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TREATMENT MODALITIES OF TRAUMA CARE

Mrs. Malarmathi. M,
Tutor,
Department of medical surgical nursing,
Kasturba Gandhi nursing college,
Sri Balaji Vidyapeeth university.
Orcid Id: https://orcid.org/0000-0003-2224-1166

Abstract

Trauma care, a patient-centred approach to healthcare, is to keep both patients and staff from experiencing trauma. Trauma care is always used, regardless of how much trauma has been disclosed. It is conceptualized as a lens through which policy and practice are examined and altered to ensure that settings and services are safe for both patients and staff. It is based on an awareness of the impact of trauma on patients and the workforce. The framework is being used in the healthcare industry and ought to be applied consistently, particularly in nursing. The experience of patients and co-workers can be greatly influenced by is a crucial profession in which to implement a trauma care approach.

KEY WORDS: Trauma care, Health care.

Introduction

A hospital that is prepared and staffed to treat patients with serious traumatic injuries, such as those brought on by falls, car accidents, or gunshot wounds, is known as a trauma center. Without the availability of specialized resources to care for victims of major trauma, an emergency department (sometimes referred to as a "casualty department" or "accident & emergency") may also be referred to as a trauma center. [1]

The Primary treatment

When a trauma patient arrives at the emergency room, a quick evaluation is necessary to ascertain their condition. The majority of patients are instantly placed on a heart monitor, pulse oximeter, and blood pressure monitor while a full set of vital signs are gathered, along with getting the narrative of events given

by the rescue team and/or witnesses. The patient's initial care is determined by this initial narrative and the baseline vital signs.

The preliminary survey can begin in a sequential set of steps

Circulation, Airway, Breathing, Disability and Exposure/Environmental Control

BLS for Cardiac Arrest Associated With Trauma

Circulation

Any apparent bleeding should be stopped by the healthcare professional using direct compression and the proper dressings. The medical professional should attempt to feel a carotid pulse after clearing the airway and giving the patient two successful rescue breaths. A healthcare professional should start chest compressions and perform cycles of compressions and ventilations if they cannot detect a pulse within 10 seconds. Rescuers should push fast and hard when performing CPR, allow the victim's chest to fully recoil after each compression, and avoid pausing between compressions if possible.

When performing CPR on a victim who already has an advanced airway in place, two rescuers no longer alternate cycles of compressions with breathing breaks. Instead, without stopping for ventilation, the compressing rescuer should provide 100 compressions per minute constantly. The rescuer administering the ventilations should breathe 8 to 10 times per minute and exercise caution to prevent administering too many breaths. To avoid compressor exhaustion and a decline in the quality and rate of chest compressions, the two rescuers should switch between the compressor and ventilator duties approximately every two minutes. When several rescuers are on the scene, the compressor duty should be switched every two minutes or more.

Turn on and attach an automated external defibrillator (AED) if one is available. The AED will assess the victim's cardiac rhythm and recommend shock administration if necessary. If VF is present, keep in mind that it can have been the source of the trauma rather than its effect (for instance, a driver might experience VF abrupt cardiac arrest and then crash his car after losing consciousness). After the person has been revived, further cardiac testing may be necessary.[2,3]

Evaluate and support circulation when the airway, oxygenation, and breathing are sufficient. Control any obvious, visible bleeding right away. An essential yet debatable component of trauma resuscitation is volume resuscitation. While traveling to the ED or trauma center, ACLS providers should achieve large-

bore IV access, making no more than two attempts. Because no one type of solution has been proven to be superior in study, isotonic crystalloid is the preferred resuscitation fluid.[4]

The type of trauma (penetrating vs. blunt) and the location of the injury influence the volume resuscitation recommendations for trauma patients exhibiting hypovolemic shock. Only patients who have isolated blunt or penetrating head or extremity injuries are now advised to have a high rate of volume infusion with a therapeutic target of a systolic blood pressure 100 mm Hg. Aggressive prehospital volume resuscitation for penetrating trauma is no longer advised because it is likely to raise blood pressure, which will speed up blood loss. It will also prolong travel time to the trauma center and postpone surgical intervention.[5, 6,7]

Airway

Indications for intubating a trauma patient right away include

- Apnea or respiratory arrest
- Respiratory failure despite oxygen therapy, including severe hypoventilation or hypoxemia
- A severe head injury (e.g., a GCS of 8 or above)
- Inability to defend the upper airway (such as a diminished level of alertness or a loss of gag reflex).
- Thoracic injuries (include penetrating trauma, pulmonary contusion, and flail chest)
- Injuries that could potentially block the airway, such as crushing facial or neck injuries.

