GASTRO-INTESTINAL TRACT INFECTIONS - ANTIMICROBIAL MANAGEMENT

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1. INTRODUCTION

Infections of the gastro-intestinal tract can occur as a result of a primary intra-abdominal septic condition (such as acute cholecystitis), as a complication of a general surgical procedure (post-op sepsis) or as a result of an enteric infection affecting the bowel (such as salmonella or campylobacter infection).

The management of patients with *Clostridium difficile* infections can be found in a separate policy (PAT IC 26. V3 Clostridium difficile).

2. ACUTE CHOLECYSTITIS AND CHOLANGITIS

2.1 *Acute cholecystitis* is characterised by:
- Local signs of inflammation including localised abdominal tenderness in the right upper quadrant (RUQ)
- Systemic signs of inflammation including fever plus raised inflammatory markers (CRP and WCC)
- Characteristic findings on imaging

2.2 *Acute Cholangitis* is characterised by:
- History of biliary disease
- Charcot’s triad (fever, jaundice, abdominal pain – upper/RUQ))
- Suggestive findings on imaging (biliary dilatation, stricture or stone)

An assessment should be made of the severity of the cholecystitis or cholangitis - at their most severe, they may be accompanied by multi-organ dysfunction.

2.3 Investigations required:
- FBC, U&E, CRP, LFT
- Amylase
- Blood culture
- Arterial blood gas (if severe)
- Abdominal x-ray
- Other urgent imaging may be required
- Bile fluid culture (if this is drained or aspirated)

2.4 Antimicrobial Management

**Co-amoxiclav IV 1.2g tds** - oral switch - **co-amoxiclav 625mg tds**

A senior surgical assessment of disease severity should be undertaken.

Course length 5-7 days depending upon severity and progress.
Exceptions:-
- Penicillin allergy (non-anaphylaxic) – **cefuroxime 1.5g tds IV** (Oral switch – **cefalexin 500mg tds**)

- Penicillin anaphylaxis – contact Microbiologist

*(If the patient is >65 years AND has received co-amoxiclav or cephalosporins in the previous 2 weeks use piperacillin + tazobactam 4.5g tds IV)*

### 3. ACUTE DIVERTICULITIS

3.1 The aetiology of acute diverticulitis is not clear, but is likely to be an inflammatory process. Up to 25% of patients with diverticulosis (presence of diverticula in the colon) will develop diverticulitis. The sigmoid colon is most commonly affected. Not all patients with diverticulitis require antibiotics and patients should be assessed for evidence of sepsis before commencing antibiotics.

3.2 **Acute diverticulitis** is characterised by:
- Constant abdominal pain – usually left lower quadrant.
- May be associated with fever, chills, nausea, vomiting, diarrhoea or constipation.
- May be complicated by abscess, fisture, perforation or bowel obstruction.

3.3 Investigations required:
- FBC, U&E, CRP
- Blood Culture
- MSU
- Arterial blood gas (if suspected sepsis or complicated disease)
- Abdominal x-ray
- CT abdomen may be indicated

3.4 **Antimicrobial Management**

**Senior surgical review** is required to determine the need for antimicrobial treatment

*Uncomplicated*:-

Antibiotics not normally indicated. Individual patient assessment required

*Complicated OR evidence of sepsis*:-

**Co-amoxiclav IV 1.2g tds** - oral switch – **co-amoxiclav 625mg tds**

Course length – 5 days (but dependent upon clinical response)

*Exceptions*:-
• Penicillin allergy (non-anaphylactic) – **cefuroxime 1.5g tds + metronidazole 500mg tds IV**
  (Oral switch – cefalexin **500mg tds + metronidazole 400mg tds**)

• Penicillin anaphylaxis – contact Microbiologist

• *(If the patient is >65 years AND has received co-amoxiclav or cephalosporins in the previous 2 weeks use piperacillin + tazobactam 4.5g tds IV)*

### 4. ACUTE APPENDICITIS

4.1 This is the commonest surgical cause of acute abdominal pain, caused by obstruction of the lumen of the appendix by faecoliths or lymphoid tissue. It may be complicated by perforation, leading to generalised peritonitis, or abscess formation. Diagnosis is made clinically.

4.2 **Acute appendicitis** is characterised by:-
  • Colicky peri-umbilical pain, moving to right iliac fossa and becoming sharper.
  • Tenderness in RIF with localised evidence of peritoneal irritation (guarding and rigidity)
  • May be complicated (peritonitis, abscess) with evidence of sepsis
  • Can be difficult to diagnose, especially in women

4.3 Investigations required:
  • FBC, U&E, CRP
  • MSU
  • Blood culture if febrile
  • Others (including imaging) – as clinically indicated

4.4 **Antimicrobial Management**

*Appendicectomy* is the definitive management and should be undertaken without delay, with appropriate prophylactic cover (see **Policy for Antimicrobial Prophylaxis for Surgical Procedures**)

Pre-operative antibiotics should only be given if there is evidence of sepsis and/or complicated disease (peritonitis/abscess), in which case a course of antibiotics is indicated:-

**Co-amoxiclav IV 1.2g tds** - oral switch – **co-amoxiclav 625mg tds**)

Course length – 5 days

**Exceptions:-**
  • Penicillin allergy (non-anaphylactic) – **cefuroxime 1.5g tds + metronidazole 500mg tds IV**
  (Oral switch – cefalexin **500mg tds + metronidazole 400mg tds**)

• Penicillin anaphylaxis – contact Microbiologist

• *(If the patient is >65 years AND has received co-amoxiclav or cephalosporins in the previous 2 weeks use piperacillin + tazobactam 4.5g tds IV)*
5. ACUTE PANCREATITIS

5.1 Acute pancreatitis is an inflammatory rather than an infective condition and antibiotic prophylaxis is not recommended. Infection of necrosis is the most serious local complication of pancreatitis but antibiotics are unlikely to affect the outcome in patients without extensive necrosis. It is particularly important that the underlying cause of the pancreatitis is treated. Eradication of gallstones prevents the risk of recurrence and for an attack of mild acute pancreatitis early definitive surgery should be undertaken. If the pancreatitis is severe then cholecystectomy should be undertaken after resolution of pancreatitis.

