

ACUTE INFECTIOUS DIARRHOEA

=====

WHO definition of diarrhoea:

.....

- Passage of 3 or more loose or liquid stools per 24 hours, or more frequently than is normal for an individual person
- Diarrhoea might be one of the following:



A) Acute diarrhoea: less than 7 days

It is either

- Watery: non-inflammatory diarrhoea caused by non-invasive bacteria, viruses and protozoa

Or

- Inflammatory (bloody diarrhoea) or Dysentery (frequent scanty stools with blood and mucus in stools + tenesmus)

Caused by invasive bacteria, viruses and protozoa

N.B: Acute vomiting and/or diarrhoea often referred to as acute gastroenteritis

B) Prolonged diarrhoea: 7 - 13 days

C) Persistent diarrhoea: 14 - 29 days

D) Chronic diarrhoea \geq 30 days

عدوى الاسهال الحاد لها اسباب كثيره منها اسباب بكتيرييه bacterial وفيروسيه viral واحيانا protozoal 🌱

A) Bacterial causes

=====

1. Bacteria causing Food poisoning:--

I> **Non - invasive** (Toxin -mediated)

Causing watery diarrhoea:

- # Staph .aureus
- # Bacillus cereus.
- # Clostridium perfringens.
- # Enterotoxigenic E.Coli
- # Vibrio Cholera (not endemic in Egypt)

II> **Invasive** (causing bloody diarrhoea)

- # Salmonella enteritides & Typhimurium.
- # Shigella Spp.
- # Enterohemorrhagic E.Coli (O: 157; H7) or STEC.
- # Campylobacter jejuni.
- # Vibrio Parahemolyticus.
- # Yersinia Enterocolitica.

2. Bacteria causing diarrhoea related to **Antibiotics**

E.g Clostridium difficile.

3. Bacteria causing diarrhoea related to **Travel** [[Traveller's diarrhoea]].

E.g Entero-toxigenic E.Coli.

B) Viral causes

=====

The most important causes of viral Gastroenteritis are 🏠🏠🏠🏠🏠

➡️ NOROVIRUS in adults

➡️ Rota virus in children

C) Protozoal causes

=====

Amoebic Dysentery (invasive)

Giardiasis

Cryptosporidium parvum

Cyclospora

🍌🍌 Bacterial Food poisoning 🍌🍌

=====

🕒 Non inflammatory diarrhoea (Toxin mediated) [[Acute watery diarrhoea]]

البكتيريا تضع سمومها على المأكولات ولكن هيا نفسها لا تصل الى الدم

(No bacteremia)

🔴 Staph aureus :

- Incubation period: 1 - 6 hours
- Clinically:
Nausea, vomiting and diarrhoea (watery)
- Common food sources:
Poultry الدواجن
Potato
Egg salade
Mayonnaise

🔴 Bacillus Cereus

- Incubation period: 1 - 6 or little more
- Clinically:
Nausea, vomiting and diarrhoea
- Common food sources:
Fried rice and
Reheated rice الرز المعاد تسخينه

🔴 Clostridium perfringens

- Incubation period: 8 - 16 hours
 - Clinically:
Abdominal cramps and watery diarrhoea
(vomiting rare)
 - Common food sources:
Beef
Poultry
Legumes البقوليات
- *****

🔴 Entero-toxigenic E.Coli

- Incubation period: > 16 hours
- Clinically:
Watery diarrhoea
- Common food sources:
Salads, cheese meats

🔴 Inflammatory diarrhoea (Dysentery or bloody diarrhoea)

- البكتريا تخترق ال colonic mucosa وتسبب دوستاريا
bacteremia (اسهال مخاطى او مدمم) وغالبا ما تسبب
- *****

🔴 Salmonella Spp (enteritides and Typhimurium)

- Incubation period: > 16 hours
- Clinically:
Bloody diarrhoea + tenesmus ± fever
- Common food sources:
Beef
Poultry
Eggs
Dairy products منتجات الالبان

🔴 Shigella species

- Incubation period: > 16 hours
 - Clinically: Dysentery
 - Common food sources:
Potato
Egg salad
Lettuce الخس
- *****

🔴 Campylobacter jejuni

- Incubation period: > 16 hours
 - Clinically:
Dysentery (bloody diarrhoea)
 - Common complication:
Guillan Barre Syndrome
 - Common food sources
Poultry
Raw milk
- *****

🔴 Yersinia Enterocolitica

- Incubation period: > 16 hours
 - Clinically:
Dysentery (bloody diarrhoea)
 - Common complication:
Pseudoappendicitis
- نفس اعراض وعلامات التهاب الزايدة مع وجود دوستاريا
- Common food sources:
Meats
Oysters محار
Crab
Fish
Raw milk

📌 Post infectious complications:

#[Erythema nodosum](#) ==▶ Yersinia, Campylobacter, Salmonella and Shigella.