Rescuers must support the spine throughout all BLS maneuvers when there is multisystem trauma present or when the head and neck are injured. To open the airway, a jaw push is performed rather than a head tilt-chin lift, with the goal of creating a patent airway. The head and neck should be physically stabilized during BLS maneuvers and until spinal immobilization equipment is applied by skilled providers, if at all possible, by a second rescuer. Clear the mouth of any blood, vomit, or other secretions after the airway is open.

Endotracheal intubation is carried out while the cervical spine is kept stable. If intubation is necessary, it should be carried out during travel. Orotracheal intubation is typically used. In cases of serious maxillofacial injuries, avoid nasotracheal intubation. Once the patient has been intubated, throughout transportation, and after any transfer of the patient (such as from an ambulance to a hospital stretcher), confirm appropriate tube placement using a clinical examination and a confirmation tool (such as an exhaled CO2 monitor). The failure of endotracheal intubation in a patient with severe facial trauma and edema is a sign that skilled medical professionals should perform a cricothyrotomy.

Simultaneous ventilation and compressions while an endotracheal tube or other advanced airway is in place during CPR may cause a tension pneumothorax in a lung that is already injured, particularly if broken ribs or a broken sternum are present.[8,9]

Breathing

Evaluate breathing when a patent airway has been established. Manual ventilation is required if breathing is non existent, agonal, sluggish, and severely shallow. If cervical spine injury is suspected, the rescuer must still maintain cervical spine stabilization while ventilation is delivered by a barrier device, pocket mask, or bag-mask device. Breathe carefully to lessen the chance of stomach inflation. Rule out tension pneumothorax or hemothorax if the chest does not expand during ventilation despite the existence of a sufficient and patent airway.

Even if the victim seems to have enough oxygenation, give them high inspired quantities of oxygen. Assess breath sounds and chest expansion once a patent airway has been created. Until tension pneumothorax or hemothorax can be ruled out as the cause, a unilateral decrease in breath sounds that is linked with insufficient chest expansion during positive-pressure ventilation should be assumed to be the cause. The pneumothorax will be aspirated with a needle, then a chest tube will be inserted (this treatment is normally carried out in a hospital Rescuers should search for and close any large pneumothoraxes that are open, leaving a conduit for exhalation to prevent tension pneumothorax.

Additionally, chest expansion and ventilation may be hampered by hemothorax. Check the initial volume of blood that emerges from the chest tube after inserting a chest tube to treat hemothorax. Continuous bleeding from the chest tube is a sign that surgery is necessary.[10]

Disability

Evaluate the victim's reaction to each intervention and keep a watchful eye out for any signs of worsening.

The neurological condition of a trauma patient is the subject of this section of the primary survey. The Glasgow Coma Scale (GCS), pupillary size and responsiveness, blood glucose screening, and drug and alcohol testing can all be done during the neurological examination. A CT of the brain and a CT of the cervical spine are both necessary for a patient with abnormal mentation and/or neurological impairments to check for a neck injury. Imaging is only possible, though, if the patient is stable enough to endure the entire study without assistance. Depending on the capabilities of their facility, the physician should have a low threshold for consulting neurosurgery or initiating a transfer to if trauma to the brain or spine is suspected.

Although neurological injuries are frequently accompanied with motor impairments, impaired feeling, unconsciousness, aphasia, agnosia, or even just headache and dizziness, they can also have an impact on vital signs. When a patient appears with hypotension and suspicion of spinal cord damage, this is an illustration of the connection between neurological injury and a patient's hemodynamic condition. Due to the frequent bleeding that can place in trauma cases, healthcare providers may fixate on the diagnosis of hemorrhagic shock. However, a patient may be experiencing neurogenic shock if their hypotension is resistant to fluid resuscitation and bradycardia is noticed. [11]

This syndrome develops when an injury to the upper thoracic and cervical portions of the spinal cord affects the sympathetic fibers that control the heartbeat, causing bradycardia and hypotension that may be resistant to fluid therapy. Vasopressors are often needed during treatment to make up for the decrease of sympathetic tone and vasodilation that occurs. [12]

Exposure/Environmental Control

Take off the victim's clothes to determine the severity of the wounds. Cover the patient once the evaluation of any injuries is finished to avoid the onset of hypothermia.

