

Assignment Topic

Malaria, Typhoid, Dengue, Hepatitis
Polio

Def, Symptom, causing agents, General causes, Treatment, Preventive Measures.

1) Malaria

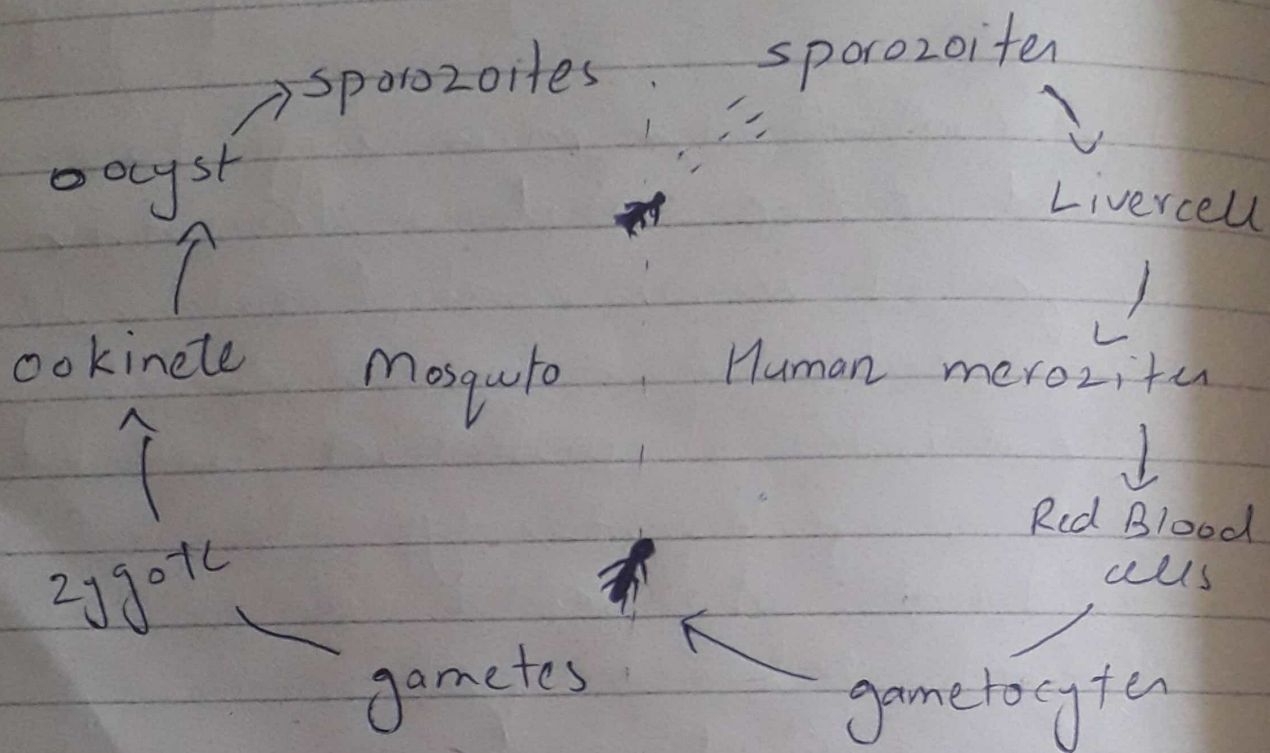
"An intermittent and remittent fever caused by a protozoan parasite which invade the red blood cells and is transmitted by mosquito in many tropical and subtropical regions"

Malaria is world largest parasitic disease, killing more people than any other communicable disease except tuberculosis.

Causing agent:-

Causing agent of malaria was discovered in 1880 by Charles Alphonse Louis Laveran. Malaria is caused by Plasmodium parasite. The parasite spread through the bites of infected **Anopheles** mosquitoes called malaria vector.

There are 5 parasite species that cause Malaria in Human. 2 of these species: **P-falciparum** and **P-vivax** pose the greatest threat



General causes:-

Water bodies that facilitate mosquito growth.

Symptoms:-

Intense fever is accompanied by nausea, headaches and muscular pain among other symptoms: fatigue, vomiting and in severe cases it can cause yellow

skin, coma or death

Preventive measures:-

Antimalarial medicines can be used to prevent malaria. For travellers malaria can be prevented through chemoprophylaxis.

Vector control is main way to prevent and reduce malaria transmission.

If coverage of vector control interventions within a specific area is high enough then a measure of protection will be conferred across community.

Two forms of vector control:-

insecticide-treated mosquito nets and indoor residual spraying - are effective in wide range of circumstances

Treatment:-

Antimalarial medications are used which are given intravenously. Quinine is effective drug against malaria but for severe malaria artesunate is superior to quinine. Treatment of severe malaria involves supportive measures that are best done in a

critical care unit. This include manage-
ment of high fevers and seizures
and monitoring of breathing.

