



UNIVERSITY OF NAIROBI

College of Health Sciences

DEPARTMENT OF MEDICAL MICROBIOLOGY

MBCHB II

VIROLOGY AND PARASITOLOGY CAT

DATE: 3rd April, 2017

TIME: 9.00 - 11.00 AM

Instructions:

Attempt all questions.

Answer question 1, 2 and 3 in booklet one and question 4, 5 and 6 in booklet two.

1. Outline five laboratory techniques used in the diagnosis of parasitic infections in humans (5 marks)

cone technique, katokatz, culture, serology, Harada - Mori cone technique

2. Describe the clinical manifestations of *Trichinella spiralis* infection (5 marks)

myositis, periorbital edema, myocarditis, inflammation of eye, swallowing difficulty, oedema

3. Briefly discuss

a. Complications of Hookworm infections (5 marks)

skin damage - pyogenic bacteria, anaemia, emphysema, hypochromia, iron deficiency, pneumonitis, arthritis, abd discomfort, obstruction, malabsorption, iron deficiency

b. The pathology of infections with *Ascaris lumbricoides* (5 marks)

obstruction, jaundice, Biliary colic, Acute cholecystitis, Intestinal obstruction, vulvovaginitis, Ascending cholangitis, Intestinal perforation

c. Laboratory diagnosis and treatment of *Enterobius vermicularis* (5 marks)

Adhesive Scotch tape, Swab technique, Cephalic swelling, Meb - with anal warm, Alb - ATP sublingual, Pyrantel pamoate, permethrin, treatment - doxycycline

4. Write brief notes on alpha-herpesviruses (5 marks)

enveloped, icosahedral ds DNA, HSV 1 & 2, - lumbar sacral, - neurons (latency), - sores in genitals & face, treatment - doxycycline

5. Outline

a. Five characteristics of the asymptomatic stage of HIV infection (5 marks)

general malaise, flu-like symptoms, night sweats, weight loss, dry cough

b. Five characteristics of human papillomaviruses (5 marks)

HPV, DNA, RNA, integrated - enveloped, vacillation, from skin, from yeast, -571, -871

6. Briefly discuss;

a. The virology of Rotavirus (5 marks)

b. The immunology and treatment of Rotavirus (5 marks)

* Questions.
① Relationship btwn hydrostatic & oncotic pressure
: In Bowman's capsule → want
↑ oncotic & ↓ hydrostatic
(electrostatic?)

Write on this

REG No. H31/360-11/2015

Write on both sides of the paper

Question..... 1

Do not
in e
m

Laboratory techniques used in the diagnosis of parasitic infections.

Concentration technique, → for example kato katz technique or Harada mori filter technique. The stool is concentrated and left for some days for moulting to occur, then ~~microscopic~~ slide is used to detect parasites.

Macroscopy. This technique is used to detect the observable adult worms since ~~eggs~~ most eggs cannot be seen with a naked eye.

Microscopy. This technique is mainly used to detect eggs in stool by use of a microscope and a slide.

Serology. This is a technique used to detect antibodies in the patients blood, infection with a parasite would induce production of certain antibodies.

Culture techniques. This technique, the parasites are grown into a specific culture to check for infection.

4/2

⊕

5
14
25

Do not write in either margin

pressure.

Vasoconstriction when there is blood → so with kidney autoregulation

Question 2

REG No. H31/36071/2015

Write on both sides of the paper

Clinical manifestations of Trichinella spiralis infection.

Muscle pain and spasm. The migrating larvae encapsulated and interfere with muscle activity.

Facial oedema. Migration of the larvae to the facial muscles interfere with fluid flow causing facial oedema.

Swallowing difficulties. Migration of the larvae to pharyngeal muscles interfere with swallowing.

Myocarditis. Migration of the larvae to the cardiac muscle. Reduce cardiac output, blood pressure and pulse.

Ascites. This occurs due to reduced cardiac output which impairs fluid movement hence fluid accumulates in the peritoneum.

Meningitis. The larvae may migrate to the meninges and cause inflammation.

Peritonitis. Inflammation of the abdomen peritoneum by larvae migrating to the peritoneum.

Nephritis. Migration of larvae to the kidneys cause inflammation.

renal...
renal convoluted tubule
to increase SA

with kidney
autoregulation

Tubular re-absorption

- Depend on the need
Selective → depends on the
- also

Write on both sides of the paper

REG No. H31/36071/2015

Question... 3

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margin

a) Complications of hookworm infections.

Pneumonitis. This is caused by larval stage 3 as it penetrates the lung tissue into alveoli of the bronchioles. It may also cause bronchial spasm and bronchitis and pneumonia.

Anaemia. Hookworms take up blood while in the intestine which interferes with absorption and utilization of nutrients such as iron B₁₂ which interfere causes microcytic hypochromic anaemia or folic and Vitamin B₁₂ which interfere causes macrocytic anaemia.

Intestinal obstruction and perforation. The hookworm larvae penetrate the intestinal mucosa in order to feed on blood hence destroying the mucosa which leads to diarrhoea or constipation and perforation. Depending on how heavy an infection is, the intestines may be obstructed causing volvulus or gangrene or even abdominal discomfort.

Skin damage. Damage of skin by infective larva as it penetrates. This injury to skin ~~may~~ may lead to pyogenic bacteria taking advantage and infecting the patient.

Urticaria and pruritis. Due to presence of the larvae in blood, the body attempts to clear the larvae via the immune system which presents as intense itching and skin rash.

b) Pathology of infections with Acute Lumbago

Malnutrition: The per acute diarrhea, the intestinal muscle infection and lacte infection in the lacte enzyme is unable to work in a changed manner. The enzyme can feel an vitamin A and B leading to the deficiency in the body.