When a patient is exposed, all of their clothing is taken off. This is necessary so that the medical professional can check the patient for any abnormalities, lacerations, abrasions, bruises, or foreign items that might have been concealed by the garments or blankets that the rescuers gave the patient. The patient should be log-rolled so that the posterior can be examined. Once the patient has been properly exposed, occult injuries are frequently discovered. Maintaining the patient's core body temperature is important, though, as many trauma patients have a tendency to rapidly lose body heat. As a result, the emergency department's trauma bays are warmer than the rest of it. Once the examination is done, it's crucial to promptly cover the patient.

Warm liquids and blankets can help prevent temperature loss if at all possible. It is well recognized that hypothermia can worsen a patient's hypocoagulative condition, exacerbate any underlying acidosis, and raise mortality rates.[13]

Secondary treatment

After the initial survey is finished, the physician must acquire more specifics about the circumstances surrounding the patient's injuries and their medical background in order to customize the treatment strategy. In a group setting, one person may finish the primary survey while another finished the secondary survey simultaneously. In essence, it is a hurried history and examination to make sure nothing has been missed. In a patient who is unresponsive or intoxicated, this could be difficult. It's crucial to thoroughly evaluate each organ system.

Following the patient's total undressing, the examination often starts from head to toe and covers all orifices as well as a closer look at places that were first surveyed. All bones are felt for discomfort, all soft tissues are examined for lesions and edema, and joints are tested for range of motion (barring evident fractures or deformities).

When a patient is gravely hurt and bounded, a urinary catheter is typically implanted as long as there is no sign of urethral injury (such as blood at the meatus or perineal ecchymosis). Patients with severe injuries who have been intubated frequently additionally receive an orogastric tube.

Sterile dressings are applied to open wounds, but cleaning and repair are postponed until more severe injuries have been fully assessed and treated. As soon as immediate life hazards have been taken care of, severe clinically obvious dislocations with noticeable deformity or neurovascular damage are scanned and minimized.

While a thorough evaluation of significant injuries and pertinent imaging examinations are conducted, obvious or suspected fractures are splinted. A commercial pelvic binder or bed sheet is used to support a clinically evident unstable pelvic fracture. Severe bleeding may necessitate for immediate angiographic embolization, surgical fixation, or direct surgical control.

The best strategy to ensure the stability of the fetus in pregnant trauma patients is to stabilize the mother first. In the short term, supine immobility may lead to the utero feto placental unit compressing the inferior vena cava, preventing blood flow and resulting in hypotension. If so, the backboard may be tilted to the left as a whole or the patient's uterus may be physically shifted to the left to relieve compression. If the fetus is >20 weeks gestation, fetal monitoring is performed and continued for at least 4 to 6 hours. Patients with major injuries or symptoms of pregnancy difficulties (such as an irregular fetal heart rate, vaginal bleeding, or contractions) should see an obstetrician as soon as possible.

After even slight injuries, all Rh-negative women receive Rh0(D) immune globulin. If the fetus is >20 weeks' gestation (equivalent to a uterine fundal height over the umbilicus), a perimortem cesarean birth can be performed if the mom experiences cardiac arrest and cannot be revived.

Clinical evaluation is supplemented by imaging and laboratory investigations. Patients who have suffered penetrating trauma generally have focused injuries that can restrict imaging to the region or regions that are plainly affected. Any area of the body can be affected by blunt trauma, especially when significant deceleration is involved (such as in a serious fall or a car accident), therefore imaging is employed more frequently. Historically, the majority of patients with blunt trauma underwent routine x-rays or CT scans of the neck, chest, and pelvis. However, the majority of trauma centers today only do imaging tests that are indicated by the nature of the injury and its physical manifestations.

