

## Diarrhea

لازم نعرف معناها قبل ما نعرف كيف نشخصها و نعالجها

-is either increased frequency or increased looseness of stool (loose watery stool)

هاي الجملة هي المهمة و البسيطة

• Abnormal frequent passage of loose stool (usually 3 or more loose watery stools in 24 hours), but we should know the normal bowel habit & compare to the normal in that pt in order to diagnose it.

or

• Abnormal passage of stools with increased frequency, fluidity, and weight, or with increased stool water excretion

Pt= patient

كل شي حكاه الدكتور محطوط تحته خط من الساليد او الريكورد، و الحكي الي من الريكورد بكون لونه ف اهي اكثر او خط اصغر او لونه كحلي

vomiting أكتر : gastritis (whole G-I)

diarrhea more : enteritis (in intestine)

## Acute diarrhea

- Sudden onset in a previously healthy person
- less than 3 days (self limited, infection) *viral diarrhea*
- Self-limiting usually, because it's mostly viral diarrhea, so what I should do is only rehydration
- Resolves without sequelae because it's mostly virus *without fever.*

## Chronic diarrhea

- longer than 14 days
- Associated with recurring passage of diarrheal stools, fever, <sup>anorexia</sup> loss of appetite, nausea, vomiting, weight loss, and chronic weakness, may be also headache.

\*\*\*Why we are troubled from diarrhea?

-Because of water & electrolytes loss that lead to these previous sequelae

## Diarrhea of Pathophysiology

- Decreased electrolyte and water absorption, because of irritation for instance
- Increase secretion of intestinal mucosa. , so antisecretory is the treatment
- Irritation of mucosal lining ( by drugs or infection)

\*In the matter of infection: the challenge is here, would u give any pt with diarrhea antibiotics?

-U shouldn't of course, firstly check for fever, tenesmus, the stool shape "if there is blood, mucus or not" & other signs of infection then decide! & U shouldn't surely give antibiotics if it's virus!

Examples for microorganisms cause diarrhea: Shigella, ameba, E.coli (very pathogenic), salmonella

\* Drugs because it may cause irritation (adsorbant).

- Stimulation of parasympathetic nervous system, if the problem

is with increased motility, the treatment then is antispasmodic! Anticholinergic.

- Antibiotics that create an imbalance in normal intestinal flora, because among them there is bacteria regulate bowel habit, it's called lactobacillus, this bacteria when killed its function disappear & also give the space for superinfections like clostridium difficile to occur. *clindamycin → Pseudo membranous colitis.*  
*ABs common cause of diarrhea (ampicillin, ...)*

### Goals of treatment of Diarrhea

- Manage the diet, for example dairy products cause diarrhea. *أي شيء ناشف أو ثقيل*  
*يؤثر على المعدة*
- Control the loss of fluids, electrolyte
- Identify and treat the cause
- Provide symptomatic relief
- Sometimes diarrhea is a defense mechanism against pathogen *acidosis* *نقص الـ PH*  
*diarr: loss of Bicarbonate.*  
*Rapid breathing.*

### Treatment:

*Child diar: loss of 5% of weight*  
*10% severe.*

1. Diet management
2. Treatment of fluid depletion, shock and acidosis
3. Drug therapy

### Diet Management

- Avoid dairy product
- Stop solid hard food for 24 hours, hard food may be irritant.

يعني مثال البطاطا ما ياكلها محمرة ناشفة ال بل يسلقها عشان تكون طرية و ما تجرح الميوكوزا

- Continue soft digestible food

### Rehydration

- Not to stop diarrhea
- To restore and maintain hydration
- Maintain electrolyte and PH balance

## What is the role of ORS?

- Just correct fluids, electrolyte & pH imbalance, some food has an alkaline action so loss of much protein & other alkaline foods cause acidity & rapid deep breath, then we should think that the diarrhea may be the cause for pt complain from rapid deep breath as well as diarrhea.

## Oral rehydration (ORS)

- **Isotonic** contain **K<sup>+</sup>**, **Na<sup>+</sup>**, **Cl<sup>-</sup>**, **Citrate** and **glucose** (important)
- Use in mild cases of dehydration (loss 5% of Body Weight)
- Drink every ½ -1 hour interval
- 5 ml/kg/hr in children. *6Kg baby : 30 ml/hr*
- The over taking for these salts as ORS may induce vomiting because it's irritant, so your prescription must be in measures.

## IV Rehydration used in these cases:

- 1- Volume = 10% of Body Weight should be infused
- 2- In sever dehydration, or very weak
- 3- vomiting, it's very logic that we shouldn't give ORS!
- Include : 1 L solution of NaCl, KCl, **NaHCO<sub>3</sub>** (because of acidosis) or 5% glucose

*fluids won't stop diarrhea, it's just compensatory.*

*الارقام مش مهمة\*\**

## Rationale for antibiotic therapy *fever, mucus, Blood in stool.*

- Limited rule in the treatment of diarrhea ????

