



Clinical Analysis Course
Lecture: 3- Fourth Stage – Biology Depart.

Dr. Yasir Adil Alabdali

General Stool examination

The stool tends to be soft and bulky on a diet high in vegetables and small and dry on diet high meat. Two third of stool weigh is attributable to is water content. The normal brown colour is of still undetermined origin. The odour result from indole and skatole produce by bacteria from tryptophan.

• Type of stool and causes

Type of stool	causes
Watery stool	Diarrhea.
Clay stool	Obstructive jaundice or presence of barium sulfate.
Reddish stool	Blood from lower gastrointestinal tract.beets consumption.
Black or tarry stool	Bleeding from upper G.I.T., Iron.
Green stool	Ingestion of spinach, seen in patients taking antibiotic orally.

• Inspection of feces

Note the quantity form consistency and colour of the stool. A simple inspection of feces many lead to a diagnosis of parasite infection obstructive jaundice, diarrhea, malabsorption, dysentery or ulcerative colitis or gastrointestinal tract bleeding.

• Pus

Patient with chronic ulcerative colitis and bacillary dysentery frequently pass large quantities of pus with the stool that has to be examined microscopically.

• **Mucus:** even slightest quantity is abnormal.

• Blood

Blood in stool should never be ignored however slight the quantity may be. Bleeding upper G.I.T may give black – tarry appearance to stool while that arising from lower G.I.T. may give red colour or be seen as frank blood.



Clinical Analysis Course Lecture: 3- Fourth Stage – Biology Depart.

Dr. Yasir Adil Alabdali

- **Microscopic examination of stool specimens:**

Stool specimens should be fresh and must not be contaminated with detergents or disinfectants. Having described the gross appearance proceeds on for microscopic examination for cells and parasite following:

1-Place a small piece on a slide and with saline until smooth cover with a cover slip.

If the specimen contains mucus, examine preferably without saline the mucus is put on the slide and cover with cover slip.

2- Examine under (10x) and (40x) objective, with a reduced condenser aperture.

3- Report the presence:

A-Large number of pus cell or muscle fiber.

B-Red blood cells

C-Free living amoeba, flagellates or ciliated.

D- Eggs and larvae

E-Cysts

F-Yeast cells.

- **Use of saline:**

Normal (0.85%) saline is used for routine examination of stool specimen. As it is isotonic with living organisms. Use fresh uninfected saline.

- **Use iodine**

Iodine is used to examine the nuclear structure of cysts, the preparation made in the same way as for saline.

- **Use of (1%) eosin**

This provides a pink background against which the cysts and amoebae stand out clear unstained objects.

- **Protozoa**

The most important intestinal parasitic infection of man.



Clinical Analysis Course Lecture: 3- Fourth Stage – Biology Depart.

Dr. Yasir Adil Alabdali

• Diseases of Gastric Intestinal Tract (GIT)

Infected with the digestive system many infections and can find out by the appearance of severe symptoms such as nausea, vomiting and diarrhea combined or single. And will vary depending on infection and their causes as follows:

1- GIT diseases associated with toxin producing microorganisms

Microorganisms produce various kinds of toxins (enterotoxins) for example, produces bacteria *Staph. aureas* and *Bacillus cereus* are two types of intestinal toxins (neurotoxins) that affect the nerves leading to vomiting. The bacteria *E.coli* and *Shigella dysenteria* and *Vibrio parahemolyticus* they secrete (cytotoxin) working to rupture and destroy the epithelial cells and blood cells in the lining of the intestines, causing hemorrhage colitis in the large intestine as well as the phenomenon of bloody urine hemolytic uremic syndrome as they will be the faeces of the patient in this type of inflammation profuse watery and does not effect the presence of cells Pmns.

2- GIT associated with destruction of cell function without toxin

In this type of injury multiplied microorganisms within epithelial cells lining intestines, which disrupts function of these cells and thus diarrhea of the most important causes of this type are viruses such as Rotaviruses and Hepatitis and Adenoviruses as well as yeasts such as *Candida* and filamentous fungi and during period use of antibiotics wide spectrum or drugs immune suppression. As not seen blood cells or cells Pmns in this type of infection.

3- GIT associated with invasive mucosa

Some microorganisms to invade layer epithelial lining of the colon lead to necrosis in epithelial cells and rupture in the blood capillaries in the region, which causes severe pain accompanied by diarrhea bloody mucous (the content of the stool is composed of red blood cells and white in addition to the presence of causes. It is the most important causes of this type of diseases of the digestive system:

1-Trophozoites phase for each of the parasite *Entamoeba histolytica* and *Balantidium coli* and called the condition Amoebic dysentery.



Clinical Analysis Course

Lecture: 3- Fourth Stage – Biology Depart.

Dr. Yasir Adil Alabdali

2- Some kinds of bacteria such as *Shiglla dysentria* called diarrhea bacillary (Bacillary dysentery) and as well as the *E.coli* bacteria, which is a kind (enterovasive).

4- GID associated with adherent microorganisms

The most important causes of this type is the parasite *Giardia lamblia* from flagellate that stick on epithelial cells of lining duodenal and midgut, which occurs the case of inflammatory and disrupt cell function in secretion and absorption is called this infection Giardiasis and have fecal in this case water and shiny unpleasant smelly as well as note that phase trophozoites of the parasite and the number of Pmns and RBCs cells.

- **Collect stool samples**

You must collect stool samples at an early stage of infection before the patient took antibiotics or lotions deadly parasite or fungi in order to ensure the isolation of pathogens and to see clearly in the direct examination.

Put samples in bottles of sterile court of the lid and place the required tests within an hour to two hours and if not take place during that period of movement by keeping them in transport medium such as (Cary-blair) transport medium suitable for most of the microorganisms and the medium (alkaline peptone water) suitable to isolate the bacteria *Vibrio spp* may be difficult occasionally get on a stool in the usual way, especially the children, so give rectal swabs by sterile cotton swab examined directly and saving in transport medium

Has been taken in some cases, (tissue biopsy) which is part of the mucous layer for the purpose of cytopathological examination and investigation of bacteria *Helicobacter pylori* that cause stomach ulcers and keep of such samples in solutions of buffer such as dextrose phosphate buffer.



Clinical Analysis Course
Lecture: 3- Fourth Stage – Biology Depart.

Dr. Yasir Adil Alabdali



- **Stool culture**

Samples must be culture immediately and if not possible, be keep in transport medium in temperature (4C°) for period of (18) hours at most.

Preparation samples for the purpose of culture (part of the samples, rectal swabs) and that the work of suspended him with (1ml) of sterile normal saline solution to obtain a homogeneous turbid. Dishes medium cultured from solution preparation by loop standard on the Blood agar and MacConkey agar. We may need to more accurate diagnosis of certain types bacteria, so is used among the differential or selective such as:

1-Diagnose the types of bacteria *Salmomella* or *Shigella* use medium following:

- A- Deoxycholate citrate agar.
- B- Hekton enteric (HE).
- C- Xylose- lysine – deoxcholate agar (XLD).

2-Diagnose the species belonging to the genus *Campylobacter spp* using medium

- Mueller-Hinton agar with 5%sheep blood in (42C°).



Clinical Analysis Course Lecture: 3- Fourth Stage – Biology Depart.

Dr. Yasir Adil Alabdali

3-Diagnose the species of the genus *Vibrio spp.*

- Thiosulfate citrate bile salts (T.C.B.S) for *Vibrio spp.*

Is complete diagnose colony bacterial developing depending on the laboratory tests of chemical, antisera and API systems or PCR and are then subjected to screening bacterial isolates were sensitive to antibiotics to identify the correct treatment.