



Comparison of Fractures Seen In Elderly Before And During Pandemic

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ABSTRACT

Aim: The aim of this study is to compare the fractures seen before and during the pandemic in individuals over the age of 65.

Method: The universe of this retrospective cohort Study consists of elderly patients with a fracture diagnosis between 01.09.2018-30.08.2021 at University Hospital.

Results: In the pre-pandemic periods, the total number of elderly patients diagnosed with fractures is 509. 57.0% of the patients are women. The average age was founded as 76.7± 8.2 (65 - 106).The most common type of accidents that cause fractures with 85% are low energy trauma injuries. 70.9% of the elderly admitted with fractures underwent surgical intervention. The total number of patients diagnosed with fractures is 736 during the pandemic period. 53.3% are women. The average age is 76.1± 8.2 (65-105).The most common fractures observed in patients are femur fractures. 42.7% of this rate is significantly lower than before the pandemic (p=0.002). The most common type of accidents caused fractures significantly higher rate (89.2%) are low energy trauma injuries (p=0.027). 63.9% of fractures seen during the pandemic period underwent surgical intervention. The surgical intervention rate was significantly lower than before the pandemic (p=0.010).

Conclusion: When the data obtained in this study are evaluated, it appears that the fractures occurred during the pandemic period have increased numerically compared to the pre-pandemic period.

Keywords: Covid-19, elderly, fracture, pandemic

Pandemi Öncesi ve Pandemi Döneminde Yaşlılarda Görülen Kırıkların Karşılaştırılması

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Öz

Amaç: Bu çalışmanın amacı, 65 yaş üzeri yaşlı bireylerde pandemi öncesi ve pandemi döneminde görülen kırıkların karşılaştırılmasıdır.

Yöntem: Retrospektif kohort tipte olan bu çalışmanın evreni, 01.09.2018-30.08.2021 tarihleri arasında Üniversite Hastanesinde kırık tanısı almış yaşlı hastalardan oluşmaktadır.

Bulgular: Pandemi öncesi dönemde kırığı olan yaşlı hastaların toplam sayısı 509'dur. Hastaların %57.0'si kadındır. Yaş ortalaması 76.7± 8.2 (65 - 106) olarak bulundu. Kırıklara neden olan en yaygın kaza türü %85 ile düşük enerjili travma yaralanmalarıdır. Kırık ile başvuran yaşlıların %70.9'una cerrahi girişim uygulanmıştır. Pandemi döneminde kırık teşhisi konulan toplam hasta sayısı 736'dır. Kadınların oranı %53.3'tür. Yaş ortalaması 76.1± 8,2 (65-105)'dir. Hastalarda en sık %42.7 ile femur kırıkları görülmektedir; bu oran pandemi öncesinden anlamlı olarak düşüktür (p=0.002). Kırıklara neden olan en yaygın kaza türü anlamlı olarak daha yüksek oranda (%89.2) düşük enerjili travma yaralanmalarıdır (p=0,027). Pandemi döneminde görülen kırıkların %63.9'una cerrahi müdahale yapılmıştır. Pandemi öncesine göre cerrahi müdahale oranı anlamlı olarak düşüktür (p=0,010).

Sonuç: Bu çalışmada elde edilen veriler değerlendirildiğinde, pandemi döneminde meydana gelen kırıkların pandemi öncesine göre sayısal olarak arttığı görülmektedir.

