Acta Ortopédica Mexicana 2020; 34(4): Jul.-Ago. 215-221

Original article

doi: 10.35366/97554

The epidemiology of patients treated at a private hospital as a consequence of the September 19th 2017 earthquake in Mexico City

Epidemiología de los pacientes tratados en un hospital privado como consecuencia del terremoto del 19 de Septiembre de 2017 en la Ciudad de México

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ABSTRACT. Introduction: Natural disasters can happen anytime. There is no gold standard for emergency department triaging and setup during these kind of emergencies. On September 19th 2017, at 13:14:40, a 7.1 magnitude on the Richter scale earthquake hit Mexico City. Buildings, including hospitals, collapsed. Our hospital offered free medical attention to those affected by the earthquake. **Material and methods:** We reviewed the patient database for all patients who had been treated between September 19th and September 24th as a consequence of earthquake related injuries in both campuses. Age, gender, diagnosis, injured part, transportation method to hospital, triage color assigned in the emergency room, campus where attention was received, attention type, time spent in hospital, attention type. We calculated frequencies, medians, and standard deviation of lesions, triage code, and treatment in the emergency room. **Results:** After the September 19th 2017 earthquake in Mexico City, our hospital treated 184 patients, most were female, most patients were between 21 and 60 years of age, the most common diagnosis were lower extremity trauma (no fractures), lower limb fractures, psychiatric disorders, craneoencephalic trauma and other upper extremity trauma. Most patients received a green triage and were discharged from the emergency department. **Conclusion:** Epidemiology of patients treated at our hospital is consistent with epidemiology reported in the literature for earthquake casualties. There was an adequate adaption of the emergency department for the reception and

RESUMEN. Introducción: Los desastres naturales pueden ocurrir en cualquier momento. No existe un estándar de oro para el triaje y la configuración del Departamento de Urgencias durante este tipo de emergencias. El 19 de Septiembre de 2017, a las 13:14:40, un terremoto con magnitud 7.1 de la escala de Richter golpeó la Ciudad de México. Edificios, incluyendo hospitales, se derrumbaron. Nuestro hospital ofreció atención médica gratuita a los afectados por el terremoto. **Material y métodos:** Revisamos la base de datos de pacientes que habían sido tratados entre el 19 y 24 de Septiembre como consecuencia de lesiones relacionadas con el terremoto en ambos campus. Fueron registrados edad, sexo, diagnóstico, lado lesionado, método de transporte al hospital, color de triaje asignado en la sala de urgencias, campus donde se recibió atención, tipo de atención, tiempo pasado en el hospital. Calculamos frecuencias, medianas y desviación estándar de lesiones, código de triaje y tratamiento en urgencias. **Resultados:** Después del terremoto del 19 de Septiembre de 2017 en la Ciudad de México, nuestro hospital atendió a 184 pacientes, la mayoría eran mujeres, con una edad entre 21 y 60 años de edad, el diagnóstico más común fueron otros traumatismos en las extremidades inferiores (sin fracturas), fracturas de extremidades inferiores, trastornos psiquiátricos, trauma craneoencefálicos y otros traumatismos en las extremidades superiores. La mayoría de los pacientes recibieron un triaje verde y fueron dados de alta del departamento de emergencias. **Conclusión:** La epidemiología de los pacientes tratados en

Level of evidence: V

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Citar como: Arroyo-Berezowsky C, Abonce-Zenteno J. The epidemiology of patients treated at a private hospital as a consequence of the September 19th 2017 earthquake in Mexico City. Acta Ortop Mex. 2020; 34(4): 215-221. https://dx.doi.org/10.35366/97554

treatment of massive casualties. Patient records were mostly complete. We believe a standardized format designed specifically for these kinds of situations could be of great help in order to keep accurate patient records.

Keywords: Earthquake, Mexico City, triage, emergency, natural disasters.

nuestro hospital es consistente con la epidemiología reportada en la literatura por bajas causadas por terremotos. Hubo una adaptación adecuada del Servicio de Urgencias para la recepción y el tratamiento de las víctimas masivas. Los registros de los pacientes fueron, en su mayoría, completos. Creemos que un formato estandarizado diseñado específicamente para este tipo de situaciones podría ser de gran ayuda con el fin de mantener registros precisos del paciente.

Palabras clave: Terremoto, Ciudad de México, triaje, emergencia, desastres naturales.

