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The Polytrauma

Marek Kovář

Learning Outcomes

The student can define a polytraumatized patient

Student understands the importance of triage and trauma centre

The student will understand the basics of caring for the polytraumatized patient

Lecture content

- Definition of terms
- Triage
- Trauma team
- Treatment
- ABCDE procedure - examination and basic therapy
- Secondary examination
- Take home message

Terms

Trauma – a sudden disturbance of health caused by external forces

- Accidents, traffic accidents, armed incidents, sports injuries

Polytrauma – serious life-threatening injury, ISS > 16

ISS (Injury Severity Score)

- Divides the anatomically injured body into 6 parts: head, face, chest, abdomen, extremities and body surface
- Each part is scored on a point scale (0 pt. no injury to 6 pts. injuries incompatible with life)
- The score is the sum of the squares of the three worst affected parts, if one part has a score of 6 then it is automatically counted as 75

The Triage

Time – speed of treatment, a critical factor affecting the outcome of the polytraumatized patient

Location/Experience – on-site team capabilities and equipment, regional hospitals, trauma centres

Triage – conditions under which the injured person is to be transported to the trauma centre

- E.g. GSC < 13, sTK< 90 mmHg, penetrating intracranial injury, unstable chest wall, fall from more than 6 meters, accident > 35 km/h, age > 60 years, under < 6 years, comorbidities,...

Scoop and Run – a strategy favouring rapid transport to hospital

Stay and Play – a strategy favouring primary treatment at the scene

The Trauma Team

Organised multidisciplinary and experienced team able to provide appropriate assistance in a trauma centre

Consists of:

- **Teamleader –** hands free
- **Emergency physician / anaesthetist / intensivist**
- **Trauma / surgeon**
- **Nurse / paramedic**
- **Radiologist**
- Possibility to call other surgical specialties, neurologist, ...

The team is ready on site before the arrival of the patient dressed in protective equipment

Information transfer is structured e.g. **MIST** protocol

(**M**echanism, **I**njuries, **S**igns, **T**reatment)

Examination and Treatment

Protocol approach **ATLS** (Advanced Trauma Life Support)

Primary examination and treatment

ABCDE system

Prioritization of life-saving procedures and treatments (stop bleeding, intubation, ...)

Secondary treatment

Conventional systematic examination of the whole body (e.g. from head to toe)

To lead to the definition of a definitive therapeutic plan

Tertiary treatment

Detection of minor injuries and early consequences of injuries (compartment sy, uncomplicated finger fract., ...)

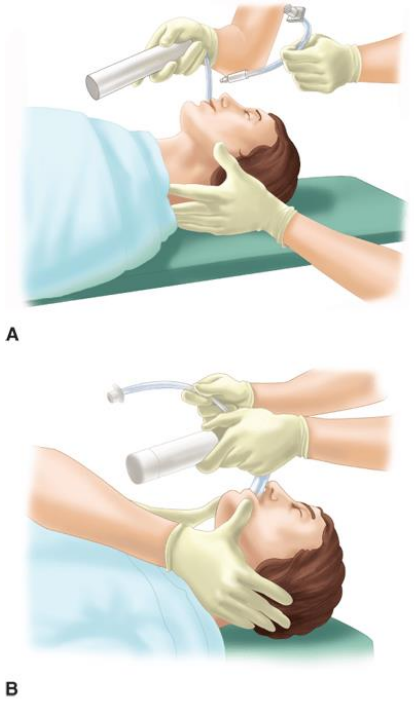
Primary examination and treatment

A - airway patency, C-spine injury,
MILS (manual inline stabilization), RSI intubation

B - (tension) PNO - decompression puncture, followed by drainage, haemothorax, rupture diaphragm, flail chest

C - search for bleeding (eFAST) and stop it
Elevation, pressure bandage, tourniquet, BP maintenance

(CAVE: stopping massive external bleeding takes priority over CPR and A, B)



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Primary examination and treatment

Securing i.v. access - peripheral i.v. or i.o. access

Hypovolaemia substitution - crystalloid solution, dilutional coagulopathy

Substitution of haemoglobin, **platelets and clotting factors** –

Erymase (universal donor 0-), fibrinogen, prothrombin complexes or massive transfusion protocol (ERY:FFP:TAD) control by viscoelastometry corresponds more closely to in vivo condition than laboratory methods and is faster

Prevention of the malignant coagulopathic triad of hypothermia, acidosis and coagulopathy

Primary examination and treatment

D – state of consciousness, pupil examination, assessment of neurological deficit and lateralization

E – environmental exposure, hypothermia, burns, chemical damage

Gradually progresses to secondary examination

Secondary examination and treatment

Systematically, e.g. from head to toe

Medical history - **AMPLE** (allergies, medication, (medical) past, last (meal) and events)

For examination of the back, **log-roll manoeuvre** can be performed (https://www.youtube.com/watch?v=fY7SAR5RXbY)

The treatment of polytrauma includes **adequate analgesic therapy**

and, in indicated cases, **antibiotic prophylaxis**

and **active or passive immunization against tetanus**

Take home message

In polytrauma, a **rapid**, precise **procedure** and approach is necessary to increase the patient's chance of survival.

It requires multidisciplinary **teamwork** and **experience** with polytraumatized patients

Patient triage is essential for success

Likewise, **structured** examination (**ABCDE**) and **information handover** between rescue teams

Sources

ATLS Advanced Trauma Life Support Student Course Manual. 10. Chicago, United States of America, 2018.

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