Polytraumatized patients treated in the general surgery service of a second-level hospital in Honduras: Clinical-epidemiological characterization

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ABSTRACT
Methodology: Cross-sectional and retrospective descriptive observational study. A non-probability sampling was analyzed using a convenience sampling, which included a total of 205 records of polytraumatized patients attended in emergency surgery obtained by a monthly stratified sampling.
Results: The mean age of the group was 38.1 ± 6.3 years; the median age was 33 years. Males accounted for 79% (n=162) and females for 21% (n=43) of those admitted. The number of patients was higher between 6 in the morning and noon. Patients who visited between these hours represent 45.4% of the sample. Fridays and Sundays were the days with the greatest influx of polytrauma patients, 23.9% and 21.5% respectively. The main diagnosis was long bone fracture 47.7%, followed by cranio-encephalic trauma with 45.3%, thoracic trauma and abdominal trauma each 17.5%. The average hospital stay was 16.3 ± 11 days.
Conclusions: Better understanding of the main mechanisms of injury of the polytraumatized patient in the emergency surgery service provides the opportunity to take timely action to train health personnel and improve the care of the polytraumatized patient.

Keywords: Accidents, Traumatology, Honduras

INTRODUCTION
Polytraumatized patient death represents 9% worldwide, being an event that produces important physical disability (1). It represents one of the highest mortality rates over other highly prevalent diseases (84 per 100,000 inhabitants) (2). It is an even greater cause of death than the deadliest infectious diseases in the world (HIV, tuberculosis, and malaria) (3) together in women and in both rural and urban areas (5).

In Latin America, developing countries, polytrauma have an incidence twice higher compared to developed countries (2). Worldwide, it has increased 2.6% in the recent years (4). It is expected that by 2020 it would be the second biggest cause of disability just below HIV (5). In Honduras the incidence of polytraumatized patients due to different mechanisms is high, affecting the quality of life of the individuals who are left with sequels, also the surgery service is saturated by polytraumatized patients, that in many occasions are not resolved in a timely manner by not having the material resources or adequate personnel according to the interventions that the patient needs.

Having a profile of polytraumatized patients provides a panorama of the main trauma attention that is received in the service and in this way to be able to prepare the personal to solve the need and improve the patient’s prognosis. HMCR (Marino Catarino Rivas Hospital) is not an exclusive center of trauma care, having the knowledge of the main etiologies and causal mechanisms allows staff to prepare strategies aimed at improving early approach of the patient upon arrival to the hospital.

The concept of polytrauma, despite being an event frequent and important, is still debated by many experts around the world, because the terminology applied to quantify the severity of the injury has been vague and inconsistent. According to Pape et al. (2014) is defined as a significant lesion of three or more places in two different anatomical sites and at least one alteration of five possible physiological (6). Before the definition above, some authors consider it subjective, which is why a “more specific” terminology must be established to guarantee an objective recognition of polytrauma (7,8).
Limb trauma is the most prevalent among all its denominations (7), for a better classification of the trauma and its immediate attention “Advanced Trauma Life Support” (ATLS) is used, it defines the types of trauma that the patient may present according to the organ, apparatus, or system (9).

Thoracic trauma has a mortality of around 10%. It is estimated, that at least theoretically, it is one of the types of trauma whose death is preventable with the measures of adequate support. Less than 30% of chest traumas (penetrating or non-penetrating) will require major surgery as an intervention (10).

Abdominal trauma can be blunt, or it can be penetrating. Organs mostly affected in the blunt type are spleen (45-55%), liver (25-35%) and small intestine (5-10). A Focused assessment with sonography in trauma (FAST) should be performed (10-11).

Cranioencephalic trauma is one of the most common types, with high mortality (> 90%) and morbidity. It requires immediate assessment using Glasgow scale and be presented to the neurosurgery service so that they define how to handle it, which must be expeditious (10-11).

Spinal injuries can be complete or incomplete and require the attention of a neurosurgeon to dictate the type of injury and management (10-11).

Musculoskeletal trauma is considered the most prevalent. It occurs primarily in the lower limbs, accompanied by multiple sequels. It is essential to avoid compartment syndrome due to inflammation and avoid air embolism by long bone fracture (10).

Polytrauma must be appropriately assessed in emergency rooms, prioritizing correct triage. It is estimated that 1/3 of polytraumatized patients are not correctly evaluated impacting on its lethality, on multiple occasions patients die from being referred to inexperienced centers for trauma care and, therefore, mortality is high (12).