Introduction

On September 19th 2017, at 13:14:40, there was a 7.1 magnitude on the Richter scale earthquake, with a depth of 38 km, with an epicenter located in 9km northeast of Chiautla de Tapia, Puebla, Mexico. The coordinates for the epicenter were latitude 18.3353º and longitude -98.6763º according to Mexico's National Sismologic Center.[1] It hit Mexico 32 years after an 8.0 magnitude earthquake did on the same date.

After the 1985 earthquake, Mexican civil protection protocols were implemented and have constantly been improved. The seismic siren is usually tested, and there are constant surprise simulation evacuations in local buildings, schools, government offices, and sometimes, they even happen nationwide.[2] There are also a few mobile applications connected to the National Seismic Center that alert people of earthquakes beforehand. Another earthquake graded 8.2 magnitude in the Richter scale had happened earlier that month, on September 7th. It caused damage to cities in Oaxaca a few days earlier, but it had happened on a more rural area.[3]

On this particular September 19th 2017, there had been a massive earthquake evacuation simulation a couple of hours before to commemorate the 1985 earthquake. At 13:14:40, however, the epicenter was really close to Mexico City and the seismic sirens did not sound until after the earthquake had started.[1]

Buildings, schools and some hospitals collapsed and suffered structural damage in Mexico City and there were approximately 331 reported deaths. Over the first few hours there was not a clear picture of the damage taken by the city, nor a national emergency plan. Traffic paralyzed the city and there were instructions to stay at home to allow traffic of emergency vehicles.

The ABC Medical Center is a private hospital located in Mexico City. It has two campus located at a distance of 14 km from each other. After news of several damaged hospitals near Campus Observatorio were reported, our hospital offered free medical attention through social networking to any person who had been affected by the seismic activity. A code red (mass patient reception) was initiated and the emergency department (ED) in both campus was prepared with triage stations and teams formed by medical and paramedical personnel ready to evaluate, provide initial and definitive treatment to patients.

Many patients from areas where buildings collapsed arrived at the hospital by their own means or transported in civilian transportation without previous medical or paramedical assessment or attention at the site. A lot of these patients had been rescued by family, friends or volunteers and not by specialized rescue personnel who were kept busy in collapsed schools and buildings.

There are few reports of the epidemiology of victims treated for lesions caused by earthquakes. However, it has been reported that over the first days and weeks, patients with wounds and lacerations, fractures, and crush syndromes present and could need surgical treatment.[3,4,5]

There is no gold standard as to how to effectively organize health systems to provide an adequate, effective and opportune medical attention when natural disasters strike.[4]

The ninth version of the ATLS manual establishes that preparation for trauma patients occurs in two different clinical scenarios: field and hospital. During the first phase it is critical that events are coordinated at receiving hospitals so that reception can be well organized. In the hospital phase, preparations need to be made to facilitate a quick and effective trauma patient resuscitation. According to ATLS manual, triage involves sorting patients based on the resources required for treatment and those available at the hospital facility. Other factors that affect triage and treatment priorities are the severity of injury, ability to survive, and available resources. Situations where triage is required can be categorized as multiple casualties and mass casualties.

Table 1: Number of patients for age group.

Age	n
0-10	13
11-20	15
21-30	32
31-40	35
41-50	34
51-60	29
61-70	12
71-80	8
81-90	4
> 90	2
Total	184

Table 2: Triage color designation by age group.

Age group	Triage				Grand total (N)
	Green (n)	Yellow (n)	Red (n)	Unknown (n)	
0-10	10	3			13
11-20	13	2			15
21-30	17	10	1	4	32
31-40	23	11	1		35
41-50	25	8	1		34
51-60	21	8			29
61-70	7	3	1	1	12
71-80	5	3			8
81-90	3	1			4
> 90	1	1			2
Grand total	125	50	4	5	184

Multiple casualties are those in which the number of patients and the severity if the injuries they sustained does not exceed the capability of the facility to provide care. Mass casualties are those where the number of patients and the severity of their injuries do exceed the capability of the facility and staff. In this second scenario, patients having the greatest chance of survival and requiring least expenditure of time, equipment, supplies, and personnel should be treated first.[6]

According to ATLS, patients should be assessed, and their treatment priorities should be established based on their injuries, vital signs and injury mechanisms. Vital functions must be assessed rapidly and efficiently. Initially, a rapid primary survey with simultaneous vital function resuscitation should be done.[6]

The objective of this study was to describe the epidemiology of patients treated at ABC Medical Center as a consequence of the September 19th, 2017 in Mexico City earthquake and analyze record keeping.

