Trauma

Traumatology

Is the study, diagnosis, and treatment of acute physical injuries sustained by individuals requiring immediate medical attention

leading causes of death

" Data are for the U.S. , 2010 "

Heart disease
Cancer
Chronic lower respiratory diseases
Stroke (cerebrovascular diseases)
Accidents (unintentional injuries)

?"Trauma—the forgotten pandemic"

There are approximately six million deaths per year as a result* ,of trauma

There are some 40 million people permanently injured per year, and up to 100 million temporarily injured

According to the World Health Organization (WHO), road traffic * Injuries accounted for 1.25 million deaths in 2014

Trauma is a leading cause of mortality globally in young adults *

Traumatic injuries range from minor isolated wounds to * .multiple organs injury

trauma accounts for approximately 30 percent of all intensive * .care unit (ICU) admissions

Causes of trauma related injuries

Motor vehicle accidents .1
Violence including gun shot wounds, Stabs. 2
Falls. 3
:Others. 4
Burn :Thermal, electrical, chemical -
corrosive -
drowning -
Blast -

Deaths from trauma

Immediate deaths in the first minutes at the scene are either due.1
to massive haemorrhage " laceration of great
vesseles" or due to massive CNS trauma

Early deaths during the 'Golden hour' are often due to.2
the effects of haemorrhage or hypoxia and may be
preventable

Late deaths are chiefly due to sepsis and organ failure.3
occur from 1 –7 days after trauma due to sepsis,
.septicemia, pulmonary embolism, multiple organ failure

The "golden hour" concept emphasized the increased risk of*
death and the need for rapid intervention during the first hour
of care following major trauma

Severity evaluation of trauma :the risk factors

: RTA risk factors

Car speed-
Rolled over car -
Throughn out person -
Dead passenger -
Car indentation >30Cm -
Extraction time >20 minutes -

:Falling down risk factors

The height -
The ground -
Way of fall -

:Burn risk factors

Flame with close space -
”Associated with other trauma “falling down -

TRAUMA SYSTEM

A coordinated National approach to trauma care

optimal care of a trauma patient requires effective and efficient communication and teamwork among all members

Access to care. 1
Pre hospital care .2
Hospital care . 3
Rehabilitation. 4
Injury prevention. 5

The approach to care of trauma patient

1. Primary Survey:
- simultaneous assessment and Management
- Identify & treat what is lethal.

2. secondry survey:
Proceed to identify all other injuries

3. Definitive management:
The definitive management plan

Primary Survey

1. The aim of the primary survey is to detect and immediately treat life threatening problems.

2. Do not proceed to Secondary Survey until ABC's are stable.

3. The primary survey must be repeated any time a patient's status changes, including changes in mental status,changes in vital signs.

The primary survey

consists of the following steps:

1. **A**irway assessment and protection (maintain cervical spine stabilization when appropriate)

2. **B**reathing and ventilation assessment(maintain adequate oxygenation)

3. **C**irculation assessment (control hemorrhage and maintain adequate end-organ perfusion)

4. **D**isability assessment (perform basic neurologic evaluation)

5. **E**xposure, with environmental control (undress patient and search everywhere for possible injury, while preventing hypothermia)

Keep the following points in mind while performing the primary survey

Airway obstruction is a major cause of death immediately* .following trauma

The airway may be obstructed by the tongue, a foreign body,* aspirated material, tissue edema, or expanding hematoma

Definitive guidelines for tracheal intubation in trauma do not* exist,when in doubt, it is generally best to intubate early, particularly in patients with hemodynamic instability, or those with significant injuries to the face or neck, which may lead to swelling and distortion of the airway

Unconscious patients with small pneumothoraces that are not* visible or missed on the initial chest radiograph may develop tension physiology after tracheal intubation from positive pressure ventilation. It is important to re auscultate the lungs of trauma patients

A: Airway

Assessment:

* Begin by asking the patient a simple question (eg, "What is your name?"). A clear accurate response verifies the patient's ability to mentate, phonate

* Observe the face, neck, chest, for signs of respiratory difficulty, including tachypnea, accessory or asymmetric muscle use, abnormal patterns of respiration, and stridor.