The purpose of this study is to create a clinical and epidemiological characterization of polytrauma patients treated in the HMCR surgery service to know the main etiologies and its location to establish strategies aimed at improving immediate patient care and prognosis.

MATERIALS AND METHODS

An observational, retrospective, cross-sectional study was carried out in a second-level hospital in Honduras between January and December 2017, being the second-highest reference center nationwide. The medical records of patients with diagnosis of multiple trauma treated in the general surgery service were reviewed.

The selection of participants was based on the total of files archived at the information management department of the HMCR with a correlative diagnosis of “Multiple Trauma” that met the criteria for the patient selection. The following were included: a) patients of both sexes between 18 and 85 years of age, b) patients treated in the emergency surgery filter in the indicated period, c) Records with a trauma sheet in their clinical record, d) patient whose correlative of file in statistics were of “multiple trauma”, e) Patients with significant injuries of three or more points in two different anatomical sites in conjunction with at least one alteration of five physiological. The following were excluded: a) psychiatric patients confirmed in their medical sheet b) illegible records that could represent a bias c) patients whose clinical records did not include at least 80% of the variables to be studied.

The instrument used to collect variables was previously validated in a pilot test with a reliability index of Cronbach’s Alpha of 0.812. Sociodemographic and clinical data of the patient were obtained through the instrument: age, sex, date of admission, time of admission and care, therapeutic window, schooling, marital status, day of occurrence, cause of the incident, transportation used to move to hospital, Glasgow; blood pressure (according to criteria of the European Society of Cardiology), ocular alteration (presence of anisocoria or traumatic mydriasis), type of trauma and mechanism of injury. A non-probabilistic sample was used through convenience or availability sampling, capturing a total of 205 records from the year 2017 that were included in the study.

Descriptive statistics was applied for data analysis using the SPSS version 25 statistical program, using measures of central tendency (mean, median, mode) and dispersion (ranges, standard deviation) for the quantitative variables, frequencies and percentages were obtained. of categorical variables. The research protocol was approved by the Institutional Ethics Committee of the Catholic University of Honduras, Campus San Pedro San Pablo.
RESULTS

Sociodemographic data

A sample of 205 polytraumatized patients treated in the HMCR surgery service was analyzed. The mean age of the group was 38.1 ± 6.3 years, with a median of 33 years. 79.0% corresponds to the male gender, the average age for this gender was 36.4 years, and 44.1 years for the female. Regarding schooling, 32.2% did not complete primary school, 20.0% were illiterate, 12.7% incomplete secondary, 9.8% complete secondary, and 8.3% complete primary. Regarding marital status, 30.2% of the patients were single, 20.5% were married and 30.2% were in common law union. According to the occupation, various professions or trades were presented, among which the following stand out: 8.3% bricklayers, 5.4% were farmers, 13.2% were housewives, 5.4% were individual traders, and 11.7% were unemployed.

Event chronology

On Fridays and Sundays there was a greater influx of polytraumatized patients, 23.9 and 21.5% respectively. The time of day when an increase in the number of multiple injuries is reported is at 7:00 am, with 45.4% of the medical attendance were between 6 am and 12 pm, 11.3% between 12 pm - 12 am and 43.4% between 12 am and 6 am. The time between the moment the incident occurs, and the hospital medical attention was evaluated, with an average of 5 hours and 40 minutes, with a range ranging from 15 minutes to 72 hours to attend the emergency surgery service.

Trauma etiology

Polytraumatized patients are transferred to the Hospital by 3 main routes: ambulances (50.7%), private vehicle (26.3%), Police patrol (12.2%), 66.3% of patients were transferred to the HMCR directly from the place where the traumatic event occurred, the remaining 33.7% are referrals from other hospitals. The cause of the traumatic / violent event that led to the polytraumatic injury is attributed in 38.5% to traffic accidents, 14.6% to assaults, 10.7% to run over, and 11.7% It is due to disputes, 3.4% due to causes of self-harm, 2% due to labor causes. 19.0% of traumas are due to other causes. 13.7% of the patients had alcoholism. Blunt trauma occurred in 63.9% and 35.6% had penetrating trauma. The etiology of the trauma corresponds to the mechanism that explains the way in which the injury occurs and is presented in Table 1.

