Case Discussion: Critically Ill Septic Patient With Multi-Organ Failure

Case Discussion 1: ICU, Septic, MOF Patient
A. Reintam (CH)
VOTING SYSTEM

Using any mobile device (smartphone, tablet, laptop, etc.) to easily participate to the voting system

Please access this website: espen18.cnf.io
Critically ill septic patient with multi-organ failure

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Member of AIF - SIG
History

- Male, 65 years
- Height 175 cm, Weight 85 kg, BMI 27.8 kg/m$^2$
- 1 week before current admission
  Robot-assisted laparoscopic prostatectomy
  (AdenoCa, localized)

Nausea and abdominal pain for 24h
Admitted to the ER

• Status
  – Soporuous
  – BP 70/45
  – HR 140, sinus rhythm
  – Dyspnoea, respiratory rate 30 x/min

• Management
  – Fluids, noradrenaline, intubation, arterial cannulation
  – Lab
  – Blood cultures
  – Piperacillin/Tazobactam 4.5 g 8-hourly

Voting system: espen18.cnf.io
# Lab Results

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>106</td>
<td>127-163 g/L</td>
</tr>
<tr>
<td>WBC</td>
<td>3.5</td>
<td>2.6-7.8 x 10⁹/L</td>
</tr>
<tr>
<td>Platelets</td>
<td>73</td>
<td>130-330 x10⁹/L</td>
</tr>
<tr>
<td>CRP</td>
<td>294</td>
<td>&lt;5 mg/L</td>
</tr>
<tr>
<td>Creatinine</td>
<td>158</td>
<td>59-104 micromol/L</td>
</tr>
<tr>
<td>pH</td>
<td>7.2</td>
<td>7.35-7.45</td>
</tr>
<tr>
<td>BE</td>
<td>-8</td>
<td>-2 ...+3 mmol/L</td>
</tr>
<tr>
<td>Lactate</td>
<td>4.4</td>
<td>0.5-1.6 mmol/L</td>
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<tr>
<td>Myoglobin</td>
<td>1056</td>
<td>&lt;110 micromol/L</td>
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Voting system: [espen18.cnf.io](espen18.cnf.io)
Most concerning abnormal result?

1. **CRP**
2. **Platelets**
3. **pH**
4. **BE**
5. **Lactate**
6. **Myoglobin**
7. **WBC**

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Live Content Slide
When playing as a slideshow, this slide will display live content

Poll: Most concerning abnormal result?
Live Content Slide
When playing as a slideshow, this slide will display live content

Poll: Management Priority
Laparotomy

- Drainage of the perivesical abscess
- Evaluation of bowel viability and continuity
- Bowels viable, no leakage
- Back to the ICU

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Postop in the ICU

- Continuing fluid resuscitation (10 L cumulative)
- Increasing dosage of noradrenalin (1 mcg/kg/min)
  - BP 75/50 mmHg, HR 120-130 x/min, sinus rhythm
- Worsening oxygenation (FiO₂ 90%), anuric
- Pulmonary artery catheter: CI 3.3 l, SvO₂ 68%
- Intra-abdominal pressure 17-18 mmHg
  - (Grade II intra-abdominal hypertension)

Voting system: espen18.cnf.io
Lab results perioperatively

<table>
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<tr>
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<th>Preop</th>
<th>12h later</th>
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<tbody>
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<td>Hb</td>
<td>106</td>
<td>103</td>
</tr>
<tr>
<td>WBC</td>
<td>3.5</td>
<td>24</td>
</tr>
<tr>
<td>pH</td>
<td>7.2</td>
<td>7.30</td>
</tr>
<tr>
<td>BE</td>
<td>-8</td>
<td>-11</td>
</tr>
<tr>
<td>Lactate</td>
<td>4.4</td>
<td>6.4</td>
</tr>
<tr>
<td>CRP</td>
<td>294</td>
<td>282</td>
</tr>
<tr>
<td>Creatinine</td>
<td>158</td>
<td>205</td>
</tr>
</tbody>
</table>
Live Content Slide

When playing as a slideshow, this slide will display live content

Poll: What is the problem now?
Live Content Slide

When playing as a slideshow, this slide will display live content

Poll: Management Priority
Relaparotomy on the same day

- **Lavage**
- **Inspection:** no visual ischemia, no leakage
- **Rectoscopy:** no ischemia, no perforation
- **Loop stoma** (descending colon)

- Back to the ICU still in shock (unchanged vasopressors, lactic acidosis, anuria)

Voting system: [espen18.cnf.io](http://espen18.cnf.io)
36 h after admission

- Shock managed with high-dose noradrenaline
- Ventilated 100% FiO2
- Anuric
- Slowly improving lactic acidosis
- E. coli in all blood cultures -> Imipenem, because ESBL not excluded (results not available yet, later: not ESBL)
Poll: Should we now start nutrition?
Hours 36 to 60

- No nutrition
- Further stabilization of hemodynamics
- FiO2 reduced to 90%, PEEP 12 cmH2O
- Anuria

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<th>60 h</th>
</tr>
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<tr>
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<td>4.8</td>
<td>2.2</td>
</tr>
<tr>
<td>CRP</td>
<td>458</td>
<td>443</td>
</tr>
<tr>
<td>Creatinine</td>
<td>393</td>
<td>579</td>
</tr>
</tbody>
</table>
Day 4

- Abdomen distended
- Gastric residuals low
- No bowel sounds on auscultation
- Lactate normal
- Noradrenaline in low dose (0.08 μg/kg/min)
- Anuria
Poll: Should we now start nutrition?
Day 4

• EN 10 ml/h via ng-tube started
• Continuous hemofiltration started
• Noradrenaline further reduced
Day 5

- Noradrenaline stopped
- Negative fluid balance under hemofiltration
- Oxygenation slowly improving
- EN increased to 20 ml/h
Days 6-10

- EN further increased, full EN on day 7
- Hemofiltration continued

- Problems with ventilation (obstruction)
  - Bronchoscopy -> hemorrhagic tracheobronchitis
  - Aspergillus fumigatus -> Caspofungin
Day 11-20

- Ventilation and oxygenation improving
- Partial thrombosis of left internal jugular vein
  - full anticoagulation with heparin
  - polyuric renal insufficiency
- Full EN
- Patient awake and stable
- Tracheostomy due to ICU-acquired weakness
Day 21-24

- Hb levels gradually decreasing down to 70 g/L
- Transfused (4 pRBCs in total)
- Lactate increased to 2-2.5 mmol/l
- CRP 20 ->100
- Platelets 150, increasing
- Bleeding out of loop stoma
- Endoscopy through stoma
How to continue? (Pannel discussion, no voting)

- Surgery for bowel resection needed?
- Full anticoagulation with heparin?
- Prophylactic / low dose heparin?
- Enteral nutrition and medications?
Days 24-29

- EN temporarily reduced to 20 ml/h, increased again to full within 3 days
- Prophylactic heparin
- Bleeding stopped after 5 days
- No perforation
- 1 week later CT scan:
  - Bowel wall thickening (long segment) in transverse colon
Long term Outcome

• Discharge
  – to the ward after 29 days
    • spontaneously breathing with tracheostomy
  – to rehabilitation clinic after 44 days

• Long-term outcome
  – Alive and independent 4 years later
  – Stoma closed without complications
Learning objectives

• Management priorities
• Timing of nutrition support
• EN vs PN
• Mesenteric ischemia assessment
• Assessment of GI function in the ICU