Damage control surgery

Surgical damage control (DCS) is a life-saving series of steps in the critically ill polytrauma patient.

History

- in the past there was a trend towards a„**traditional approach** “ - i.e. do everything at once (access, revision, resection, reconstruction) regardless of the patient's condition, but this procedure showed**high lethality**

- **1983 Stone et al.** - **principles of DCS**
- **1992 Burch et al.** - described **the triad of death**
- **1993 Rotondo and Schwab** - term **DCS**
- **2001 Assensio et al.** - intraoperative parameters and indications for starting the DCS protocol

DCS Targets

1. restoration of physiological parameters before anatomical adjustment
2. facilitate control of bleeding and contamination (1. stabilization of fatal problems, 2. resuscitation, 3. definitive treatment)

Triad of Death

1. **Hypothermia** - consequence of bleeding and resuscitation

Clinical manifestations: ↓ 36°C (if lasting >4h), arrhythmia, suppression of the immune system, systemic vascular resistance

2. **Coagulopathy** - massive volume resuscitation worsens it with dilution

Clinical manifestations: disorder and inhibition of coagulation factors, platelet dysfunction

Laboratory results are not indicative of hypothermia, **only clinical diagnosis** (bleeding from wounds, serous surfaces, skin edges)

3. **Metabolic acidosis** - long-term hypoperfusion → anaerobic metabolism and lactic acidosis

Clinical manifestations: ↓ myocardial contractility, ↓ ejection volume

Indications for DCS

Preoperative parameters

1. high energy injury
2. blunt trauma to the trunk
3. multiple torso injuries
4. hemodynamic instability, coagulopathy and hypothermia on admission

Intraoperative parameters

1. ↓ 34°C
2. pH <7,2
3. HCO_3^- <15 mEq/l
4. administration of >5,000 ml transfusions
5. intraoperative replacement > 12,000 ml
6. clinical evidence of intraoperative coagulopathy

Surgical damage control in abdominal injuries

It consists of three successive phases:

1. Phase - **abbreviated laparotomy**

- bleeding control and hemostasis (ligatures, clamps, shunts, balloon catheters...)
- **reconstruction is not carried**
- FR abdominal lavage, open abdominal fascia, subcutaneous vacuum drainage

2. Phase - **resuscitation in the ICU** (modification of the triad of death)

- **hypothermia** - warm infusion solutions, thermal insulation blankets
- **coagulopathy** - ERY meat, Tr concentrate and fresh frozen plasma
- **MAC** - adjusts itself by warming the patient

3. Phase - **definitive surgical treatment**

- reoperation after 36-48h (vascular reconstruction, GIT continuity)
- enteral nutrition

Links

Related Articles

- Injury
- Rhabdomyolysis
- Blast syndrome
- Crush syndrom
- Compartment syndrome
- Polytrauma

References

- HUŤAN, Martin, et al. *Základy všeobecnej a špeciálnej chirurgie.* prvé vydání. Bratislava : Univerzita Komenského v Bratislave, 2012. 198 s. ISBN 978-80-223-3214-9.