Methods

The investigation and bioethics committee approved this study with reference number ABC -8-15. We reviewed the patient database for all patients who had been treated between September 19th and September 24th as a consequence of earthquake related injuries in both campuses. Age, gender, diagnosis, injured part, transportation method to hospital, triage color assigned in the emergency department (ED), campus where attention was received, attention type, time spent in hospital, attention type. We calculated frequencies, medians, and standard deviation of lesions, triage code, and treatment in the ED.

Results

On September 19th, the ED in ABC Medical Center was transformed into a triage area. Administration personnel were outside ready to receive patients and identify them. A color code was used to help with triage: green were minor, non life-threatening lesions, yellow were patients with lesions that did not require immediate lifesaving interventions and red were lesions that needed lifesaving interventions.

The waiting room was adapted with gurneys and the portable X-ray was brought out. All personnel around the X-ray machine had adequate X-ray protection. This was established as initial contact area and treatment site for green triage patients. Inside the ER, cubicles were ready to receive yellow triaged patients and two shock cubicles had a full team each to treat red code patients.

In the waiting room, teams consisting on a nurse, an intern and a surgery or orthopedic trauma resident were formed. There were a few orthopedists staff members helping the teams and junior and senior emergency physicians were allocated to the ED area where yellow and red triaged patients would be treated.

There were 184 patients registered from September 19th to September 25th in the emergency department in both campuses: 112 (60.9%) patients were treated in Observatorio campus and 72 (39.1%) were treated in Santa Fe. Seven of them were treated with a condition not related to the earthquake. Most patients were female 123 (66.8%) and 61 (33.2%) were male. The average age of the patient population was 39.7 years. Age ranged from 3 months to 95 years. Median was 39.5 and standard deviation was 19.59 *(Table 1)*.

Regarding triage color assignation: most patients received a green triage category 125 (67.9%), 50 (27.17%) were classified as yellow triage, 4 (2.17%) as red and 5 (2.71%) had no registry of the color code assigned to them. Of the green triage, 85 (68%) patients were female and 40 (32%) were male. In the yellow triage 31 (62%) were female and 19 (38%) were male. All of the patients in the red group were female, and in the unclassified group 3 (60%) were female and 2 (40%) were male. All age distribution and triage groups can be observed in *Table 2*.

Diagnosis were divided by large groups that fit what was described in patient records including: asthma (0.54%), cardiovascular conditions (3.26%), compartment syndrome (0.54%), craneoencephalic trauma (8.69%), crush syndrome (1.63%), diabetes associated conditions (0.54%), foreign bodies (1.08%), gastrointestinal infections (1.08%), lower limb fractures (11.41%), lower limb wounds and lacerations (1.08%), lower respiratory tract infections (1.63%), metabolic disorders (1.08%), multiple body contusions (3.80%), non-traumatic abdominal conditions (1.08%), non-cardiac thoracic pain (2.17%), other lower extremity trauma (14.67%), other non-traumatic conditions (4.89%), other upper extremity trauma (8.69%), other wounds and lacerations (0.54%), polytrauma (0.54%), post-traumatic lower back pain (2.17%), pregnancy related conditions (4.89%), psychiatric disorder (9.78%), spinal trauma (3.26%), thoracic trauma (1.63%), upper limb fractures (6.52%), upper limb wounds and lacerations (1.08%), upper respiratory tract infections (1.63%). Distribution for group diagnosis can be found

in *Figure 1*. The most common diagnosis was other lower extremity trauma (no fractures) with 27 patients (14.67%), 21 patients with lower limb fractures (11.41%), 18 patients with psychiatric disorders (9.78%), and craneoencephalic trauma and other upper extremity trauma with 16 patients each group (8.69%). *Table 3* shows the group diagnosis related to triage color designation. *Table 4* shows the relation between diagnosis, sex and campus where patients were treated. There were ten ankle fractures, thirteen ankle sprains, eighteen anxiety crisis, four cervical sprains, three clavicle fractures, five distal radius fractures, three foot contusions, three hand contusions, three hypertensive crisis, four knee contusions, two leukemia patients, three lower limb contusions, two migraine episodes, fourteen mild craneoencephalic trauma, eight multiple body contusions, four non cardiac thoracic pain episodes, three post traumatic lower back pain allegations, three rhabdomyolisis cases, three pregnant patients and two preterm labor threats. The remaining 60 patients had a unique diagnosis. Forty patients had a secondary diagnosis. The important secondary diagnoses were: two acute kidney failure cases, two ankle fractures, four cervical sprains, two metatarsal fractures and two multiple body contusions.