Anahtar sözcükler: Covid-19, yaşlı, kırık, pandemi

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Introduction

In December 2019, a new type of coronavirus was detected in Wuhan, China when unusual cases of pneumonia began to appear [1]. Covid 19, which causes outbreaks all over the world with a zoonotic virus, has spread globally and the World Health Organization data, the Covid 19 virus has killed 6.353.692 people in the world so far [2-5]. According to the data of the Ministry of Health in Turkey, 99.088 people have lost their lives so far [6]. Due to the lack of any vaccine or drugs that treat the disease as a preventive against Covid 19 at the beginning of the pandemic, measures such as isolation, social distancing and quarantine have been the only way to control the disease [7]. On the other hand, developments in the field of health and technology in our country, as well as in the whole world have led to an increase in the average of life expectancy and an increase in the elderly population [8]. Pandemic application of social life isolation to the elderly population for a longer period of time during the period, in closed environments with prolonged stay, deprivation of the outdoor environment and exercises, as well as sunlight conditions such as decreased contact have increased the risk of osteoporosis in the elderly population [9,10]. Also, people couldn't go to the hospital and use health services, because they were scared to get infected with Covid-19, due to these reasons, osteoporosis have led to a delay in the treatment of patients and in the progressions of osteoporosis [11]. As a result of exercising indoors due to restrictions, the elderly are not used to this environment at home may increase the risk of accidents [12] and may increase domestic accidents in an indoor environment with less movement. With the addition of the risk of osteoporosis, it can also lead to an increase in fractures in the elderly. The aim of this study was to investigate the effects of pandemic on the quality of life and to show demographic characteristics of elderly (65 years and over) patients diagnosed with fractures before and during the pandemic and to compare their characteristics associated with fracture.

Materials and Methods

Sivas Cumhuriyet University, the universe of descriptive, Retrospective Cohort type of research. The elderly who were diagnosed with fractures in the Application and Research Hospital between 01.09.2018 and 30.08.2021 patients were included in the study (n=1245). All elderly patients, with the age of 65 and over, diagnosed with fracture were included in the study. Permission was obtained from Sivas Cumhuriyet University Faculty of Medicine ethics Committee, dated 20.10.2021 numbered 2021-10/43. The independent variable used before the pandemic (01.09.2018-29.02.2020) and during the pandemic (01.03.2020-30.08.2021) is an 18-month period. Dependent variables are the demographic characteristics of the patients (age and gender), for example: age (65-69, 70-74, 75-79, 80-84 and 85 and over), place of fracture

(femur, forearm, cruris, humerus, rib, spine and other), hospitalization status, whether it has been operated on, whether there has been a death, and the type of accident (low-energy and high-energy). Other fractures in the group are fractures of the clavicle, scapula, hand, pelvis, patella, pathological fractures and foot fractures. Low energy traumas cover simple accidents with household accidents and low-distance falls, as well as what is left out of it the types of accidents have been evaluated as high-energy accidents. The data were collected by SPSS-22 (SPSS INC., Chicago, IL, USA) and analyzed with the statistical program. By measurement the specified data are the mean and standard deviation (the smallest-the highest values), the data specified by the census is presented descriptively with number and percentage distribution. The frequency of the pandemic period, before and after the pandemic, the data was analyzed using the Chi-square test, the averages were analyzed using the t-test; $p < 0.05$ was considered statistically significant.

Results

In this study, the total number of elderly patients diagnosed with fractures in the pre- pandemic period was 509. Multiple fractures were observed in 11 elderly people. 57.6% of the patients are women (Table 1). The mean age was 76.7 ± 8.2 years (65-106).

Femoral fractures are most common in patients with 51.4%; the fractures of the forearm cruris, humerus, rib, spine and other fractures, respectively, follow. Fractures with the most common type of accident caused by low-energy with 85.0% (household accidents and falls from a low distance, simple accidents) are accidents. Surgical intervention was performed on 70.9% of the elderly who presented with a fracture (Table 2). The median length of stay of the hospitalized patients was 7 (min=1- max=29) days. Mortality from fracture it is 1% and all of the deceased are cases of femoral fracture. During the pandemic period, the total number of patients diagnosed with fractures was 736, an increase of 44.5%. 20 multi-elderly fractures were observed; there was no significant difference compared to before the pandemic ($p=0.535$). Similar to before the pandemic, 53.3% of the patients were female ($p=0.159$). The mean age was 76.1 ± 8.2 years (range, 65-105) and it was broken when the distribution of cases according to age groups is evaluated; in both periods, the most common it is worth nothing that it is observed in the December of 65-69 years. 25.3% of fractures in the pre-pandemic period, during the pandemic period, 26.8% of them are in the 65-69 age range. Decadal age groups with no statistically significant difference was found when compared ($p=0.694$) (Table 1). Femoral fractures are most common in patients with 42.7%. This ratio is significant before the pandemic and it is as low as ($p=0.002$) (Table 2). Other types of fractures are, respectively, the humerus, spine, forearm, cruris and other fractures have been found as well. The type of

