# Intra-abdominal sepsis
# Peritonitis

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# Outline

- Definition
- Types
- Risk factors
- Diagnosis
- Treatment

# Definition

- Infection contained within the peritoneum or retroperitoneal space.

- Peritoneal cavity contains:
  - Stomach
  - Small bowel / part of duodenum Except part of the deudenum
  - Large bowel
  - Liver, gallbladder and spleen

- Retroperitoneal space:
  - Duodenum
  - Pancreas
  - kidneys

# Intra-abdominal infection

## Examples

- Peritonitis
- Intra-abdominal abscess
- Appendicitis
- Diverticulitis
- Pelvic inflammatory disease

# GIT Microflora

- **Stomach:**
- H-pylori
- Streptococci
- Lactobacilli
- **small intestine:**
- Aerobes:
- Streptococci and Staphylococci
- Lactobacilli, enterobacter
- E. coli, klebsiella
- Anaerobes:
- Bacteroids
- Clostredium

**Colon:**

- Aerobes:
  - Staphylococcus, streptococci
  - Enterobacter
  - E.coli, klebsiella

- Anaerobes:
  - Bacteroides
  - Clostridium

# Peritonitis

**Inflammation of the serous lining of the peritoneal cavity.**

Due to:

- Microorganisms Regardless if the source of MOs externally or from GIT
- Chemicals Bile ( in case of bile leak , stool ( in case of perforated bowel )
- Foreign body Penterating abd. Injury

# Peritonitis

Types:

- Primary (spontaneous bacterial peritonitis)
- Secondary
- Tertiary

- Peritoneal membrane measures about 1.7 m2.
- 20 -50 ml transudate In healthy person لازم يطلع سوائل بهاي الكمية القليلة

- Peritonotis  is a life threatening condition if  not treated properly

# Primary peritonitis

Risk factors:

- Liver cirrhosis with ascites; 25% of patients with alcoholic cirrhosis.
- Chronic ambulatory peritoneal dialysis; 60% of patient will have at least one episode in the first year
- Abdominal catheters connecting to exterior body.

# Primary peritonitis

- Usually monomicrobial
- Bacteria transported from blood stream to peritoneal cavity

- Common microorganism:

- E.coli
- Streptococci
- Enterococci
- Klebsiella
- Staphylococci
- Bacteroides
- pseudomonas

# Secondary peritonitis

- Secondary to the entry of bacteria or enzymes into the peritoneum from the gastrointestinal or biliary tract.

Caused by:

- Perforated DU food and bile in addition to normal flora from GIT رح يدخل عليه
- Perforated appendix
- Perforated diverticulitis
- Usually polymicrobial

# Tertiary peritonitis

- Peritonitis in a critically ill patients which persists or recures at least 48 hr after apparently adequate management of primary or secondary peritonitis.

# Diagnosis

**History:**

- Abdominal pain
- Nausea/ vomiting, constipation

**P/E:**

- Fever, low B/P, RR, HR.
- Abdominal quarding/rigidity
- Hypoactive bowel sounds

**Labs:**

- leucocytosis

# Investigation

Peritoneal fluid analysis:

- WBC < 300 CELLS/mm3
- Protein: <3g/dl

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حكى الدكتور بمحاضرة ١٨.

Bacterial peritonitis:

- 300 – 500 ml inflow/hr resulting in hypovolemia
- WBC > 300 Cells/mm3
- Gram stain and culture

# Microbiology

- Peritoneal fluid analysis
- Nosocomial organisms usually associated with infections at health care centres.

# Prognosis

- Bad if not treated.
- If treated, mortality Depends on the underlying cause.

# Intra-abdominal abscess

Pus surrounded by fibrinous layer

- Result from chronic inflammation and often occur without generalized peritonitis.

- Contained within a fibrinous capsule
- Size is variable
- Located within peritoneal cavity or visceral organs
- Appendicitis is the most common cause

Other causes : crohns and diverticultis

# Intra-abdominal abscess

Microorganisms:

- E.Coli
- Klebsiella
- Enterococci
- Clostridium
- B. fragilis

# Symptoms

- Less dramatic than generalized peritonitis
- Localised

If ruptured:

- Spread of bacteria and toxins >>> generalized peritonitis.
- Spreading of bacteria and toxins into systemic circulation >>> sepsis

# Treatment of intra-abdominal infection

- Resuscitation:
- Surgical:
- Abscess: depends on the size (surgical or IR).
- Repair of perforated DU. Local control of the source
- Resection of perforated colon
- Appendicectomy

**Antimicrobial:**

- Empiric antibiotic must cover aerobic and anaerobic coverage:
- Piperacillin/tazobactam Both
- Ampicillin/sulbactam Both
- Meropenem For anaerobes
- Metronidazole (anaerobic only).

**Aerobic activity:**

- Aminoglycoside
- Gentamycin, tobramycin (g –ve only)
- B – Lactams
- Cefotaxime and ceftriaxone
- Quinolones
- Ciprofloxacine ; mostly gram negative.
- Levofloxacin (+/- and anaerobic coverage) Tavanic
- Vancomycin/ linezolid: MRSA/ Enterococci

# Antibiotic therapy

Antibiotic selection:

- Suspected organism and severity of infection. Toxicity and allergy.

Antibiotic therapy depand on :
1- pt has allergy to one of them or not
2-possible toxicity ( in renal imparment pt. ) some drugs has nephrotoxicity effect.
3- severity of infection

- Failure to improve:
  - Resistant organisms Or wrong choice of drug
  - Recurrent surgical infection
  - Other infections : UTI, pneumonia. Wrong diagnosis

Cephalosporine and metrodanzole for mild peratonitis such as appendicitis