How was Felt Van Earthquake by a Neighbor University Hospital?

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SUMMARY

Objectives

Natural disasters, which are defined as events causing great damage or loss of life, are events of natural origin unpreventable by human beings that occur in a short period of time and lead to loss of life and property. The aim of the study is to analyze which patient groups and problems at a university hospital after the earthquakes in Van.

Methods

For the purposes of this study, 169 patients who presented to our emergency room following the earthquakes that occurred on the 23rd of October, 2011 and the 9th of November, 2011 in Van and were treated as an outpatient or inpatient were enrolled. Patients were divided into two groups. Patient data including the clinical and demographic characteristics were analyzed.

Results

Among the 169 patients included in our study, 97 (57.4%) were male and 72 (42.6%) were female. The mean age was 26.95±16.44 years in Group 1 and 39.80±23.08 years in Group 2. In our study, the majority of the patients in Group 1 had orthopedic injuries, while internal problems were more common in Group 2. The need for intensive care was greater among the patients in Group 1 compared to Group 2 ($p<0.05$). The leading cause of death in Group 1 was multi-systemic trauma in 7 out of the 10 patients (70%) and internal problems in Group 2 with 5 out of 12 patients (41.5%).

Conclusions

Our country is in a geographical location where earthquakes are responsible for great losses of life and property. An efficient disaster relief plan may help to minimize the possible damage of earthquakes.

Key words: Disaster; university hospital; Van earthquake.

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Introduction

Natural disasters, which are defined as events causing great damage or loss of life, are events of natural origin unpreventable by human beings that occur in a short period of time and lead to loss of life and property.[1] Earthquakes are among the leading natural disasters that cause the greatest number of mortalities and disabilities both in our country and around the world.[2,3] The earthquakes that occurred in Van on the 23rd of October, 2011 and the 9th of November, 2011 measuring 7.2 and 5.6 on the Richter scale, respectively, caused a total of 644 fatalities and destroyed or severely damaged nearly 30,000 buildings in Van, Ercis and the surrounding provinces and townships.[4] Although earthquakes occur frequently in our country due to its location in an earthquake-prone zone, unplanned urbanization and structurally weak buildings as well as inadequate earthquake education and preparation still contribute to high rates of earthquake-related fatalities and disabilities.[5,6] Therefore, earthquake-associated data should be gathered, meticulously analyzed and published in order for the necessary measures against future earthquakes to be taken.

This study presents a retrospective analysis of the patients who presented to our emergency department after the earthquakes in Van. The aim of the study is to analyze which patient groups and problems can be expected at a university hospital after a natural disaster such as an earthquake.

Material and Method

For the purposes of this study, 169 patients who presented to our emergency department following the earthquakes that occurred on the previously mentioned dates in Van and were treated in an outpatient or inpatient status were enrolled. The type of study was a retrospective cross-sectional study. Patients were divided into two groups as patients who presented after the first earthquake on the 23rd of October, 2011 (Group 1, n=41) and those who presented after the second large earthquake on the 9th of November, 2011 (Group 2, n=128). Patient data including age, gender, reason for referral, diagnoses, subsequent clinical condition, need for blood transfusion, compartment syndrome, amputations, crush syndrome, surgeries, need for dialysis, need for intensive care, laboratory results, length of hospital stay, and the outcome were retrieved from the hospital data base and analyzed. Patients whose data in the file could not be verified or was inadequate were excluded from the study. Differences between Group 1 and Group 2 in terms of the assessed parameters were investigated. This study was approved by the local ethical committee (2013/180).

The statistical analysis was performed using the SPSS version 15.0 (SPSS Inc., Chicago, IL, USA) software. The normality of the data was tested using the Kolmogorov–Smirnov test. The results were expressed as mean±SD or number of patients. Categorical data were analyzed using the chi-square test. For the normally distributed continuous variables, the student's t test was used for statistical comparisons. Statistical significance was based on a p-value of <0.05.

Results

Among the 169 patients included in our study, 97 (57.4%) were male and 72 (42.6%) were female. The mean age was 26.95±16.44 years in Group 1 and 39.80±23.08 years in Group 2. The clinical and demographic characteristics of the patients are presented in Table 1. Among the 131 patients admitted to the hospital, 42 (32.1%) were in internal medicine, 18 (13.7%) were in orthopedics and traumatology, 16 (7.7%) were in the pediatrics and pediatric surgery departments, 11 (5.3%) were in neurosurgery, and 44 (33.5%) were in the other services. The length of the hospital stay was 10.85±9.85 days in Group 1 and 8.68±12.71 days in Group 2. Three out of the 5 patients (60%) who underwent fasciotomies had to receive hemodialysis due to acute renal failure. The mean age of the mortalities in Group 1 was 24±16.9, while the mean age among the mortalities in Group 2 was 26.6±29.7 years. The leading cause of death in Group 1 was multi-systemic trauma in 7 out of the 10 patients (70%) and internal problems in Group 2 with 5 out of 12 patients (41.5%).

Discussion

Within the last 25 years, natural disasters have caused over 3 million deaths and disabilities and affected the living standards of approximately 800 million people around the world.[7] Earthquakes are the most destructive kind of natural disasters in terms of loss of life and property.[8] Due to our country's high-risk location in an earthquake-prone zone, 100,000 people have lost their lives between the years 1908 and 1995. Furthermore, the Marmara earthquake on the 17th of August, 1999 caused 17,127 mortalities and 604 people were lost in the earthquake in Van in 2011.[6,9,10] The great number of structurally weak buildings and the inadequate disaster response and recovery framework lead to higher mortality rates after these earthquakes. The relatively lower number of fatalities in the earthquake in Van was due to the advantageous timing of the earthquake during daytime at a weekend when only few people were inside buildings.

In a study where the patients who had presented to the Uludag University hospital after the Marmara earthquake, 147 out of 330 of the wounded patients were admitted to the Orthopedics and Traumatology clinic, while the other patients were followed up by the general surgery, plastic surgery, and cardiothoracic surgery departments.[11] In an-

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