In individuals who are not drunk, do not have focal neurologic abnormalities, do not have midline cervical spine discomfort or distracting injuries (e.g., femur fracture), and are awake and alert, cervical spine imaging may be postponed. For all others, a CT scan of the cervical spine is recommended.

A chest x-ray can detect hemothorax, pneumothorax, hemorrhage, and obstruction of the airways. It can also hint to thoracic aorta rips (for instance, by mediastinal expansion). However, chest CT is frequently favored because it is more sensitive to the majority of intrathoracic lesions. Extended focused assessment with sonography in trauma, or E-FAST, is increasingly frequently utilized for chest imaging at the patient's bedside, especially in cases where the patient is unstable. It is possible to recognize pneumothoraxes, hemothoraxes, and hemopericardium.

Patients who require imaging following severe repeated blunt trauma usually employ CT of the chest, abdomen, pelvis, spine, or head, or, more specifically, combinations of these tests.

CT of the pelvis is performed if a pelvic fracture is suspected; it is more accurate than standard x-rays.

Patients who have altered mental status, localized neurologic abnormalities, or who have lost consciousness generally undergo a head CT. According to some research, CT scans are not required for patients who have temporary forgetfulness, disorientation, or brief loss of consciousness (less than five seconds) but who are otherwise cognizant and have a GCS of 15 when being examined. Imaging is performed more frequently in patients who have a persistent headache, vomit, forgetfulness, seizures, are older than 60 years old, are intoxicated by drugs or alcohol, or who are using anticoagulant or antiplatelet medications. To assist in choosing which patients need a head CT, clinical decision guidelines have been created. [14]

Any suspected fractures and dislocations of the extremities are documented with plain x-rays. For example, angiography is used to detect and occasionally embolize vascular injuries, while CT is used to more clearly define spinal, pelvic, or complicated joint fractures. Other imaging tests are performed for specific indications.

The following laboratory examinations may be helpful:

- To create a baseline, complete a blood count.
- Monitoring serial hemoglobin readings for hemorrhage
- Base deficit, carbon dioxide partial pressure, and oxygen partial pressure in blood measurements
- Checking the urine for blood
- To test for hypoglycemia, use glucose
- Crossmatch and type for potential blood transfusion
- Coagulation research

To help identify early or partially treated shock, perfusion measures (serum lactate, base deficit on arterial blood gas measurement, and, in patients with a catheterized central vein, central venous oxygen saturation) are recommended. If there is no pertinent medical history (such as renal insufficiency or usage of diuretics), further impulsively acquired tests (such as electrolytes and other chemistries) are unlikely to be beneficial.

The findings of toxicology screening (such as a blood alcohol or urine drug test) are frequently performed; while they seldom affect immediate management, they can indicate a substance use disorder as the injury's primary cause and enable intervention to prevent further harm.

In pregnant trauma victims, D-dimer, fibrinogen, and fibrin breakdown products can be assessed. Patients with placental abruption may have aberrant test findings, but because they lack both sensitivity and specificity, they cannot conclusively confirm or rule out the diagnosis. [15.]

Role of nurses in trauma care

Trauma nurses are experts in treating and diagnosing traumatic illnesses or injuries that immediately endanger the patients' physical safety and life. A traumatizing or upsetting occurrence is what the word "trauma" describes. Because these cases are unpredictable and frequently life-threatening, trauma nurses need to be able to process information quickly and accurately in unpredictable, chaotic conditions. Trauma nurses must not only be able to manage each case clinically and emotionally, but they also need to be skilled

multitaskers who can talk to their colleagues while trying to stabilize the patient. Trauma nursing may be the ideal path for you if you're seeking for a fast-paced career in medicine where you'll learn to evaluate and manage a wide range of really critical situations. [16]

Conclusion

The goal of trauma care is to comprehend the full person receiving assistance. An individual's sense of self, sense of others, and sense of the world are all impacted by trauma. These ideas may negatively affect a person's motivation or capacity to engage with and use support services. Understanding the direct impact that trauma can have on access to services, a system using a trauma care approach adjusts policies, procedures, and practices to eliminate potential barriers. A system using a trauma care approach also fully integrates trauma knowledge into all elements of services and trains employees to identify the symptoms and indicators of trauma in order to prevent any risk of re-traumatization.

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