Tikrit University

College of Nursing

Basic Nursing Sciences

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Microbiology

Parasitology

Methods for diagnosis parasitic samples

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Methods for diagnosis parasitic samples

• Examined fresh stool (direct).
• Examined fresh urine (direct).
• Immunological methods.
• Molecular methods.
• Culture methods.
• Histological examination (bone marrow)

Definition

*Human feces are called as stool
*Faeces / Feces is plural of latin term faex meaning RESIDUE.

It is the waste residue of indigestible materials of the digestive tract expelled through the anus during defecation.
*Meconium is newborn's first feces. SCATOLOGY or CAPROLOGY is the study of feces.

Composition

• ¾ Water, ¼ Solid
• Undigested and Unabsorbed food
• Intestinal secretions, Mucous
• Bile pigments and Salts
• Bacteria and Inorganic material
• Epithelial cells, Leukocytes

Precaution Before Collection

• Patient should avoid the following things for at least 48 hrs. before collection of stools
• Meneral oils, bismuth, non-absorbable antidiarroeal drugs, antimalarial drugs, antibiotics, etc
• Avoid iron containing drugs, meat, fish etc for at least 48hrs. Before stool for occult blood
• In constipated patients use only non-residual purgative.

COLLECTION (Universal precautions)

• Stool should be collected in a sterilized, wide mouthed container.
• Loose/last/portion containing mucus, blood etc is to be collected in a wide mouthed bottle.
• Should be uncontaminated with urine or any other body secretions.
• Properly named and always a fresh sample should be tested.

• Liquid stool to be examined within ½ hour
• Solid stool to be examined within 1 hour.
• If delayed store in a refrigerator.

TYPES OF EXAMINATION
• MACROSCOPIC EXAMINATION:
color, volume, consistency, odour, blood, mucus, pus, and adult helminths.
• CHEMICAL EXAMINATION:
reactions, occult blood, fat, carbohydrate, protein, etc

MICROSCOPIC EXAMINATION:
remnants of food, pus cells, macrophages, RBCs, crystals, bacteria, yeasts, molds, protozoa, helminths.

• STOOL CULTURE
EXAMINATION MACROSCOPIC
*Amount: Normal is 150 g to 200 g/day and increased in steatorrhoea, diarrhoea, indigestion of carbohydrate.
*Color of stool: Human fecal matter is normally yellowish brown in colour which results from a combination of bile and bilirubin.

***Consistency or form:**
• Normal is soft but formed
• Excessively hard/scybala- habitual constipation
• Flattened or ribbon like-intake of excess of mineral oil, carcinoma of rectum, stricture of rectum
• Soft, mushy, liquid and voluminous- diarrhea, intake of purgatives
• Small numerous, largely mucus and blood with small amount of stool- dysenteries
• Rice watery without fecal matter- Cholera

*Odour of stool: Normal odour of the stool is aromatic due to INDOLE and SKETOLE are the substances that produce normal odour formed by Intestinal bacterial fermentation and putrefaction.
Increased: A foul odour is caused by excessive protein and degradation of undigested protein, and excessive carbohydrate intake. Sickly sweet odour is produced by undigested Lactose.Sour rancid: fatty acid in milk indigestion (in children and adults), normal in infants. Putrid: severe diarrhoea of malignancy, gangrenous dysentry.

Reaction

- Normal is neutral
- Ph varies from 6.9 to 7.2
- pH is dependent on bacterial fermentation and putrefaction in the bowel.
- Alkaline – excess protein ingestion
- Acidic – excess carbohydrate ingestion

Mucus

- Small quantity of mucin is normal
- Small quantity – faeces from small gut
- Excessive quantity – infection of intestine
- Entirely mucus with little or no faeces and streaks of blood- dysentery, ileo colitis, intussusception

Blood

- Absent in normal faeces
- Formed stool with streaks of blood – lesion in sigmoid colon, rectum or anal canal
- Liquid stool with bright red blood, pus and mucus- bacillary dysentery, ulcerative colitis
- Semi formed stool with deep tarry black blood- melena
- Loose stool with deep cherry red blood- melena

Examination and collection of the stool (feces):

Examination of stool becomes necessary if gastrointestinal, symptoms diarrhea, dysentery is present. Most of parasites which inhabiting the gastrointestinal tract are found in the stool.

General stool examination(G.S.E)

Examination of stool sample (GSE) include: -

A. Macroscopic examination (by naked eye)

B. Microscopic examination (by microscope)

Macroscopic examination (by naked eye):

1- Consistency: normal feces is fresh, dense and semisolid, but abnormal stool sample is: solid (formed), watery (liquid), mucoid , bloody ,bloody with mucus.

2- Color: normal stool is (brown or little dark brown). But the other colors are abnormal like: yellow, black, green, red.

3- Presence of blood: the normal stool must be without blood.

4- Presence of mucus: little mucus found in normal stool but it is increased in pathogenic cases.
5- Presence of stones: you can observe it by using wooden stick.
6- Presence of parasites: whole worm like ascaris, or segments of worms.
7- Presence of foreign bodies.
8- Presence of food particles.

Microscopic examination (by microscope):

1- Parasitic findings:
A- protozoa (trophozoite and cyst).
B- Whole worm or segment (proglotted) of worm.
C- Ova (eggs) of worms.
D- Larva of worms.
2- Non- parasitic findings:
A- bacteria: e.g. bacilli
B- air bubbles
C- fat droplets
D- muscle fibers
E- animal cells
F- red blood cell (RBC)

G- pus cell
H- fungi
I- stones

Preparation of slide fresh stool:

1- take clean slide and put one drop of (normal saline) on one side and one drop of iodine solution on another side.
2- Take small amount of stool by mean of wood stick and first mix well with the drop of normal saline and then with the iodine solution.
3- Cover it with cover slide.
4- Examination in under microscope (zigzag line) using 10X and 40X objective lens .