Transmission of Malaria

Female anopheles mosquitoes feed on human blood to obtain protein they need to develop their eggs. If the person they bite is infected with plasmodium, they will take up some of pathogens gametes with blood. Male and female gametes fuse in mosquito gut and develop to form infective stages which move to mosquito salivary gland. When mosquito feeds again, she injects an anticoagulant from her salivary gland that prevent blood meal from clotting so that its flow out of host into mosquito. The infective stages pass from mosquito into human together with anticoagulant in saliva. The parasite enter RBCs, where they multiply. The female Anopheles mosquito is therefore a vector of malaria and she transmits the disease when she passes infective stage into an uninfected person.

2) Dengue

Dengue is a viral disease, transmitted by mosquitoes and causing sudden fever and pain in the joints.

Dengue virus infects 50-100 million individuals annually.

Causing agents:-

Dengue is transmitted by several species of mosquito within genus *Aedes* principally *A. aegypti*.

There are 4 distinct but closely related serotypes of virus that cause dengue.

(DEN-1, DEN-2, DEN-3, DEN-4)

Recovery from infection by one provides life long immunity against the particular serotype. However cross immunity to other serotypes after recovery is only partial and temporary. Subsequent infection by other serotypes increase the risk of developing severe dengue.

General cause:-

Water sources and dirty areas and any place where water remain for long time (uncovered water) provide habitat mosquito to grow.

Symptoms:-

Symptoms usually last for 2-7 days after an incubation period of 4-10 days after the bite from an infected mosquito.

Symptoms include

Sudden High fever, Severe headache, Pain behind eyes, Severe joint and muscle pain, Fatigue, Nausea, Vomiting, Skin rash
Mild bleeding (such as nose and gum bleed).

Transmission:-

Virus is transmitted to human through bites of infected female mosquito. After virus incubation of 4-10 days an infected mosquito is capable of transmitting virus for rest of its life.

Infected symptomatic or asymptomatic humans are main sources and

multipliers of virus, serving as a source for uninfected mosquitoes.

Immunization:-

In late 2015 and early 2016, the first dengue vaccine Dengvaxia (CYD-TDV) by Sanofi Pasteur was registered in several countries.

Treatment:-

No specific medicine to treat dengue infection. Symptomatic treatment is used. Pain relievers used with acetaminophen and avoid medicine with aspirin which could worsen bleeding. Take rest and drink plenty of fluids.

Preventive Measures:-

- Preventing mosquito from accessing egg laying habitats by environmental management and modification.
- Disposing of solid waste properly and removing artificial man made habitats.
- covering, emptying and cleaning of domestic water storage containers

- on a weekly basis.
- Apply appropriate insecticide to water storage containers on a weekly basis.
 - Apply appropriate insecticide to water storage outdoor containers.
 - Use personal household protection such as window screens, long-sleeved clothes, insecticide treated materials, coil etc.

3) Hepatitis

Hepatitis refers to an inflammatory condition of liver. It is commonly caused by a viral infection but there are other possible causes of hepatitis. These include autoimmune hepatitis and hepatitis that occurs as a secondary result of medications, drugs, toxins and alcohols. Autoimmune hepatitis is a disease that occurs when body makes antibodies against liver tissue.

Hepatitis reduce the liver's ability to perform life preserving functions, including filtering harmful infectious agents from blood, storing

blood sugar and converting it to usable energy forms and producing may proteins necessary for life.

Causing agent:-

Virus.

Hep A virus, Hep B virus, Hep C virus

General cause:-

- Transmitted through blood.
- Through contaminated needles and syringes in health care setting and among people who inject drugs.
- Can also transmit through unsafe sex, from an infected mother to her newborn child.

Symptoms:-

Initial symptoms include flu, muscle and joint pain, high temperature at 38°C or above, feeling sick, being sick, headache, yellowing of eye and skin.

Chronic hepatitis symptoms:-

feeling tired all time, depression, jaundice, a general sense of feeling unwell

In many cases hepatitis causes no noticeable symptoms.

Five main hepatitis virus referred to as hepatitis A, B, C, D and E.

Hepatitis A:

HAV lies in feces in intestinal tract. Hepatitis A virus is transmitted through ingestion of contaminated food and water or through direct contact with an infectious person.

Hepatitis B:

Hep B can cause both acute and chronic disease. Virus is transmitted through contact with blood or other body fluids of an infected person.

Hep B is an important occupational hazard for health workers. Baby born to an infected mother have a 90-95% chance of contracting HBV during childhood.

