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Traumatic Emergency. A Health Challenge

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1. Abstract

Trauma is the third cause of death in the world and the fifth in Cuba. Trauma reports that the most frequent causes in daily life are gunshots, stab wounds (urban violence), and motor vehicle accidents. Alcohol and drug intoxications constitute 30-60% of accidents.

Good results in trauma care can be reached thanks to the knowledge of injury, its frequency, management, population education, training and equipment you have to deal with trauma injury in civil life, considering that trauma can occur as an isolated fact or as a traffic accident, collapse or natural disasters such as earthquake, hurricane and others.

I report Cuban statistics about causes of trauma during 2020, the organization of the health centers, Public health, and the training that doctors and technicians that work with trauma patients, receive according to the best international protocols.

2. Introduction

Trauma is the third cause of death in the world, and the fifth in Cuba [1-18]. When some people ask: -why trauma care is a priority in our country, the answer to this question is: the reason why trauma care is a priority in all health centers in the country and so, the evacuation of complex trauma patients, according to the severity of injury, to different level of trauma centers is done.

Traffic accidents are the main cause of trauma in our island because gunshot wounds are not frequent. In Cuba the population is not allowed to have a gun.

International Trauma reports that the most frequent causes in daily life are gun- shots, stab wounds (urban violence), and motor vehicle accidents. Alcohol and drug intoxications constitute 30-60% of accidents [19-24].

Trauma committees are working to decrease the range of mortality in all countries.

No observance of the protection rules by workers, drivers, and persons on the street are the principal causes of trauma in civil life.

Good results in trauma care can be reached thanks to the knowledge of injury, its frequency, management, population education, training and equipment you have to deal with trauma injury in civil life, considering that trauma can occur as an isolated fact or as a traffic accident, collapse or natural disasters such as earthquake, hurricane and others.

3. Development

Cuba is always exposed to meteorological natural disasters like tropical storms, hurricanes, and sometimes tornados.

The Cuban Society of Surgery has eleven sections: one of them is the Trauma section which has sixteen groups along the country.

We have hospitals for complex trauma in each province, at least a Trauma Hospital Center, but in Havana city there are four Trauma centers.

Cuba has surgical specialists spread all over the country and the number of medical doctors that work as general surgeons are residents in Surgery. The report of the national statistics of Public Health Ministry on the population of Cuba is over 11 million inhabitants, and life expectancy is over 78 years old. Education of the population and training are carried out through television programs, radio, newspaper, as well as health lectures given in the communities under the family doctor leadership in the cities and rural work centers. In all these lectures, many of them show the trauma preventive procedures at home and on the street not only

for pedestrian but also for drivers of motor vehicle and bicycle. Our statistics about the main causes of mortality of all ages by accidents was 5339 (47,7 range by 100000 inhabitants), lower than in 2019 which 5429 (48, 4 range by 100000 inhabitants), and Life year's loss according to main causes of death per 1000 inhabitants of 1-74 years old was 4, 1 during 2020. Mortality by accidents, according to different causes were the majority causes: Falls and Motor Vehicle Accidents [25].

Last decade of XX Century a new organization of Emergency Service (Sistema Integrado de Urgencias Médicas, SIUM, in Spanish) was created in Cuba after a group of Cuban doctors received international courses of Advanced Trauma Life Support (ATLS), Advanced Cardiologic Life Support (ACLS), and Pre-hospital Trauma Life Support (PHTLS) in 1996.

In 2014, we received professors from the Occidental Continent, Caribbean and Latin-American countries who taught surgeons and medical doctors that worked in Intensive Care Unit, an International course of ATLS at "General Calixto García" University Hospital, thanks to the work performed in the Trauma section of the Cuban Society of Surgery. That year National Instructors and a group of Cuban surgeons were certificated.

In 2016, we started to give Trauma Evaluation and Management (TEAM, Evaluación y Manejo del Trauma, in Spanish) courses to medicine students in my Faculty of Medicine, and it was received by students with enthusiasm and positive opinions.

The ATLS program has trained thousands of doctors in the whole world including Cuba. This program improves the prevention, resuscitation and application of surgical skills to save further lives and contributes to minimize disability. National instructors can teach the management of trauma in all provinces. This course aims to find sources and solutions in situations of war or natural disaster for the medical doctors and health technicians.

Organization of Trauma service in Cuba includes the training of these courses and also the Pre-hospital Trauma Live Support program to health technicians, of Out Patient Departments and Intensive Care Ambulances personnel in the principal cities in each province. The protocol and algorithm performed in trauma services can help to decrease the unnecessary interventions and give more rates of survival trauma patients.