There were 16 patients who arrived in an ambulance to the hospital. Three of them were coded red triage, ten of them yellow, and three were green. Of these 16 patients: five had lower limb fractures, four had non- traumatic conditions, three had a crush syndrome, one was a polytrauma patient, one had craneoencephalic trauma, one compartment syndrome, and one had multiple contusions. The remaining 168 patients had no data for the means of transportation. However, it can be assumed that they were taken by their own means, mostly by family members or other civilians. Forty patients had a second diagnosis.

The most commonly injured side was the right side with 48 patients (26%), 30 patients (16.30%) had an injured left side. There were three bilateral cases. There was information missing about side in 8 cases, one patient had a facial injury, and 94 (51%) injuries were not side related. Right-sided injuries included 11 lower limb fractures, one lower limb wound and laceration, 15 other lower extremity trauma, 8 other upper extremity trauma, 6 upper limb fractures and 2 upper limb wounds and lacerations. The rest of them were associated injuries considered secondary diagnosis. Left-sided injuries included: one compartment syndrome, two crush syndromes, one diabetes-associated conditions, 6 lower limb fractures, one lower limb wound and laceration, 10 other lower extremity trauma, 3 other upper extremity trauma and four upper limb fractures. The rest of the left extremity injuries were secondary diagnosis.

Of the 184 admitted to the ER from September 19th to September 25th, 146 (79.3%) were discharged home from the ER. Another 37 patients (20.1%) were admitted to the hospital. Some received surgical treatment, some were admitted to the intensive care unit (ICU), and some were hospitalized for observation. There was information about patient destination in one chart. Of the hospitalized patients, five patients were hospitalized for 1 day, 12 patients for 2 days, 4 patients for 3 days, 1 patient for five, six, seven, and eight, 13, 15, 52, and 57 days each. Three patients were hospitalized for 20 days.

