

**M U N I**  
**M E D**

# **Sepsis, septic shock**

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# Learning outcomes

- The student is able to explain the **definition** of sepsis and septic shock.
- The student recognizes **symptoms** and can apply the **initial steps in the diagnosis** of sepsis and septic shock.
- The student knows the **basic principles** of causal and symptomatic **therapy** of sepsis and septic shock.

# Content lesson

- Sepsis, septic shock and organ dysfunction definition.
- Searching for the infection source.
- Initial management.
- Symptomatic therapy.
- Causal therapy.

# Definition

- **Sepsis**- life-threatening **organ dysfunction** due to deregulated response of the organism to infection.
- **Septic shock**- sepsis with circulatory insuffic. (**vasopressors**), associated with disbalance between O<sub>2</sub> and substrates delivery and demand.
  - Lactate level above **2 mmol/L**.
- ~~**SIRS and severe sepsis** are not used nowadays.~~

# Organ dysfunction

- Acute abnormality of organ system- respiratory system, consciousness, circulatory system,...
- **SOFA**- sequential (sepsis- related) organ failure assessment.
- **qSOFA**- quick SOFA.
- **Clinical examination!**



# SOFA score and qSOFA score

- **SOFA- 6 organ systems-** neurological, respiratory, renal, cardiovascular, liver and coagulation system.
  - Acute increase of the score of 2 points or more indicates new organ dysfunction.
- **qSOFA-** simplified version of SOFA score, outside the ICU (prehospital care, standard ward...).
  - Alteration of the consciousness, circulation or respiration.
  - 2 points or more in patient with infection predict a significantly higher risk of adverse outcome.

# Clinical examination and other diagnostics

- **Basic** clinical examination in algorithm A > B > C > D.
- **Advanced** examination- mottled skin, capillary refill time,...
- **Laboratory diagnosis**- inflammatory markers, organ dysfunction markers, **lactate level dynamics**,...
- **Searching for infection source**- chest X-ray, catheters, hepatobiliary ultrasound, urine examination...

# Initial management



- Brisk management, ideally in 1 hour-> **golden hour.**
- Microbiological material collection, **blood cultures including!**
- **Symptomatic therapy-** organ function supporting (vasopressors, artificial ventilation, dialysis,...).
- **Causal therapy-** source eradication, antimicrobial therapy.



# Symptomatic therapy- circulation support

- Aggressive approach, volumotherapy, target MAP **over 65 torr.**
- Balanced crystalloid fluids are preferred to colloids, except albumin in case of the higher risk of hypervolemia.
- Initially at least 30 ml / kg i.v. during first 3 hours, but we should respect patients comorbidities.
  
- Septic shock- **distributive** shock (vasoplegia).
- Early administration of **vasopressors**- norepinephrine.
- Regular control of haemodynamics.

# Causal therapy- antimicrobial therapy

- Broad-spectrum intravenous **antibiotics**.
- Within 1 hour of diagnosis and initial management.
- Microbiological material collection (**blood cultures,...**) before antibiotics administration.
- It is necessary to respect the antibiotics properties, tissue penetration, patient comorbidities, epidemiological situation,...



# Causal therapy- source eradication

- It is necessary to consider other possibilities of causal therapy.
- Elimination of the anatomic source of infection- gallbladder, abscess cavity, carious teeth,...
- We prefer minimally invasive approaches.



# Take home message

- The essential part of sepsis management is microbiological material collection, **blood cultures** including, to detect pathogens.
- Early diagnosis and initial therapy, **golden hour** ideally, is the basic step to surviving the sepsis or septic shock.
- **Lactate level dynamics** is essential to microcirculation evaluation and it is a marker of the cellular stress.

# References

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