It is very important to apply the Triage scheme because we know which injury needs to be transferred to a Trauma center. Initial assessment and management (ABCDE):

- Evaluate airway patency through patient dialogue or interviewing techniques while maintaining inline immobilization and protection of the patient´s spine.
- Recognize the signs and symptoms of acute airway obstruction, and define the steps to maintain ventilation and oxygenation (breathing) before, during and after establishing a definitive airway.
- Patients with pre hospital hypotension, Glasgow Coma Scale score of 8 or lower, and nonextremity firearm injury have higher mortality with increasing pre hospital time. These patients may have time sensitive injuries and benefit from rapid transport to definitive care center [26-30].

The causes of severe injuries are:

- Exsanguination lesions.
- Skull fractures with intracranial hemorrhages.
- Complex maxillofacial fractures with respiratory problems.
- Gastrointestinal perforations.
- Spine and spinal cord injuries.

Severely injured penetrating trauma patients have a higher survival when treated at high volume penetrating trauma centers, for that the mechanisms of traumatic injury can be diverse: penetrating, blunt, and burns injuries require different skill sets from the treating trauma team [31-32].

Various authors have demonstrated that adjusted mortality rates are significantly lower when care is provided in a trauma center than in a non-trauma center [33, 34].

In the evaluation of traumatic patient is important to recognize that:

- The clinical examination is the best evaluation of traumatic patients. The loss of consciousness by drug intoxications, hypovolemic shock or head trauma are the possible to confuse the clinical results.
- These are frequent lesions of the retro-peritoneum organs, for instance that of a non-diagnosed lesion in the first moment: pancreas, duodenum, and colon. The trauma surgeon knows that late diagnosis of these lesions can cause high morbidity and mortality [35-37].

3.1. Investigations in the Emergency Department

- Focused Assessment Sonography in Trauma (FAST) is very important for clinical evaluation for abdominal trauma.
- Positive FAST confirms intra- abdominal lesion; negative FAST is not enough negative for intra-abdominal lesion.

3.2. Computed Tomography (CT)

CT. It has high sensibility for head, spleen, liver, and gastrointestinal injuries in the penetrating abdominal traumas. There are good international experiences with this investigation.

CT is useful in retro peritoneum lesions and gunshot trauma because it shows the way of the bullet and the organs or visceras that have been broken.

CT detects early complications as pancreas rupture, brain hemato-

mas, and peritonitis caused by intestinal perforation. These lesions make the clinical condition of traumatic patients more critical.

Helical CT scanner can be useful because through this exam a quick diagnosis is possible.

- Computed tomography angiography (CTA). This tool is of great potential for the diagnosis of abdominal vascular trauma.
- The laparoscopy video applied in emergency is a useful tool for treating and diagnosing abdominal trauma. This exam avoids unnecessary laparotomies, and gives a security range of 80-89% according to national and international experience [38-50].

4. Surgical-Medical Management

The Damage Control (DC) technique is the best emergency surgery in current times. It is evidence based surgery in the last 30 years.

Actually, the surgical treatment is used according to organ grade of lesions, hemodynamic clinical status, and other important factors for applying algorithms for example, as, for complex abdominal trauma.

Damage control laparotomy can contribute to Systemic inflammatory Reply Syndrome (SIRS). At first it causes hemostasis, but if it is prolonged it will be noxious. For that reason, DC must be managed carefully.

Complications can appear in these cases as a Compartment Syndrome: abdominal cavity or extremities (the emergency treatment is the fasciotomy) [51-53].

In our country, we have organized an assistance-teaching exchange with surgeons from our western hemisphere when our national trauma committee became part of the American Association of Surgeons and since then, in 2015 Symposium and workshops on Trauma and surgical medical emergencies have taken place in my hospital, yearly. The international courses and workshops on nursery emergency were included since 2016.

5. Conclusions

The development of pre hospital attention system, the application of new techniques and technologies, the organization method inside hospital according to international experiences, the teamwork, the intensive care units, the trauma centers, and the use of international guidelines for the management of different causes of trauma, according to the severity of traumatic lesion, give positive results in the early diagnosis and the application of the best therapeutics for traumatic patients and lower mortality [1, 2, 54-60].

The general opinion is that the clinical method of diagnosis and the systematic re-evaluation of the traumatic patients from pre hospital to hospital phases and the hospital level are necessary for maintaining low rates of morbidity and mortality.

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