Anorexia, loss of appetite, nausea and diarrhoea which leads to the abdominal discomfort due to burden of enzyme in the intestine which causes weight loss and general weakness.

Intestinal obstruction: Varies with severity burden that in large infections, the many adult women in the intestine may cause volvulus (intestinal twisting) or perforate the intestine, causing of the intestines may also occur.

Acute Lumbago may also involve the gastric and biliary apparatus when there is usually the acute infection area might be the area and may involve inflammation which is to prostate, acalculous cholelithiasis, causing distention, colic and destructive gastric.

14
25

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Question

Relationship between hydrostatic pressure and oncotic pressure
↓
Osmotic pressure
↓
Hydrostatic pressure

Vasoconstriction when there is

Question 3 REG No. 113136011/2015

Write on both sides of the paper

b) Pathology of infections with Ancient lumbricoides.
 Malnutrition. The per worms destroy the intestinal mucosa interfering with absorption of nutrients which leads to vitamin A malnutrition and lactase intolerance as the lactase enzyme is unable to work in a damaged mucosa. The worms also feed on vitamin A and B C leading to their deficiencies in the body.
 Anorexia, loss of appetite, nausea and diarrhoea which leads to intestinal abdominal discomfort due to burden of worms in the intestine which causes weight loss and general weakness.
 Intestinal obstruction. Varies with parasite burden. ~~the~~ In huge infections, the many adult worms in the intestines may cause Volvulus (intestinal twisting) or perforate the intestines, cutting of the intestines may also occur.
 Ancient lumbricoides may also involve the pancreas and biliary apparatus when these worms ~~may~~ especially the ~~center~~ unmated ones migrate to this area and cause inflammation which leads to pancreatitis, acalculous cholecystitis, ascending cholangitis, biliary colic and obstructive jaundice.

2 1/2

* Questions
② Relationship between hydrostatic & oncotic pressure.
- In summer season - water
↑ osmotic & ↓ hydrostatic.

Vasoconstriction
when there is
Hood → so
with ...

Write on both sides of the paper

REG No. H3136071/2015

Question 3

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in either
margin

① Laboratory diagnosis and treatment of Enterobius vermicularis.

Laboratory diagnosis

Adhesive Scotch tape used to extract eggs from the perianal area. used

an adhesive material onto which the eggs stick and are taken for investigations.

Camel hair brush. ~~is~~ used to extract eggs from the nails by brushing them. It is not supposed to be used on the anal area.

Swab technique. Also use an adhesive material onto which eggs in the anal area stick.

Cephalic swelling may also be diagnostic when the worms infect the brain.

3
2

Treatment

Mebendazole - This drug kills the adult worms in the intestinal mucosa and prevents females from laying eggs.

Albendazole. The drug prevents the worms from producing ATP for energy mobilization which eventually kills the worms.

Ivomec (Ivermectin) kills the adult worms.

The drugs only kill the adult worms not the eggs, hence retreatment is required after three or four weeks to completely eradicate the worms.

Questions

* relationship b/w hydrostatic & oncotic pressure.
side - want

Vaso constriction
when there is
blood → so
with kidney

Write on both sides of the paper

REG No. H31/36071/1

of labant

Question 4

REG No. H31/36071/2015

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Alpha - herpes viruses.

The viruses are enveloped

Have an icosahedral nucleocapsid.

They have a double stranded DNA genetic core.

They include Human Simplex Virus 1 and Human simplex virus II.

They produce latency in neurons.

Human Simplex virus 1 cause latency in the trigeminal ganglion
while Human simplex virus II causes latency in the sacral and
lumbar ganglions.

Human Simplex virus 1 causes primary infections above the waist,
especially on the face & on the mouth at mucocutaneous junction of
mouth and nose → cold sores. It is transmitted via saliva. It rarely
causes lesions in the genitalia.

Human Simplex Virus II causes primary infections below the waist,
that is, genitalia where it produces sores. It is transmitted by sexual
contact. It rarely causes facial lesions.

VZV?

3/2

5

Laboratory diagnosis and treatment of Enterobius vermiciformis
 Laboratory diagnosis:
 Adhesive Scotch tape. Used to extract eggs from the perianal area.
 an adhesive material onto which the eggs stick and are used for investigations.
 Camel hair brush. Used to extract eggs from the rectum. It is not supposed to be used on the perianal area.
 Scab technique. Also used on the perianal area.
 Copaloc

Do not write in either margin

a) Characteristics of the asymptomatic stage of HIV infection.

- A flu-like disease. and fever.
- Fever weight loss. and general weakness.
- Dry cough.
- Night sweats.
- Lymphadenopathy.

Write on both sides of the paper

REG No. 1131/36071/2015

Entero passive

Vaso constriction when there is blood → so kidney

Question 3

elaborate diagnosis and treatment of Enterobius vermicularis.
Laboratory diagnosis
Adhesive Scotch tape used to extract eggs from the perianal area used as an adhesive material onto which the eggs stick and are taken for investigations.

Comel hair brush. ~~is~~ used to extract them. It is not supported +
Scab to-1

REG No. 1131/36071/2015

Write on both sides of the paper

Question 5

14
25

b) Characteristics of human papillomavirus.

1. Cause sexually transmitted infections; infection of the genitalia.
2. Enveloped.
3. Circular nucleocapsid DNA.
4. Double stranded DNA.
5. Cause cutaneous and genital warts.

No treatment but prevented by vaccination.

Transmitted mainly via sexual contact.