* Inspect the oropharyngeal cavity for disruption; injuries to the teeth or tongue; blood, vomitus, or pooling secretions.

* Inspect and palpate the anterior neck for lacerations, hemorrhage, swelling, or other signs of injury

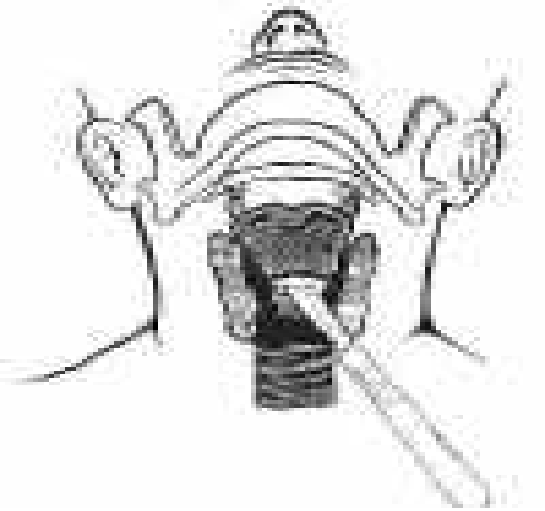
The possible causes of air way obstruction

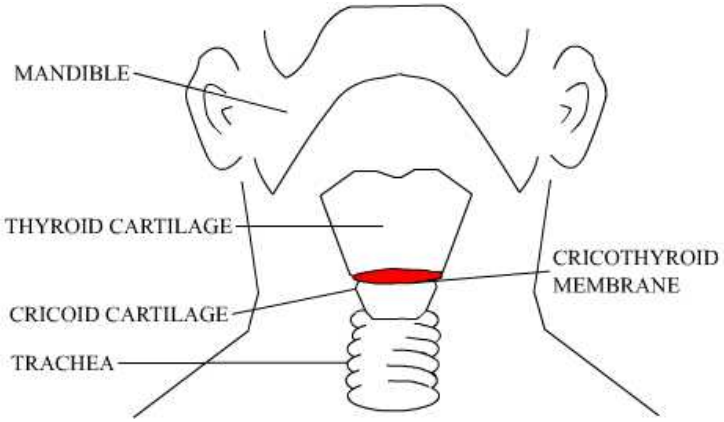
- Vomitus
- Bleeding
- Loose or missing teeth
- Dentures
- Facial trauma
- backward tongue displacement

airway tools can be helpful when managing a trauma patient

* Remove 1st any tight clothes at the neck
* Suction :To clear the oropharynx of blood, mucus and foreign bodies
* Bag-valve mask attached to high flow oxygen
* Cricothyrotomy kit
* Endotracheal tubes in a range of sizes

Cricothyroidotomy





Cervical spine protection

The high index of suspicion depends on the history of * .the accident

Avoid rough manipulation of the head and neck. * *

*Protection is initially provided by holding the head in a neutral position facing forward. and can be .secured with a hard cervical collar

Obtain appropriate radiological evaluation and should* .be done only after the patient has been stabilized

B. BREATHING AND VENTILATION

assessing the adequacy of oxygenation and“
”ventilation

.Inspect for symmetrical chest movements.1

:Palpate for.2

- the trachea for deviation
- the chest wall for bone crepitus “fractures” or air crepitus “ surgical emphysema”.

