Travma

Abstract

Objective: Geriatric patients are more prone to traumatic injuries, particularly cranial traumas and spinal fractures resulting from falls, due to osteoporosis and sedentary lifestyles. As a primary measure against the Coronavirus-19 (Covid-19) pandemic, Turkey put into effect a lockdown for people aged 65 and above. This study aimed to compare the change in the number of cranial and spinal trauma cases in the age group of 65 and above who were placed under lockdown between 21st March and 3rd June 2020 with the number in the previous year.

Materials and Methods: The study included patients aged 65 and above who presented to the emergency departments and neurosurgery clinics of two trauma centers in our city with cranial and spinal traumas between 21st March and 3rd June in 2019 and 2020. The patients were retrospectively categorized in terms of age, gender, type of trauma and treatment.

Results: In total, 83 patients presented to the hospital between 21st March and 3rd June 2019 while only 12 patients presented between 21st March and 3rd June 2020 ($p<0.001$). Of the 83 patients hospitalised in 2019, 43 were male and 40 were female, and of the 12 patients admitted in 2020, 4 were male and 8 were female ($p=0.232$). In 2019, 37 of the patients presented with isolated cranial trauma, 27 with isolated spinal trauma and 19 with spinal+orthopaedic trauma. In 2020, 3 patients presented with isolated cranial trauma, 6 with isolated spinal trauma and 3 with spinal+orthopaedic trauma ($p=0.33$). Falls were the most common cause of geriatric injuries in 2019 and during the lockdown period.

Conclusion: Our study reported that trauma was most likely to occur outside the home. Therefore, further research should be conducted to identify the causes of trauma outside the home for this age group and measures need to be taken accordingly to the reduce occurrence of such traumas.

Keywords: Covid-19, Geriatrics, Pandemic, Trauma

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INTRODUCTION

The geriatric population (aged 65 and above) has experienced and increase in recent years owing to the developments in healthcare (1). The health services required by the growing elderly population have also become extensively varied (2). As the geriatric population has a higher propensity towards injury, its increase further leads to amplified rates of traumatic injuries among older adults (3). Hence, this patient population requires closer follow-ups in terms of healthcare than the younger patient population. With the current advances in medicine, the life expectancy of elderly patients has increased along with the need for an active and functionally independent life (4,5).

Geriatric patients with trauma have significantly higher mortality and worse functional outcomes following injuries. Falls are a leading cause of traumatic injuries in the elderly, especially in developed countries (6). Compared to the younger population, blunt trauma is more common in elderly patients, with blunt cranial trauma being one of the primary causes of mortality for this age group (7). In elderly patients, mortality after post traumatic brain injury is directly proportional to age (especially in the age group of 65 and above) (8). In these patients, subdural haemorrhage, contusion and subarachnoid haemorrhage are more commonly observed (9,10). Being active or inactive in terms of mobility also affects the propensity towards trauma in geriatric individuals.

Severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) has led to a worldwide pandemic since its first detection in Wuhan, China in December 2019 (11,12). Although no country's healthcare system was prepared to cope with a crisis of such magnitude, each country tried to contain the Covid-19 pandemic by following their specific guidelines (13) and taking various measures to increase the capacity of their healthcare services in preventing the spread of the pandemic (14).

The first protection against the Covid-19 pandemic taken in Turkey was a lockdown for people aged 65 and above. In this study, we aimed to compare the change in the number of cranial and spinal trauma cases in this age group during the lockdown between 21st March and 3rd June 2020 with that the number in the previous year.

MATERIALS AND METHODS

This study compared the number of patients aged 65 and above who were admitted to the emergency departments and neurosurgery clinics of Kahramanmaras Sutcu Imam University and Kahramanmaras Necip Fazil City Hospital with cranial and spinal traumas between 21st March and 3rd June 2020 and between 21st March and 3rd June 2019 (**Figure 1**). The patient data were obtained from patients' discharge reports and diagnosis codes recorded in the electronic system. This study was approved by clinical research ethics committee of Kahramanmaras Sutcu Imam University School of Medicine (date: 27.01.2021-decision no: 06).

Statistical Analysis

Statistical Package for Social Sciences (SPSS) 20.0 (IBM) was used for statistical evaluation. For the comparison among independent groups, the Kolmogorov–Smirnov test was used to evaluate the conformity of numerical data to the normal distribution. The student t test or Mann–Whitney U test was used depending on the normality of distribution of the numerical data, analysis of variance or Kruskal–Wallis test was used depending on the normality of distribution in the comparison of the subgroups and Chi–square test or Fischer's exact test was used in the evaluation of categorical data. The data analysed by variance analysis was evaluated using the Post Hoc Tukey Honest Significant Difference test. Numerical values were expressed in mean ± standard deviation (minimum–maximum values) or median (25%–75% value) depending on the normality of distribution; categorical values were expressed in number-percentage (n%).

RESULTS

Of the 95 patients who met the study criteria, 83 were admitted to the hospital between 21st March and 3rd June 2019 while 12 of them were admitted to the hospital between 21st March and 3rd June 2020 (p <0.001) (**Table 1**).