Hepatitis C:

Hep C virus is a blood borne virus and most common mode of infection are through unsafe injection practices.

inadequate sterilization of medical equipment and transfusion of unscreened blood and blood products. A significant number of those who are chronically infected will develop liver cirrhosis and liver cancer.

Hepatitis Diagnosis:-

Liver Biopsy, Liver Function Test, Ultrasound, Blood tests, Viral antibody testing.

Treatment.

Treatment options are determined by which type of hepatitis a person have and whether infection is acute and chronic.

Hepatitis A:-

Vaccination is available for Hep A. Most children receive vaccination between 12 and 18 months.

Hepatitis A is not usually treated. Bed rest may be recommended. In case of diarrhea and vomiting, special diet is recommended to prevent malnutrition or dehydration.

Hepatitis B: Acute hepatitis does not require treatment. Chronic hepatitis is treated with antiviral. This type of treatment can be costly.

Hepatitis C: Antiviral medication are used to treat both acute and chronic form. Chronic Hep C typically treated with a combination of antiviral drug therapies. People who develop cirrhosis or liver disease as a result of chronic Hep C may be candidate for liver transplant.

Preventive Measure

- Safe and effective vaccines are available to prevent Hepatitis A and B infection
- Immune globulin injection can also prevent Hep A and B if they are given within 2 weeks of exposure.
- There are currently no vaccine available to prevent infection with HCV, HEV and HGV
- Best protection include preventing exposure to body fluids of infected individual and always wash hand after using toilet or changing an infant's diapers.

In addition, implementing blood safety strategies, including quality-assured screening practices, safe sex practices, including minimizing no of partners and using barrier protection measures.

4) Typhoid Fever

is a clinical syndrome characterized by constitutional and gastrointestinal symptoms and by headache.

Causing agent:-

Typhoid is caused by *Salmonella Typhi*.

General causes:-

Transmission through oro-faecal route, through the contaminated milk or water, house flies are important vectors of infections.

Symptoms:-

Headache, bodyache, malaise, sore throat and anorexia.

often constipation in ~~children~~ ^{Adults} but
vomiting and diarrhoea in children.
Fever, Bronchitis, Rash.

Investigations:-

Stool cultures, WBC count, Blood culture, PCR.

Treatment:-

Bed rest, preferably in isolation.
Maintenance of nutrition and fluid intake.

Antibiotic treatment

e.g. ciprofloxacin, Azithromycin.

Duration of treatment is 14 days.

Preventive Measures:-

Vaccination of household contacts of a typhoid carrier.

Safe eating habits.

Proper hand wash after using toilet.

Drink clean water or milk.

Protection from house flies.

5) POLIO

The term poliomyelitis derives from Greek words referring to inflammation of gray matter of spinal cord. It is an infectious viral disease that sometimes results in paralysis. The infection chiefly affects children and young adults.

Causing agent:-

Viral disease and caused by one or any one of 3 related viruses called **polioviruses**

3 types of poliovirus

- Type 1 (Brunhilde)
- Type 2 (Lansing)
- Type 3 (Leon)

General cause:-

Poliovirus spreads in human faeces. People become infected with virus through contaminated food and water especially in areas where sanitation and hygiene are poor. Improper sewage disposal.

Poliovirus typically enter body through mouth and proceeds through digestive tract to intestine. After multiplying in body, the virus is shed in faeces, from which it can spread, especially when people (infected) do not wash hand and touch food or other people. Adults can become infected by changing diapers of an infected infant and then touching their mouth.

Symptoms

This virus invade nervous system and cause total paralysis in a matter of hours. Initial symptoms are fever, fatigue, headache, vomiting and stiffness in neck and pain in limbs. One in 200 infections lead to irreversible paralysis (usually in legs). Among those paralyzed 5% to 10% die when their breathing muscles become immobilized. Polio mainly affects children under 5 years of age.

Treatment:-

No cure for polio, no drug no other medical treatment can halt the destruction of poliovirus. However several medical treatment can lessen the severity of disease.

- Mild cases of polio do not require specific treatment.
- For some serious cases - keeping patients still and quiet can, in some cases, minimize severity of paralysis. Simple treatments, including moist heat applied to affected muscle pain.
- Artificial respirator in case of respiratory depression.
- Physical therapy.

Preventive Measure

Immunization with polio vaccine is best way to prevent it.

Polio vaccine

There are two type of vaccine

- 1) Inactivated Polio Vaccine (IPV)

Oral Polio Vaccine (OPV)

IPV is given as an injection in leg or arm

OPV is taken by mouth.

Children should be vaccinated with four doses of inactivated polio

vaccine at following ages-

2 months, 4 months, 6-8 months

4-6 years.