.Auscultate for breath sounds bilaterally.3

problems to be identified The life-threatening

Tension pneumothorax: Initial decompression with needle.1
insertion through the 2nd or 3rd intercostal space
.anteriorly, mid-clavicular line

or Thoracostomy tube

massive haemo-thorax : Thoracostomy tube.2

:Flail chest .3

,Monitor pulse oximetry and blood gases -

intubate and ventilate if there is hypoxia or respiratory distress. -
- Consider early intubation in elderly or severe multitrauma
.patients

Open pneumothorax, a sucking wound in the chest wall .4

C. CIRCULATION AND HEMORRHAGE CONTROL

1. Assess BP, heart rate and evidences of bleeding or signs of shock.

2. Control any external bleeding.

3. If there is shock, insert one or two large intravenous lines and start fluid resuscitation and prepare blood.

D: Disability and neurologic evaluation

include a description of the patient's level of consciousness using the APVU

,or Glasgow Coma Scale (GCS) score

assessments of pupillary size,equality and reactivity *

gross motor function and sensation ,the level of sensation if a spinal cord injury is present *

E :Exposure and environmental control

* Be certain that the trauma patient is completely undressed and that his or her entire body is examined for any sign of injury.

* Regions often neglected include:

- "the scalp" posterior scalp
- the gluteal fold, axilary folds, perineum,
- abdominal folds in obese patients.

Penetrating wounds may be present anywhere

* While maintaining spine precautions examine the patient's back.

ADJUNCTS TO PRIMARY SURVEY

,Pulsoxymeter, cardiac monitors, BP monitor *

ECG *

:Xrays *

Cspine, CXR, pelvis

Trauma blood work *

ABG *

Quick medical history (AMPLE)

Allergy

Medication

Past Medical History (health problems, previous surgery)

Last food and drink

Events leading up to the situation

SECONDARY SURVEY

The secondary survey aims to detect and treat any other* trauma injuries

the secondary survey should not be started until the primary survey is complete.

It is a head-to-toe examination*

Specialized diagnostic tests are performed when indicated

These tests include, extremity radiography, ultrasonography CT scanning

Top-to-Toe

Head

Observe and palpate skull (anterior and posterior) for* signs of trauma

)deformity, Wounds – bruising/bleeding , lacerations

Panda eyes/Battle's sign

Check the face for deformity*

Check eyes for: equality and responsiveness of pupils, * movement and size of pupils foreign bodies, discoloration, contact lenses, prosthetic eye

Check nose and ears for bleeding, CSF leaks *

Neck

look for any Swelling or Wounds

jugular venous distention, use of·

neck muscles for respiration, tracheal shift

cervical spine

Bruise,swelling, tenderness, wound

Cont.Top-to-Toe

Chest

Symmetrical expansion, Paradoxical movement ▪
Wounds/bruising·
Deformity·
Resp.rate and depth
Tenderness
,Breath sounds·

Abdomen

Bruising/wounds·
Distension·
Tenderness·
Rigidity/guarding·
Bowel sounds

:Pelvis/Genito-urinary

deformity, Bruise :scrotal or perineal·
bleeding per urethra

Cont.Top-to-Toe

Back

Wounds/bruising or swelling·

Tenderness·

Arms and Legs

Wounds·

Deformity·

Tenderness.

Movement·

Pulses·

Sensation·

Mass casuality

The no. of casualies greatly exceeds the local resources and capabilities

In a short time

Level 1 :mass casualities resulting in less than 10 surviving victims

Level 2 :10-25 surviving victims

Level 3 :more than 25 surviving victims

Triage

”sorting out patients“

Minor injuriy : conscious ,can walk, i.e wounded. 1

Can be delayed : potentially serious ,not expected to .2
deteriorate significantly over several hours: resp.
.rate<30,capilary refil <2 sec

:Immediate.3

needs immediate transportation and medical
:attention within minutes

altered consc.,hypotensive capil.refil.>2sec.,
resp.rate >30

Expectant : dead or inevitably dying.4

Multidisciplinary Trauma Team

-Trauma surgeon
-Emergency physician
Anesthesiologist -
Trauma nurse team -
Blood bank technician -
Radiological technologist -
Respiratory therapist -
-Public relation officer
Hospital security officer -
Physician specialist as necessary: neurosurgeon, -
orthopedic surgeon, urologic surgeon, general
surgeon