For further information see “Treat the Cause. A review of the quality of care provided to patients treated for acute pancreatitis. National Confidential Enquiry into Patient Outcome and Death (2016)”

5.2 Antimicrobial management

- Antibiotic treatment should be considered ONLY in patients with CT evidence of more than 30% necrosis of the pancreas AND persistence or deterioration of symptoms after 7 days of hospitalisation and in those with smaller areas of necrosis and clinical suspicion of sepsis.
- CT-guided fine needle aspiration (FNA) for microscopy and culture to guide use of appropriate antibiotics is advisable. Discuss with the Consultant Surgeon
- Choice of empiric antibiotics should be discussed with a Microbiologist.
- Antibiotic treatment of an extra-pancreatic infection (e.g. cholangitis, urinary tract infections, pneumonia etc) in a patient with pancreatitis should be in accordance with Trust guidelines

6. PERITONITIS AND POST-OPERATIVE INTRA-ABDOMINAL INFECTION

6.1 If a patient becomes unwell post-operatively with evidence of sepsis, this should be investigated appropriately with:-
- FBC, U&E, CRP, LFT
- Blood cultures
- MSU
- Wound swab
- Samples from drainage sites or pus collections
- Imaging to exclude collections
6.2 Antimicrobial management

*Initial empiric therapy* pending outcome of investigations:

**Co-amoxiclav IV 1.2g tds - oral switch – co-amoxiclav 625mg tds**

**Exceptions:**
- Penicillin allergy (non-anaphylactic) – *CEFuroxime 1.5g tds + metronidazole 500mg tds IV*
  (Oral switch – *CEfalexin 500mg tds + metronidazole 400mg tds*).
- Penicillin anaphylaxis – contact Microbiologist
- *(If the patient is >65 years AND has received co-amoxiclav or cephalosporins in the previous 2 weeks use* *Piperacillin + Tazobactam 4.5g tds IV)*

**7. LIVER ABSCESS**

7.1 May be bacterial, fungal or parasitic. Patients typically present with fever, RUQ pain and tenderness but may also have nausea/vomiting and weight loss.

Investigations should be as section 6.1
Diagnosis is confirmed by imaging (ultrasound/CT) with aspiration and culture of the abscess material.
Abscesses should be drained either by percutaneous catheter or needle aspiration, depending on size of abscess (repeat needle aspiration may be required).

**7.2 Antimicrobial management**

- **Co-amoxiclav 1.2g tds IV** (first-line)
  *(If the patient is >65 years AND has received co-amoxiclav or cephalosporins in the previous 2 weeks use* *Tazocin 4.5g tds IV)*
- Penicillin allergy (non-anaphylactic) – *CEFuroxime 1.5g tds + metronidazole 500mg tds IV*
- Penicillin anaphylaxis – contact Microbiologist

**8. SUPERFICIAL WOUND INFECTION**

Flucloxacillin 500mg – 1g qds IV/po

Penicillin allergy – *Clarithromycin 500mg bd IV/po*

Course length usually 5 days, depending on nature of infection
9. INFECTIOUS GASTROENTERITIS

Causative organisms include *Salmonella*, *Shigella*, *Campylobacter*, *E.coli* O157. These infections are self-limiting and rarely require antibiotics. Antibiotics are contra-indicated in *E. coli* O157 infection as they are likely to increase the risk of complications such as haemolytic-uraemic syndrome and may prolong carriage of *Salmonella*. Patients causing concern should be discussed with the Microbiologist.

10. SPONTAENEOUS BACTERIAL PERITONITIS (SBP)

10.1 This is ascitic fluid infection without a surgical intra-abdominal source. It usually occurs in patients with cirrhosis and ascites. Most common causative organisms include *E.coli* and streptococci, including pneumococci and enterococci. Mortality has been reduced to 20% with early diagnosis and treatment. It may be asymptomatic or may present with:

- Fever
- abdominal pain, vomiting
- altered mental status
- should also be suspected in those presenting with hepatic encephalopathy,
- impaired renal function or unexplained leucocytosis

10.2 Investigations required:-

- Blood cultures
- FBC, U&E, CRP
- Abdominal paracentesis – 10-20 mls of ascitic fluid should be placed into blood culture bottles and an EDTA tube and sent urgently to the laboratory. **>250 neutrophils/ml is diagnostic of SBP in the absence of a perforated viscus or inflammation of an intra-abdominal organ**

Note – multiple organisms growing in ascitic fluid is suggestive of perforated bowel

10.3 Antimicrobial Management

All patients with ascitic fluid counts of > 250 neutrophils/ml should commence empiric antibiotic therapy with:-

**Co-amoxiclav 1.2g tds IV** (first-line)
(If the patient is >65 years AND has received co-amoxiclav or cephalosporins in the previous 2 weeks use tazocin 4.5g tds IV)

Penicillin allergy (non-anaphylactic) – **cefuroxime 1.5g tds**

Penicillin anaphylaxis – discuss with Microbiology

*If ascitic fluid neutrophil counts do not fall by >25% by 48 hours of therapy then discuss alternative antibiotics with a Microbiologist*
10.4  *Prophylaxis of SBP*

Only recommended for patients who have had a previous episode of SBP:

**Ciprofloxacin 500mg od** (Ciprofloxacin allergy – discuss with Microbiology)

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**11. REFERENCES**


