ANTIBIOTICS IN ABDOMINAL SURGERY

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DIVERTICULITIS

• ***Uncomplicated diverticulitis*** (without perforation, abscess or peritonitis): if the patient has no signs of systemic infection and is not immunocompromised, symptomatic treatment is possible

• ***Complicated diverticulitis*** or ***uncomplicated diverticulitis in a patient with signs of systemic infection or with immunodeficiency***:

Cefuroxime 1,5 g/8h IV + metronidazole 500 mg/8h IV (older patients, possible kidney injury) or
Gentamicin 240-300 mg/24h + metronidazole 500 mg/8h IV

Other possibilities:
• 1 dose of tigecycline 100 mg, then 50 mg/12h IV (patients with allergy or ESBL colonization)
• Ertapenem 1 g/24h IV (patients with ESBL colonization)

Possible treatment after clinical improvement: amoxicillin with clavulanic acid 1000 mg/8h or (for patients with allergy) ciprofloxacin 500 mg/12h + metronidazole 400 mg/8h (both listed oral therapy options can be less effective than intravenous ones due to lower bacterial sensitivity)

Duration: **7 to 10 days**

APPENDICITIS

• Gentamicin 240-300 mg/24h + metronidazole 500 mg/8h IV or Cefuroxime 1,5 g/8h IV + metronidazole 500 mg/8h IV (*older patients, possible kidney injury)*

Other possibilities:

• Amoxicillin with clavulanic acid 1,2 g/6h IV + gentamicin 240-300 mg/24h IV
1 dose of tigecycline 100 mg, then 50 mg/12h IV

• Ertapenem 1 g/24h IV

Duration: gangrenous appendicitis without perforation: 24 hours; perforation, peritonitis: ***4 to 7 days after surgical treatment***

ABSCESS AFTER SURGICAL TREATMENT, PATIENT IS READMITTED

• Patient does not have sepsis: delay treatment until abscess sample is acquired for microbiological analysis, then:
Patient has received no antibiotics apart from perioperative prophylaxis:

1 dose of tigecycline 100 mg, then 50 mg/12h IV or ertapenem 1 g/24h IV or cefuroxime 1,5 g/8h + metronidazole 500 mg/8h IV

Patient was treated with antibiotics at time of previous hospitalization: piperacillin/tazobactam 4,5 g/8h IV or imipenem 500 mg/6h IV (for patients with allergy)

• Patient has signs of severe systemic infection: collect two blood samples or blood culture, then administer antibiotics (see above)

ABDOMEN AFTER CHEMOTHERAPY
Immediately collect blood samples for blood culture, then administer antibiotics:
• Piperacillin/tazobactam 4,5 g/8h IV or
• Imipenem 500 mg/6h IV or
• Meropenem 1g/8h IV

CHOLANGITIS, CHOLECYSTITIS

• ***Mild disease***, no risk factors:

Amoxicillin with clavulanic acid 1,2-2,2 g/6h IV

Other possibilities:

Cefuroxime 1,5 g/8h IV + metronidazole 500 mg/8h IV or
Ciprofloxacin 400 mg /8-12h IV + metronidazole 500 mg/8h IV

Duration: if infection has not spread: only before surgery; most other cases: until 24 hours after surgery; in case no surgery has taken place: no consensus has been reached, presumably some days after resolution of inflammation

• ***Moderate cholangitis***, at least two of the following criteria:
leukocytosis or leukopenia under 4 or over 12x109 /l, fever 39°C, age > 75 years, hyperbilirubinemia > 34 mmol/l, hypoalbuminemia < 70 % of normal value:

Amoxicillin with clavulanic acid 1,2-2,2 g/6h IV + gentamicin 5 mg/kg of BW, IV

Other possibilities:

1 dose of tigecycline 100 mg, then 50 mg/12h IV or Ertapenem 1 g/24h IV

Duration: ***4 to 7 days after surgery***; in case of ***bacteraemia 10 to 14 days***; in case no surgery has taken place: no consensus has been reached, presumably some days after resolution of inflammation.

• **Severe cholangitis** with at least one organ failure (hypotension treated with high doses of vasoactive amines, reduced consciousness, respiratory failure (PaO2/FiO2 < 300), kidney failure (oliguria, serum creatinine concentration > 177 µmol/l), liver failure (INR > 1,5), thrombocytopenia (< 100000 /mm3))

Piperacillin/tazobactam 4,5 g/8h IV or cefepime 2 g/8h IV + metronidazole 500 mg/8h IV or
Imipenem 500-1000 mg/6-8h IV or
Meropenem 1 g/8h IV

Duration: **4 to 7 days after surgery**; in case of **bacteraemia 10 to 14 days**; in case no surgery has taken place: no consensus has been reached, presumably some days after resolution of inflammation.

In case the patient needs to be treated with gentamicin for longer than 5 days an infectious disease specialist should be consulted

Conclusion

- **Source control and personalized approach are important to reduce the incidence of all over complications.**
- **The duration of antimicrobial therapy in the patient with IAI needs to be specific for each clinical condition.**
- **To reduce the incidence of resistant antimicrobials and treatment complications time limited period is mandatory.**

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