Of the 83 patients who were hospitalised in the corresponding period of 2019, 43 were male and 40 were female, and of the 12 patients admitted in 2020, 4 were male and 8 were female (p=0.232). In 2019, 37 of the patients suffered from isolated cranial trauma, 27 from isolated spinal trauma and 19 from spinal+orthopaedic trauma. Of the 12 patients admitted in 2020, 3 presented with isolated cranial trauma, 6 with isolated spinal trauma and 3 with spinal+orthopaedic trauma (p=0.33) (Table 2). Falls were the most common cause of geriatric injuries in 2019 and during the lockdown period in 2020. Other demographic distributions are given in **Table 2**.

DISCUSSION

As in the United States, the number of geriatric patients (>65 years) is increasing in Turkey (15,16), which has led to an increase in the number of geriatric injuries (15). Older age causes loss of muscle mass, and consequently, reduced muscle strength and activity (16).

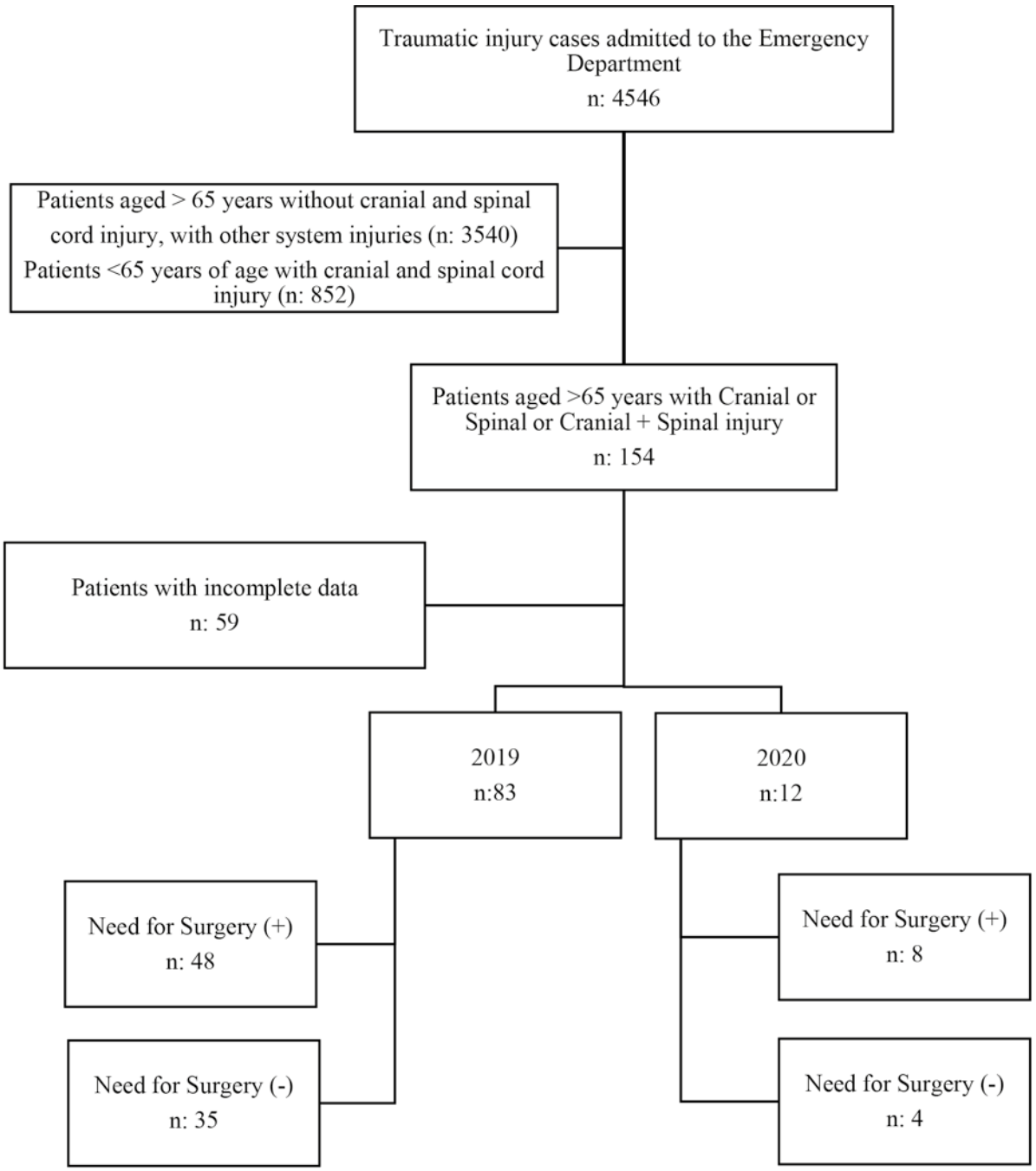

Figure 1. Flowchart of the study design

Ageing also leads to declined mental activity, decreased sensory functions (vision and hearing), perception disorders, movement deficits and reduced reflexes (17). The rate of hospital emergencies concerning the geriatric patient population has reached 25% in 2020 (17).