accident that most often causes fractures is significantly higher than before the pandemic as a result, they are low-energy accidents with a higher rate (89.2%) (p=0.027). During the pandemic period, surgical intervention was applied to 63.9% of the fractures seen; the surgical intervention rate in pandemic it is significantly lower than before (p=0.010)

(Table 2). The median length of the hospitalized patients was 6 (min=1- max=28). Fracture-related mortality rate (0.7%) was significantly higher than before the pandemic and it is no different (p=0.556); four of these deaths are due to a fracture of the femur and one is due to a neck fracture.

Table 1. Age and gender distribution of cases before and during the pandemic

	Before the pandemic (n=509)		The pandemic period (n=736)		p
	Number	%	Number	%	
Gender					
Man	216	42.4	342	46.7	0.159
Woman	293	57.6	394	53.3	
Age Group					
65-69	129	25.3	197	26.8	0.694
70-74	90	17.7	157	21.3	
75-79	112	22.0	140	19.0	
80-84	67	13.2	100	13.6	
85 and over	111	21.8	142	19.3	

Table 2. Fracture-related characteristics of cases before and during the pandemic

	Before the pandemic (n=509)		The pandemic period (n=736)		p
	Number	%	Number	%	
Type of the accident					
Low energy	433	85.0	657	89.2	0.027
High energy	76	15.0	79	10.8	
Fracture Location					
Femur	262	51.5	314	42.7	0.002
Forearm	49	9.6	51	6.9	
Cruris	46	9.0	47	6.4	
Humerus	36	7.1	60	8.2	
Rib	33	6.5	102	13.9	
Spine	29	5.7	54	7.3	
Other	54	10.6	108	14.6	
Multiple fractures					
yes	11	2.1	20	2.7	0.535
No	498	97.9	716	97.3	
Surgical intervention					
yes	361	70.9	471	63.9	0.010
No	148	29.1	265	36.1	
Fracture-related death					
yes	5	1.1	5	0.7	0.556
No	504	98.9	731	99.3	

Discussion

In this study, we aimed to investigate the relationship between the pre-pandemic period and the pandemic in fractures seen in the elderly during the 18th month period were compared and compared during the pandemic period it was found that there was a 44.5% increase in the number of fractures. This numerical increase was observed in the period of the pandemic, over the age of 65 longer periods of social isolation in individuals and the implementation of quarantines, sunlight exposure inability to take advantage of them, inability to do their social activities, inability to go to medical institutions, most of them the fact that they have to do housework, live more sedentary than other age groups, get enough exercises may be associated with their inability to. The number of fracture cases observed in women in both periods is high (Table 1). The reason for this although it is believed that there is osteoporosis, there is a need for a more thorough study it is heard. Again, the maximum number of fractures in both periods is in the 65-69 age range (Table 1). This condition is caused by the fact that the 65-69 age group is more active than other age groups is being considered. During the pandemic period, there was an increase in low-energy accidents, including domestic accidents is seen. The reasons for this situation are the closure of vehicle traffic and the social isolation applied it is possible to say that it is among. The number of surgical interventions decreased again during the pandemic period. In this period, low-energy accidents are more common instead of high-energy accidents it is considered to be related. In both periods, there was no statistically significant difference in the incidence of multiple fractures, hospitalization times, and fracture-related deaths. In a study conducted in Germany, which is similar to this study, the first of the years 2019 and 2020 femoral fractures at the age of six months are compared. In the number of patients diagnosed with fractures during the pandemic period there has been a decrease, mainly due to the closure of vehicle traffic, social isolation and quarantine it has been reported that it may also be related to comorbid diseases [13]. In this study, the compared time is shorter and only femoral fractures are examined, but also in our study the femoral fracture rate was also found to be lower in the pandemic. Isolation, especially applied to the elderly, home it may have reduced the likelihood of a high-energy accident such as an out-of-traffic accident. A made in Poland in the study, in the population over the age of 50, including the elderly, there were about three periods of the pandemic with the pre-pandemic period the monthly baseline period was compared for osteoporotic fractures. It has been reported that there is a decrease in arm, forearm and femur fractures during the pandemic period [14]. This includes the initial period of the pandemic as in the study, arm, forearm and femoral fractures decreased