### Clinical notes:

- the general rule for giving antibiotic to treat diarrhea = watery diarrhea + mucus in stool + fever

*watery without pus, fever → No need, self limited!*

- If watery without mucus, don't give antibiotics, just give rehydration
- Blood with stool isn't mandatory, the mucus is mandatory to give antibiotic

• **Two types of diarrhea are caused by pathogens:**

– Watery diarrhea without mucous with no fever :rota virus

- ORS is the therapy not antimicrobial

– Watery diarrhea with mucous or / and blood : shigela , C.

difficile, E.Histolytica, E. Coli:

- This case need antimicrobial

• **1-Salmonella :**

– ciprofloxacin , azithromycin or I.V <sup>5-7 days</sup> Ceftriaxone (drug of choice) *اريسون*

• **2-Cholera:** Tetracycline and cotrimoxazole

• **3-Clostridium difficile:** Metronidazole and vancomycin

• **4-Amebiasis :** Metronidazole ( for intestinal or extraintestinal) or

Diloxinide furoate (if cysts present in the stool only without trophozoite)

But it's ok, metronidazole (flagyl) is mostly the effective in ameba cases.

• **5-Shigella enteritis:**

– Bloody and mucus stool

– Treated with fluoroquinolone: ciprofloxacin or <sup>نورفلوکساسین</sup> norfloxacin, Cotrimoxazole is alternative

• **6- Enteropathogenic Escherichia coli (EPEC):** Cotrimoxazole or fluoroquinolone

\*To be clear, Should we give antibiotics in any case of watery diarrhea ?

## Antidiarrheals: Adsorbents

بتغلف بالجدار و بتلقط البكتيريا و السموم اللي بدھا تعمل مصايب وتنزل بيها في الامعاء

- Coat the walls of the GI tract
- Bind to the causative bacteria or toxin, which is then eliminated through the stool
- less effective than antimotility agents and they can interfere with the absorption of other drugs
- Examples: bismuth subsalicylate (Pepto-Bismol), kaolin-pectin, activated charcoal, attapulgit (Kaopectate) *coat mucosa*.

### Notes:

- ☐ Bismuth subsalicylate is the hero of GI because it's antiulcer, antiemetic, adsorbent & antisecretory
- Attapulgit is a preparation from Kaolin + pectin  
Atta pul git ( this is unique name actually)
- Adsorbent is bought in form of sachets in markets
- الحمص is natural adsorbent + لبن

## Antidiarrheals: Antisecretory

Octreotide *only for dia due to carcinoid syndrome*

- It is a synthetic somatostatin analog that is growth hormone antagonist & act against serotonin.
- Highly effective in relieving diarrhea of Carcinoid syndrome, which release serotonin that in turn increase the motility & mucus secretion.  
*↑ motility*

- Given SC or in an IV infusion

### Bismuth Subsalicylate

- used for traveler's diarrhea ( Drug Of Choice)

لما الواحد يسافر و مو متعود عالكل بالمكان هناك

- MOA: decreases chloride and fluid secretion in the bowel.
- Its action may be due to its salicylate component as well as its coating action
- Suspension: 60 ml 6 hourly

### Antidiarrheals: Anticholinergics

tone : static contraction (spasm).

↑ motility contraction: peristaltic

- Decrease intestinal muscle **tone** and **peristalsis** of GI tract
- Result: slowing the movement of fecal matter through the GI tract, facilitate water absorption
- Examples: belladonna alkaloids (Donnatal), atropine
- \* atropine extracted from belladonna plant

For traversal dia.

### Antidiarrheals: Antimotility

lopramide

#### Opiates

(antimotility that lessen peristalsis)

\*Note:

-antispasmodic: decrease the tone "contraction", مصمدة واقفة بس بتنقبض

-Antimotility: decrease peristalsis

\*\*\*\*\*

## surely, we won't prescribe morphine for diarrhea but morphine analogs that don't cause addiction.

# morphine & its analogs is with anti-motility action but increase the tone means it's spasmotic.

# morphine has a congener (brother) that he is called meperidine; both of them cause addiction, but meperidine in turn has 2 sons: loperamide & diphenoxylate (these sons is meperidine-like drugs) & these don't cause addiction.

- Decrease bowel motility and relieve rectal spasms
- Decrease transit time through the bowel, allowing more time for water and electrolytes to be absorbed

• Ex: paregoric (Anhydrous Morphine), opium tincture, codeine, loperamide IBS → إسهال diarrhea.  
Diphenoxylate + Atropine (Lomotil) 5 mg first followed by 2.5 mg every 6 hours  
IBS + Const: laxative

# to avoid colic resulting from morphine analogs, we give atropine that is antispasmodic in preparation called Lomotil Diphenoxylate + Atropine = (Lomotil) used also for traveler's diarrhea

# **paregoric** (Anhydrous Morphine), another opiate drug مسكن

• The utility of antimotility drugs in diarrhea is limited to :

- non-infective diarrhea لوقلت الوبائية لنا بسبب الميكروب وبنزيد  
الديفنوكسيل والديفنوكسيل

- Traveler diarrhea

- Idiopathic diarrhea in AIDS

- In chronic diarrhea of mild IBD at low doses ماي infection severe IBD: لا يعطى

• antimotility drugs is contraindicated in:

- Acute infective diarrhea ?? Because they delay clearance of the pathogen from intestine, if shigella, EC, EH present the use of antimotility increase risk of systemic invasion.