Previous studies have reported motor vehicle accidents and falls as the most common reasons for geriatric trauma cases (18–20), and hence, serious injuries due to falls are more critical in the elderly population. In tandem with the existing literature, our study also showed falls to be the most common cause of trauma in geriatric patients even during the absence of lockdowns prior to the pandemic.

Most falls occur due to certain predisposing factors such as age, gender, extremity weakness, a previous history of falling, balance problems, stroke sequelae and multiple drug use (21,22). Advancing age gradually causes declined mobility, increased co-morbidities and worsening motor skills in geriatric patients; therefore, increasing the frequency of trauma. The literature reports that the frequency of falls increases with age and are more common in women than in men, making the female gender a risk factor for falls (21–24). However, geriatric trauma studies conducted in Turkey reported the frequency of falls to be higher in males (19,25). Our study found a significant reduction in traumatic injuries in patients aged

Table 1. Demographic data of all patients (gender, aetiology, type of injury, need for surgery, type of surgery, need for hospitalisation, treatment, year of admission)

Parameter	Count (n) and Percent (%)
Gender	
Male	47 (49.5%)
Female	48 (50.5%)
Aetiology	
Battery	4 (4.2%)
Fall	79 (83.2%)
Traffic accident	12 (12.6%)
Type of Injury	
Isolated Cranial	40 (42.1%)
Isolated Spinal	33 (34.7%)
Spinal+Orthopaedic	22 (23.2%)
Need for Surgery	
Yes	56 (58.9%)
No	39 (41.1%)
Type of Surgery	
Burr Hole	14 (14.7%)
Craniotomy	5 (5.3%)
PSE	7 (7.4%)
Vertebroplasty	30 (31.6%)
None	39 (41.1%)
Need for Hospitalisation	
Yes	83 (87.4%)
No	12 (12.6%)
Treatment (Hospitalised Patients)	
Medical treatment	14 (16.9%)
Neurological follow-up	13 (15.7%)
Surgical	56 (67.4%)
Year of Admission	
2019	83 (87.4%)
2020	12 (12.6%)

PSE: Posterior Segmental Instrumentation

65 and above during the lockdown imposed during the Covid-19 pandemic. All traumatic injuries that occurred during the lockdown were caused by falling. While the majority of patients aged 65 and above, who sustained traumatic injuries before the pandemic, were male, an increase in the proportion of female geriatric patients was seen during the pandemic lockdowns (67%). This is probably due to the male population in Turkey spending more time outdoors before the lockdowns.

Studies have reported that falls most commonly cause cranial and extremity injuries (6,23,25,26). Our study found that most of the admissions to our clinic were cases of cranial trauma (44.5%), followed by isolated spinal trauma cases (32.5%) in the pre-pandemic period. Isolated extremity fractures are also commonly observed after falls (6,23,27). During the lockdown period, all the presenting patients sustained traumas due to falling, but contrary to the literature, our study found that the most common type of trauma caused by falls was isolated vertebral fracture (50%).

Table 2. Comparison between the groups (number of patients, gender, age, aetiology, type of injury, hospitalisation, length of hospital stay, need for surgery, treatment and mortality)

Parameter	Groups		*p* value
	Group 1 (2019)	Group 2 (2020)	
Number of Patients (n%)	83 (87.4%)	12 (12.6%)	<0.001*ƒ
Gender (n%)			
Male	43	4	0.232
Female	40	8	
Age (years) [mean ± SD (min–max values)]	76.92±7.73 (65–93)	78.58±7.61 (69–90)	0.449
Aetiology (n%)			
Battery	4	0	0.253
Fall	67	12	
Traffic accident	12	0	
Type of Injury (n%)			
Isolated Cranial	37	3	0.330
Isolated Spinal	27	6	
Spinal+Orthopaedic	19	3	
Hospitalisation (n%)			
Yes	71	12	0.177
No	12	0	
Length of Hospital Stay (days) [mean ± SD (min–max values)]	4.71±3.80 (0–18)	6±3.95 (2–12)	0.309
Need for Surgery			
Yes	48	8	0.756
No	35	4	
Treatment (n%)			
Medical treatment	11	3	0.600
Neurological follow-up	12	1	
Surgical	48	8	
Mortality (n%)	0	0	

*p<0.05

ƒ : According to the paired samples t test

CONCLUSION

Mortality and morbidity due to traumatic injuries are emerging as serious health complications in the growing geriatric population. During the pandemic, this age group had to stay at home due to the imposed lockdowns, and a significant reduction in the trauma rates in the geriatric population was observed. As reported in this study, trauma is most commonly observed to occur outside the home. Therefore, further research needs to be conducted to identify the causes of trauma outside the home for this age group and corresponding measures need to be taken to reduce such trauma cases.

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Conflict of Interest: The authors have no conflicts of interest to declare.

Ethical Approval: This study was approved by clinical research ethics committee of Kahramanmaras Sutcu Imam University School of Medicine (date: 27.01.2021-decision no: 06).

Author contributions: All authors contributed equally to the article.

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