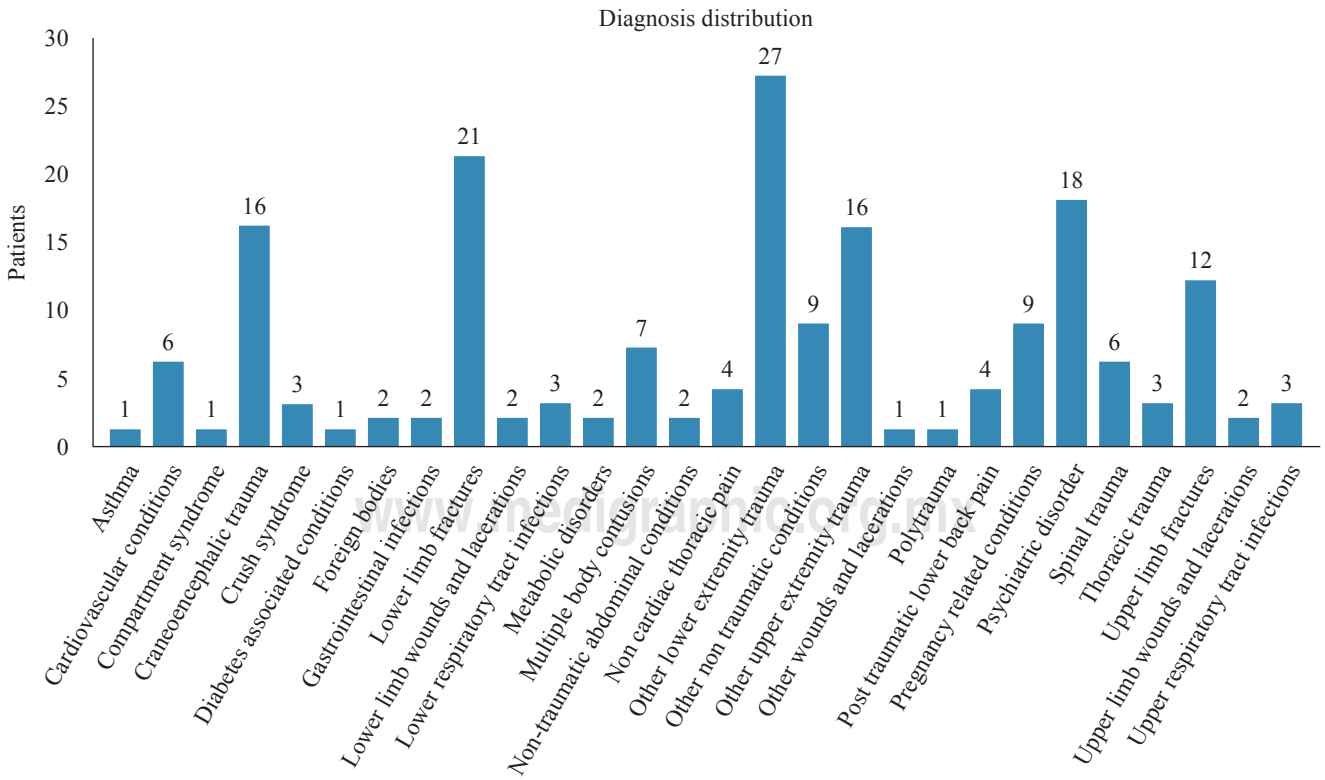

Figure 1: Primary diagnosis distribution of the group.

Table 3: Group diagnosis and triage color associated.

Group diagnosis	Triage					
	Green	Red	Unknown	Yellow	Grand total	%
Asthma				1	1	0.54
Cardiovascular conditions	2	1		3	6	3.26
Compartment syndrome		1			1	0.54
Craneoencephalic trauma	8			8	16	8.70
Crush syndrome		1		2	3	1.63
Diabetes associated conditions	1				1	0.54
Foreign bodies	2				2	1.09
Gastrointestinal infections	1			1	2	1.09
Lower limb fractures	15	1	1	4	21	11.41
Lower limb wounds and lacerations	2				2	1.09
Lower respiratory tract infections	1			2	3	1.63
Metabolic disorders				2	2	1.09
Multiple body contusions	5			2	7	3.80
Non - traumatic Abdominal conditions	2				2	1.09
Non cardiac thoracic pain	2			2	4	2.17
Other lower extremity trauma	27				27	14.67
Other non traumatic conditions	6		1	2	9	4.89
Other upper extremity trauma	12			4	16	8.70
Other wounds and lacerations	1				1	0.54
Polytrauma				1	1	0.54
Post traumatic lower back pain	4				4	2.17
Pregnancy related conditions			1	8	9	4.89
Psychiatric disorder	11		2	5	18	9.78
Spinal trauma	5			1	6	3.26
Thoracic trauma	2			1	3	1.63
Upper limb fractures	11			1	12	6.52
Upper limb wounds and lacerations	2				2	1.09
Upper respiratory tract infections	3				3	1.63
Grand total	125	4	5	50	184	100

The time spent in the emergency room was: 21 patients from 0 to 40 minutes, 28 patients from 40 to 80 minutes, 27 patients spent from 80 to 120 minutes, 15 patients spent from 120 to 160 minutes, 6 patients between 160 to 200 minutes, 3 patients from 200 to 240 minutes, 1 patient between 320 to 360 minutes, two more patients two more patients spent 360 to 400 minutes. There was unknown information about time spent in the ER or hospital for 41 patients.

Discussion

Public health consequences of earthquakes are usually characterized by a large amount of traumatic injuries during the initial period of the earthquake ant the effects of stress. Children and women are generally more injured. There is a described ratio of killed to injured people ranging from 1:0.3 to 1:15. During the initial period of the earthquake, traumatic injuries prevail in almost 95% of the cases. These injuries have been reported as: fractures in the extremities 17%, skull traumas (15% to 37%), and soft tissue wounds with hemorrhages 32% among the severely wounded. In those suffering from minor wound, mostly wounds to the extremities are reported (60%) and head. There is a described increase in cardiovascular disease and its aggravation, also an increase in hypertensive cardio-cerebral disease complicated by infarction and disturbances in cerebral circulation that increases mortality. It has also been documented that more neuroses and psychiatric illnesses are observed over the second period of an earthquake. Finally, infectious diseases have been observed at later stages of an earthquake.[5]

