

# Case 2

Synergy satellite event: Good morning pharmacists!  
Case studies on antimicrobial resistance



22nd Congress of the EAHP "Hospital pharmacists – catalysts for change", 22-24 March 2017, Cannes

## Disclosure statement

✗ Conflict of interest: nothing to disclose

## History

- × Girl, 8 years and 7 months old, body weight 33 kg
- × Since August 17 has pain in abdomen
- × On August 18 pain is diffuse and poorly localized
  - × Later (the same day) localized mainly in the area around the belly button and also radiates to the lower right abdomen and groin
- × Uses drotaverine (antispasmodic drug) ½ of the tablet – at home

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## History

- × On August 19 pain becomes more severe
- × The girl is hospitalized to the local hospital
  - × irregular stools with small portions
  - × periodically has hyperthermia
  - × pain is localized mainly in the area around the belly button and also radiates to the lower right abdomen and groin

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## Therapy and blood results (local hospital: Aug 19-21)

### × i.v.

- × NaCl 0.9% 500 ml
- × Dexamethasone 4 mg
- × Ringer 500 ml
- × Drotaverine 2.0
- × Metamizole 1.0
- × Clemastine 1.0
- × Ceftriaxone 1.0 x 2

### blood results: Aug 19

- × WBC: 20.6 [5.5-10.8]
- × CRP: 0.8 [0-8]
- × Blood creatinine level: 38.4 [27-62]
- × Urinalysis: normal

### × i.m.

- × Metoclopramide 1.0

Surgeon's consultation → „no indication for surgery“

**What do you think about drug therapy?**

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## Blood results

### blood results: **Aug 19**

- × WBC: 20,6 [5.5-10.8]
- × CRP: 0.8 [0-8]
- × Blood creatinine level: 38,4 [27-62]
- × Urinalysis: normal

### blood results: **Aug 20**

- × WBC: 20.9 [5.5-10.8]

### blood results: Aug 21

- × WBC: 22.9 [5.5-10.8]
- × CRP: 61.2 [0-8]
- × Chest X-ray: lungs, heart, aorta & diaphragma → no visible changes
- × Ultrasound of abdomen → no pathological changes

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## History – on August 22 transferred to the University Hospital

- × Moderate pain in the area around the belly button and also radiates to the lower abdomen
- × The patient has:
  - × no nausea, vomiting once in the evening
  - × loss of appetite
  - × pale skin
- × Blood results:
  - × WBC 20.52 [5.5-13.5]
  - × CRP 129.07 [0-5]
- × Pulse rate 120/min, breathes without problems at frequency 24/min
- × Palpation of abdomen – soft, has some pain in the lower abdomen
- × The signs of peritoneal irritation = tenderness in the abdomen +/-
- × Surgeon's prescribed investigations:
  - × Ultrasound of abdomen: signs of an ileus?
  - × CT of abdomen: atypical appendicitis

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### Therapy – August 22

Prescribed	Received
Ampicillin 1.0 q8h	15:00 & 21:00
Gentamicin 60 mg q12h	15:00 & 22:00
NaCl 0.9% 1000 ml	
Sterofundin BG-5 500 ml	
→ no improvement	

### Therapy – August 23

Prescribed	Received
Gentamicin 60 mg q12h	7:00 & 12:20
Cefazolin 900 mg q8h	12:00
Diclofenac 1 ml	17:55
Drotaverine 0.7 ml	13:50
Midazolam 7.5 mg (oral)	21:00

- × Surgery 22:00-23:20 → appendectomy & drainage
- × Final diagnosis → acute gangrenous appendicitis with perforation & abscess in the Pouch of Douglas

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## Does the patient need surgical prophylaxis?

1. Yes, she needs
2. No, she does not need
3. Perhaps

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## When should the antimicrobial prophylaxis be started?

1. >2 hours before surgical incision
2. 1-2 hours before surgical incision
3. <1 hour before surgical incision

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## Microbiology and blood results – after surgery

- × Escherichia coli, ESBL negative found in pus from the abdomen
  - × Sensitive to: gentamicin, cefotaxime, ceftazidime, cefepime, cefuroxime (parenteral), ampicillin, amikacin, amoxicillin/clavulanic acid, meropenem, piperacillin/tazobactam
- × CRP
  - × 129 (Aug 22) → 88 (Aug 26) → 52 (Aug 29) → 17.74 (Sep 2) → 4.49 (Sep 5)
- × WBC
  - × 19 (Aug 29) → 12 (Sep 2)

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## Medical management after surgery

Medicines	Days	Dates
Cefazolin 900 mg q8h	8	August 23-30
Gentamicin 60 mg q12h	8	August 22-29
Metronidazole 250 mg q8h	7	August 24-30
Metronidazole 250 mg q8h (oral)	1	August 31
Cefuroxime 375 mg q8h (oral)	1	August 31

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## Did the patient receive appropriate treatment?

1. Yes, therapy was correct

2. Therapy should be partly changed

3. No, therapy was wrong

- Concurrent use of cefazolin and aminoglycosides may increase aminoglycoside nephrotoxicity. The kidney function should be checked.
- Cefazolin may not be appropriate choice for the management of complicated appendicitis. It is mostly used for treatment of susceptible infections involving the respiratory tract, skin and skin structure, urinary tract, biliary tract, bone and joint, genitals and septicemia

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## Learning points - appendicitis

- ✗ Acute appendicitis is one of the most common causes of abdominal pain and
- ✗ Is the most frequent condition leading to emergent abdominal surgery in children
- ✗ Common symptoms of acute appendicitis include abdominal pain, fever, and vomiting
- ✗ The diagnosis of appendicitis can be difficult in children because the classic symptoms are often not present and could be symptoms of other diseases

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## Learning points – surgical prophylaxis

- × A single dose of antibiotic is usually sufficient if the duration of surgery is  $\leq 4$  h and there is no previous antibiotic treatment
- ×  $<60$  min before surgery (120 minutes for vancomycin or fluoroquinolones)
- × The second dose if:
  - × prolonged surgery  $> 4$  h
  - × major blood loss  $> 1500$  ml
- × The choice of antibiotic should take into account local resistance patterns
- × The antimicrobial agent chosen (both for prophylaxis & treatment) should be suitable for the organisms likely to be encountered

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Thank you for your attention!

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