#[Glomerulonephritis](#) ==▶ Shigella, Campylobacter, and Yersinia.

#[Guillain Barré Syndrome](#) ==▶ Campylobacter.

#[Hemolytic anemia](#) ==▶ Campylobacter, Yersinia.

#[Hemolytic Uremic Syndrome](#) ==▶ STEC and Shigella dysenteriae serotype 1.

#[IgA nephropathy](#) ==▶ Campylobacter.

[Reactive arthritis](#) ==▶ Salmonella, Shigella, Campylobacter and Yersinia.

#[post-infectious irritable bowel syndrome](#) ==▶ Campylobacter, Salmonella, Shigella, and STEC.

حدوث اعراض قولون عصبى بما فيها الاسهال والامساك والمغص والانتفاخ بعد حدوث نزلة معويه مع استمرارها لفته واحيانا صعوبة علاجها

[Intestinal perforation](#) ==▶ Salmonella species, Shigella, Campylobacter, Yersinia

#[Ekiri Syndrome](#) ==▶ Lethal, toxic encephalopathy, and/or seizures

#[Aortitis & Osteomyelitis](#) ==▶ Salmonella and Yersinia.

ايه الفحوصات اللى تعملها لمريض عنده اسهال مشتبه انه نتيجة عدوى ؟

الاجابه : لو اتضح ان نوع الاسهال مدمم او مصاحب بمخاط (دوسنتاريا) يبقى تعمل الاتى

Stool analysis searching for pus cells

+

Stool microscopy for blood

+

Stool culture for demonstration of the organisms & sensitivity

+

Inflammatory markers

ESR, CRP, CBC

اما فى حالة ال Watery diarrhoea

No need for stool analysis or culture

TREATMENT العلاج

❖ **Non inflammatory** (watery diarrhoea caused by **Non-invasive** bacteria)

☀ The mainstay of treatment is:

Fluid and electrolyte replacement

- The type of fluid replacement depends on the degree of dehydration
 - Mild dehydration: < 5 motions with clinical correlation.
 - Moderate dehydration: $\geq 5 - 9$ motions with clinical correlation.
 - Severe dehydration ≥ 10 motions with clinical correlation



✓ Mild to Moderate:

2 - 4 Litres ORS (oral rehydration therapy) Rehydran or low hydran

✓ Severe dehydration:

IV isotonic crystalloid boluses (Better Ringer's lactate) until optimization of pulse, BP and CVP & urine output, then maintenance 20 ml/kg/body weight

نعطى المريض ٥٠٠ - ١٠٠٠ مللى فى central line كنظام bolus ونكررها لحين تحسن ال 8-12 CVP

مع تحسن العلامات الحيويه ثم نعطى ال Maintenance fluids

★ ملحوظه:

Mild diarrhoea < 5 motions

ممكن تسجيب لل symptomatic therapy من غير اى تعويض fluids

Symptomatic therapy:

[#Loperamide](#) (Imodium) 2 mg tab

Dose: 2 tabs initially then 1 tab for every motion, not exceed 16 mg /day

[#Streptoquin](#) tab 1×3

[#Hidrasec](#) tab 1 ×3

❖ **Inflammatory** diarrhoea (dysentery) caused by **invasive** bacteria

- Antibiotics:

First line: Ciprofloxacin 500 mg tab ... 1 × 2 for 3 days

Second line: Azithromycin 1 gm. once/day, may repeated daily for 3 - 5 days if diarrhoea persists.

★ ملحوظة:

المضادات الحيوية محظور استخدامها فى عدوى الاسهال نتيجة

Enterohemorrhagic E.Coli & E.Coli O 157:H7

لتجنب حدوث

Hemolytic uremic syndrome

[Antibiotic -Associated diarrhoea]

(Clostridium difficile infection)

=====

Cl.difficile: spore forming gram +ve anaerobic bacteria

Suspect C.difficile infection (**CDI**) in any patient who has diarrhoea in association with antibiotic exposure

هل هناك عوامل خطوره للاصابه بال CDI ؟

--- < نعم

Risk factors:

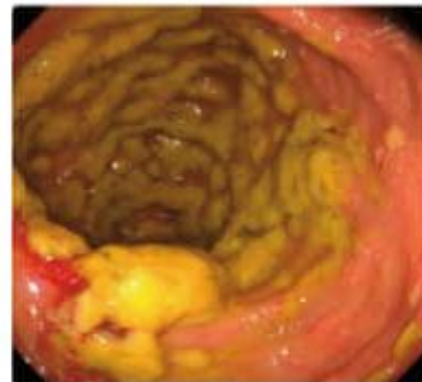
- Major risk factor: antibiotic exposure
E.g. clindamycin & cephalosporins
- Advanced age
- Hospitalization
- Cancer chemotherapy
- Manipulation of the GIT tract (tube feeding)
- Use of PPI