Bulut et al. reported 66.6% of patients admitted to a hospital sustained limb injuries, while only 18% had head injuries after an earthquake in Marmara, Turkey in 1999.[7]

On October 8th 2005 a 7.8 earthquake affected Northern Pakistan and Kashmir. An international group of physicians from the International Red Cross treated 150 patients within two weeks with lesions caused by the earthquake. Many of the treated patients presented with extremity fractures and degloving of extremities, most of which were infected and presented with purulent secretions three weeks after injuries were sustained.[8]

Mulvey et al. reported that 86,000 people were killed and another 80,000 severely injured during the Earthquake in Nothern Pakistan and Kashmir. They mentioned that 1502 patients were triaged during the first 72 hours in a small military hospital in Pakistan. Of these, 31.1% (468 patients) were admitted for less than 24 hours. Most admissions happened on the first day (195 patients) and most hospitalized patients were male. The most common types of injuries were: superficial lacerations (64.9%), fractures (22.2%), soft tissue contusions or sprains (5.9%). Multiple injuries were found in 17.1% of patients.[9]

Nie et al. described that after the Wenchuan earthquake in 2008, 2,283 patients were treated in their hospital for two weeks after the event. These patients were divided in four groups resuscitation (0.26%), urgent treatment (17.34%), delayed treatment (65.79%) and minor injuries (17.78%). They reported a rise in morbidity three days after the earthquake. Soft tissue injuries and extremity and pelvis fractures were the most common injuries.[4]

On May 12th 2008 an 8.0 earthquake hit Wechuang, China. Six different hospitals hospitalized 533 patients. Most patients were female, most patients were aged between 18 and 65 years of age. Mean age was 41.65 ± 19.50 years for males and 43.26 ± 20.45 years for females. Limb and pelvis injures were the most common (58.9%) and 6% had to undergo amputation. Multiple soft tissue injuries (38.5%) and chest injuries (21.4%) were also reported. Most patients (54.6%) were admitted between 3 and 7 days after the earthquake. The rest were admitted in the first three days.[10]

On January 12, 2010 a 7.0 magnitude earthquake hit Port au Prince in Haiti. A reported number of 222,750 deaths and 300,000 injured. The reported injury rate was calculated as 40.2 injuries/1,000 (CI: 35.6-45.3). Females were more injured than males and people between 18 and 59 years of age were the most injured.[11] Another study from the same earthquake found that young adults (15-24 years old) were the most hospitalized (22% of all patients.[12]

On April 14, 2010, a 7.1 earthquake hit the Yushu Tibetan Autonomous Region in Qinghai province. For a week after the earthquake, 1,621 patients were transferred to Xining City to be treated. Out of these, 582 patients had an orthopedic pathology. Average age was 38.0 ± 13.08 years, and the majority of patients were between 15 and 59 years of age, most of them were female (51.72%) and the most common injuries included: limb fractures, pelvic / acetabulum fractures, and spinal fractures. Crush syndrome complications were found in 1.20% and nerve injuries in 2.92% of cases.[13]

Epidemiology of injured patients treated at our hospital (both campus) was similar to that described by the literature. There were more female patients and most patients were between 18 and 65 years of age. The most common diagnosis were other lower extremity trauma (no fractures) (14.67%), lower limb fractures (11.41%), psychiatric disorders (9.78%), and craneoencephalic trauma and other upper extremity trauma (8.69%).

The importance of documentation during disaster medical attention has been emphasized in papers since the 60s. It is well known that regular hospital documentation is not very useful during massive patient reception. Casualty cards and prepared laboratory, x-ray, and other requests

Table 4: Diagnosis by sex and campus distribution.