Vital signs at admission

The mean systolic blood pressure on admission was 115 ± 20 mmHg and 72 ± 10 mmHg for the diastolic. The mean Glasgow score at the initial evaluation was 15 ± 2, 92.7% of the patients had a score higher than 13 on the scale. 6.3% presented pupillary alteration.

Characteristics of polytrauma

Among the most frequent traumatic injuries were: 48.7% long bone fracture, 45.3% head trauma, 17.5% thoracic trauma, 17.5% abdominal trauma, 6.4% maxillofacial trauma, 3.9% spinal trauma, 0.9% pelvic trauma. The mean days of hospital stay was 16.3 ± 11 days.
The profile of the polytraumatized patient corresponds to that of a male, under 40 years of age, with a hospital stay of 16.3 days, whose main reason for admission was head trauma and long bone fractures due mostly to a traffic accident using as means of transport motorcycle. The male gender (79%) and the age range (<40) reported in the study coincide with the data reported by Navarro et al. (2014), where the male gender predominated over female and the age range of the polytraumatized patients treated in the emergency ranged between 40-42 years (13), similar data reported by Serracant Barrera et al. (2016), with the same characteristics in gender and age groups (14). In other studies, with similar conditions to the one carried out in the HMCR, the main mechanism of injury was traffic accidents caused by motorcycle, producing TBI that coincide with what was reported in our results (45.3%). (15-21, 23, 24) 13.7% of the patients were under the influence of alcohol, like that reported by Berrones-Sanz (2017) whose cohort showed 13.73% alcoholism, with a probability of 1.89 times higher fatal accident occurrence (24).

Certain analyzes in cohorts of polytraumatized patients (14) suggest that both months and days play a crucial role in the appearance of accidents. Fridays (23.9%) and Sundays (21.5%) are the days with the highest influx of patients, mainly in the early hours of the morning. Contradictorily, Jove-Gonzales et al. (2000), in their results reported that the day of the week with the most traumatic events is Monday (16).
Most of those attended are in their second and third decade of life, when they are active at work, the time of day where traffic accidents were most reported are those hours of movement to work 07:00 - 08:00 h, and which are considered “collapsed hours” with high pedestrian and road traffic conducive to accidents.

In the reviewed bibliography (16), it is concluded that the time is a decisive factor in the prognosis of the injured and although the “golden hour” constitutes an indicator of excellence, for it to be fulfilled there must be immediate prehospital care, a fast way to reach the healthcare center and good coordination in the hospital emergency service, in this way a more satisfactory resolution can be predicted for this type of patient, three factors that are often not optimal in our environment, or somehow it becomes deficient, impacting the quality of patient care.

Despite the Advanced Trauma Life Support (ATLS), there are no studies that support its impact and the results it generates in different hospital contexts on trauma. Its effectiveness for trauma management is undoubted, but studies are required to assess the usefulness of this program in educational contexts for timely trauma management (18).

On the other hand, surgeons or medical personnel specialized in trauma are considered who should know the most about this class of measures and management in polytraumatized patients, it is a priority that those who benefit the most from the knowledge provided by the ATLS of primary management of trauma are primary care physicians in emergency services such as general practitioners, social service physicians, interns and those found in the different areas of trauma shock in developing countries. Therefore, it is recommended that training programs in trauma management be primarily oriented to this type of health personnel and not strictly to specialist physicians, however, the latter need to have a specialized understanding of the primary care of patients polytraumatized and knowing how to direct, control and delegate to a trauma care group (19).

Being a retrospective study, it entails a series of operational limitations, which condition the availability of clinical variables of the patient contained in the file, allowing information bias. It was not possible to perform a probabilistic calculation of the sample based on the total care of polytraumatized patients received in the surgery service because there was limited access to the records, making it necessary to implement prospective observational studies in the future. That informs to capture timely information of the total of conditions that surround the traumatic event in the patient.

The polytraumatized patient represents one of the main causes of mortality and morbidity in the emergency service patient, affecting their long-term quality of life due to the sequelae that it entails and representing one of the main causes of hospital expenses due to prolonged stay of the patient. It must be ensured that the triage of the emergency service is prepared to recognize signs and symptoms of those more threatening traumas that appear to be masked, to provide them with immediate management according to the severity it represents and not to waste valuable time, likewise, attention is necessary in peripheral centers specialized in trauma, strategically located that alleviate the influx of patients in regional hospitals. Given that the main motive involved in traumas are motorcycle road accidents, strict control of safety measures is unavoidable, primarily the use of a helmet to reduce cranioencephalic injuries.

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REFERENCES