ايه اللي بتعمله البكتريا !؟

Production of toxins (A & B) which causes invasion of the colonic mucosa

--> dysentery & inflammatory diarrhoea

Formation of "pseudomembranes" which are seen in 50% of the patient



Clinically:

- Profuse watery or green mucoid , foul smelling diarrhoea with cramping abdominal pain beginning 4
 - 10 days after starting antibiotic therapy
- (Range: 1day - 8 weeks)

Complications:

- Toxic megacolon
- Perforation
- Peritonitis

ازای تشخیص!؟

Mainly clinical & suspicious by history

لكن لو عايز تتأكد

▶ Detection of C.difficile toxins in stools

▶ Gold standard: culture followed by detection of toxigenic isolate is the gold standard

▶ Endoscopy may be useful to see pseudomembranes.

العلاج:

★ Mild to moderate and first or second episode

---> Metronidazole 500 mg oral every 8 hours for 10 - 14 days

≥ Third episode: oral Vancomycin 125 mg oral every 6 hours for 10 - 14 days

★ Severe (leucocytosis $\geq 15,000$ or creatinine ≥ 1.5 mg/dl)

---> Vancomycin 125 mg oral every 6 hours for 10 - 14 days.

★ Severe, complicated (ileus, megacolon , impending perforation , hypotension or shock

---> Vancomycin 125 - 500 mg oral every 6 hours or Vancomycin enema

+

Metronidazole 500 mg IV every 8 hrs

+

Surgical consultation

[Traveller's diarrhoea]

ايه هي!؟

Three or more unformed stools per day in a person travelling to a developing country

من الاخر كده اسهال بيحصل للناس اللي عايشه فى الدول المتقدمه لما بيسافروا الى الدول الناميه

-العدوى بتحصل نتيجة تناول اطعمه او مياه ملوثة بالبكتريا ،، واشهر بكتريا هيا ال

Enterotoxigenic E.Coli

Other bact: salmonella Spp, Shigella

Also, Viral (Norovirus)

اعراض المرض

- Diarrhoea, anorexia, nausea, vomiting and campy abdominal pain can occur
- Fever is often not present, if present (low grade fever)
- Self-limited disease (3 - 5 days)

العلاج

#Fluid replacement is important

symptomatic for diarrhoea as mentioned before

لا تستخدم المضادات الحيويه الا فى الحالات الاتيه:

★ > 4 stools /day

★ Associated fever

★ Blood, mucus or pus in stools

First line: Ciprofloxacin 500 mg tab oral

1 × 2 for 3 days

Second line: azithromycin as before

VIRAL GASTROENTERITIS

- ★ Caused mainly by Norovirus in adults and Rota virus in childrens
- ★ Incubation periods: 24 hrs - 48 hrs
- ★ Classic /common food sources:
Shellfish, prepared foods, vegetables and fruits
- ★ outbreaks in restaurants, schools, military populations, Cruise ships and health care facilities

الاعراض

- Vomiting
- Watery diarrhoea for 2 - 3 days (Non invasive organism)
- low grade fever may occur

Treatment:

Fluids as before



Symptomatic (No antibiotics)

PROTOZOAL DIARRHOEA

Character :

Persistent (14 - 29 days) or chronic diarrhoea (≥ 30 days)

Causes :

- # Entamoeba histolytica (amoebic bloody diarrhoea or Dysentery): will be discussed in details in amoebic liver abscess
- # Giardiasis (*Giardia lamblia* or *intestinalis*)
- # Cryptosporidium parvum (watery diarrhoea in HIV patients)

Giardiasis

=====

Caused by Giardia lamblia

- Transmission: feco-oral (foods and water)

المياه الغير مفلتره والمياه الملوته بمياه الصرف الصحى

- Endemic in Egypt esp in children

ازای بتحصل العدوى

Contaminated food with cysts ---> release of trophozoites in intestine

--> Attachment of trophozoites to GIT --> duodenum --> malabsorptive diarrhoea

Clinically:

=====

Majority: Asymptomatic carriers' ناس كثير

After incubation period (1 - 3 weeks)

Bloating, abdominal pain, nausea and flatulence, vomiting (occasional)

Steatorrhea (fatty diarrhoea) , weight loss may occur

Symptoms may resolve spontaneously

ازای تشخیصها!

Gold standard: detection of parasites in stools

Repeated Detection of Giardia antigen (ELISA)

Endoscopy & duodenal aspirate + detection of subtotal villous atrophy

Treatment

Metronidazole (flagyl or amrizole)

500 mg /8 hrs. for 7 - 10 days

Or

Tinidazole (Fasigyn 500 mg tab)

4 tab once