	Observatorio			Santa Fe			Total
Group diagnosis	Female (n)	Male (n)	Total (n)	Female (n)	Male (n)	Total (n)	n (%)
Asthma		1	1				1 (0.54)
Cardiovascular conditions	5	1	6				6 (3.26)
Compartment syndrome	1		1				1 (0.54)
Craneoencephalic trauma	3	7	10	4	2	6	16 (8.70)
Crush syndrome	1		1		2	2	3 (1.63)
Diabetes associated conditions	1		1				1 (0.54)
Foreign bodies		1	1		1	1	2 (1.09)
Gastrointestinal infections	1	1	2				2 (1.09)
Lower limb fractures	8	3	11	7	3	10	21 (11.41)
Lower limb wounds and lacerations	2		2				2 (1.09)
Lower respiratory tract infections	1		1		2	2	3 (1.63)
Metabolic disorders	1	1	2				2 (1.09)
Multiple body contusions	4		4	3		3	7 (3.80)
Non-traumatic abdominal conditions	1	1	2				2 (1.09)
Non cardiac thoracic pain	2	1	3		1	1	4 (2.17)
Other lower extremity trauma	9	4	13	7	7	14	27 (14.67)
Other non traumatic conditions	5	3	8		1	1	9 (4.89)
Other upper extremity trauma	5	3	8	5	3	8	16 (8.70)
Other wounds and lacerations		1	1				1 (0.54)
Polytrauma		1	1				1 (0.54)
Post traumatic lower back pain	4		4				4 (2.17)
Pregnancy related conditions	7		7	2		2	9 (4.89)
Psychiatric disorder	4	1	5	12	1	13	18 (9.78)
Spinal trauma	3		3	3		3	6 (3.26)
Thoracic trauma	1		1	2		2	3 (1.63)
Upper limb fractures	4	5	9	2	1	3	12 (6.52)
Upper limb wounds and lacerations	1		1		1	1	2 (1.09)
Upper respiratory tract infections	2	1	3				3 (1.63)
Grand total	76	36	112	47	25	72	**184** (100)

have been suggested. Other measures for mass casualty patient reception such as: admittance from a single entrance to the emergency area, setting up different areas in the emergency department and separating patients according to a classification system.[14] In a review of dedicated mass casualty incident hospitals, the authors found that one thing all of them had in common was the policy to create equal work procedures in the emergency facility, as well as during regular hospital routine. This way, routine care could be provided under special circumstances with only some key participants stepping up and assuming coordinating functions.[15] Moore et al. propose the creation of regional or national trauma registries that could help monitor quality of care in trauma patients.[16] It has been suggested that a hospital should be prepared and have the resources to be self sufficient for at least 72 hours after a disaster strikes.[17]

Nie et al. propose that triage in hospital for treating disaster victims should be made by a multidisciplinary team consisting on senior, junior emergency department specialists and specialty surgeons. They found senior emergency physicians were the ones who made accurate diagnosis during triage evaluation, while junior emergency physicians and residents tended to over triage. Specialty surgeons were more prone to under-triage. They propose that junior emergency doctors and residents do initial triage, senior emergency surgeons should be responsible for final triage decisions and advanced triage. Meanwhile, specialty surgeons may –and should– be available to treat specific pathologies, but are not the most appropriate resources for triage.[4]

During the hours of most affluence, teams of interns (in Mexico internship is the fifth year out of six medical school years, so interns are not yet licensed MDs) and orthopedic, surgery residents were made. They were mostly in charge of the green triage area, since most green triaged patients had a musculoskeletal condition. This allowed for adequate diagnosis and treatment, consisting mostly in immobilization. There were some orthopedists at the hospital who helped with emergency treatment and starting operating on patients who needed emergent surgery. Emergency medicine residents and staff physicians covered both yellow and red triage areas. After the high affluence ended, the ED continued to work as it usually does.

Yang et al. mentioned that records for the 533 patients hospitalized after the Wechuang earthquake, 423 had specific records on rescue time and 233 had records showing time of rescue.[10] Nie et al. described that basic registry information was only missing from 22 patients out of 2283 registries. However, during their study, they found that 54 patients had left the hospital with their records without previous authorization. The missing information corresponded to: age, gender, and ED visit time.[4]

Most of the missing information in patient records in our study was: method of transportation, admission and discharge time, time spent in hospital and affected side. However, we believe that patient records were sufficiently well kept for the kind of emergent attention given to patients in such conditions. There were some difficulties identifying triage color assigned to some patients because apparently, color stamps were pasted on admission sheets but scanning for electronic records is done in black and white. We believe that patient records can be better kept if a standardized format is designed for these events. Follow up information was difficult to obtain, and was beyond the scope of this study.

Conclusion

Our hospital treated 184 patients, most were female, most patients were between 21 and 60 years of age, the most common diagnosis was other lower extremity trauma (no fractures). Most patients received a green triage and were discharged from the emergency department and there was an adequate adaption of the emergency department for the reception and treatment of massive casualties. Patient records were mostly complete.

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