proportionally in our study. A study conducted in Spain found that during the pandemic, there was a curfew for the first 20 more days compared with the previous 3 similar periods, and in the number of fractures that occurred due to trauma it has been shown that there is a significant decrease, there is no difference in the number of fractures that occur for the osteoporotic reason [15]. Similar to other studies, a short period review is used not only for the elderly, but also for the median age although he evaluated a group of 55, similarly, an out-of-home work accident, such as a traffic accident it has been stated that the reduction of traumas may play a role. Similarly to our study, age and there were no differences between periods in terms of gender. Decimation was not observed between periods. A study conducted in Peru, a Latin American country, also found that the onset of the pandemic occurred within a two-month period the same period before the pandemic was compared and the applicants to the orthopedics clinic during the pandemic period were a decrease in the number of cases has been reported [16]. In our study, there was a numerical increase in elderly fractures however, the examined period (18-month period) was longer than all of the specified studies it covers the period. In studies conducted in Turkey, generally shorter periods were compared. In these studies, regional fractures were also examined [17-19]. A university hospital in a study in which the applicant's cases were examined, the period between the pre-pandemic and the pandemic was 6 months the radius distal- end fractures seen were compared and it was reported that there was a decrease during the pandemic period [17]. 6- Month femoral fracture cases performed in the same institution and before the pandemic and during the pandemic period in the study in which it was evaluated, it was determined that there was no decrease in femoral fractures during the pandemic period [18]. Comparison of femoral fractures in the elderly, study of data from a university hospital in the study, similarly to our study, mortality rates before and during the pandemic were there was no significant difference [19]. In contrast to the studies shown above, this study took a longer process and was conducted at the age of 18 months the periods are compared. In the study, the number of patients diagnosed with fractures seen during the pandemic period was the increase seen is caused by household accidents and elderly people are especially socially isolated it can be thought that they were exposed to domestic accidents during this period. You can also obtain data from the records this leads to the fact that we have limited data on the causes of fractures. Therefore it has not been evaluated whether the falls are related to comorbid diseases. In terms of comorbid diseases, no numerical difference between the pre-pandemic period and the pandemic period in the related falls was also shown in some studies [13]. Nevertheless, comorbid diseases are caused by Covid-

19 in order to be able to show that it is triggered and causes falls and fractures, more extensive studies it may have to be done. Despite this limitation, the applicant for a three-year period in a university hospital the evaluation of all fractures in elderly individuals and the study of the effect of the pandemic period are the strengths of the research.

Conclusion

In this study, the fractures seen during the pandemic period increased compared to the pre-pandemic period. In particular, an increase in fractures caused by low-energy accidents has been observed. The home of the elderly in order to be protected from accidents and not to be harmed during periods of social isolation, quarantine the arrangements to be made will be able to prevent the increase in fracture cases. in individuals over the age of 65 in order to investigate and prevent the causes of the increase in fracture diagnoses more research is needed with a multidisciplinary approach.

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Author 1: planning the research, obtaining the necessary permissions, collecting the data, analyzing the data, performing the statistical tests, preparing the article

Author 2: planning the research, obtaining the necessary permissions, collecting the data, preparing the article

Author 3: planning the research, performing the statistical tests, preparing the article

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