Medical parasitology

- Obligatory books:
  - A. Buczek „Parasitology for medical students”, Koliber, Lublin 2011

Medical parasitology

- **Websites:**
  - There are a number of useful sites on the internet. The following are excellent sites to look for general information and materials for visual illustrations:
- ***Atlas of Medical Parasitology***
  - http://www.cdfound.to.it/
- ***DPDx Laboratory identification of parasites of public health concern***
  - http://www.dpd.cdc.gov/dpdx/HTML/Para_Health.htm
- ***WHO Tropical Diseases Research Program***
  - http://www.who.int/tdr/

Commensalism

- An association in which the commensal takes benefit without casing injury to the host.
- **Mutualism**
- Both partners benefit; metabolically dependent on each other.

Parasites – definitions and criteria classification

- With regard to the degree of the parasites dependence on the host we distinguish the:
  - **Obligatory parasite** (parasitus obligatorius) – which cannot survive without a host and the relationship with a host is absolutely necessary for successful conclusion of this cycle
  - **Facultative parasite** (parasitus facultativus), also called the conditionary parasite – which infect living host only occasionally

The permanent parasite (parasitus permanens)

- The permanent parasite leads a parasitic lifestyle throughout its entire ontogenesis
- The temporary parasite (parasitus temporarius)
- The temporary parasite is an organism which utilizes the host’s body for a brief period of time.

Parasites are characterized by various host specifity:

- At the specific stage of development, a stenoxenic parasite (parasitus stenoxenicus) occurs in one host species or in several closely related species
- While at a specific development stage, a euryxenic parasite (parasitus euryxenicus) parasitizes many hosts, even from different groups;

Depending on the number of host species, a parasite can be:

- A **monoxenic** parasite (parasitus monoxenicus) parasitizes one species
- An **oligoxenic** parasite (parasitus oligoxenicus) feeds on a few hosts species
- A **polyxenic** parasie (parasitus polyxenicus) – can parasitize several differrent, often unrelated, species

- A parasite that is spread worldwide is called **cosmopolitan** (parasitus cosmopoliticus)
- When a parasite that is specific to a particular geographical region is spread across a new area, it is referred to as an **introduced parasite** (parasitus translatus)

An endoparasite (endoparasitus)

- An internal parasite (endoparasitus) lives inside the body of their host, i.e.
  - in the body cavity
  - in organ walls and parenchyma in tissues
  - blood parasite

Hosts – definitions and criteria classification

- A host in which the parasite reaches sexual maturity and/or in which sexual reproduction of the parasite takes place is called definitive host (DH)
- The intermediate host (IH)is one in which the larval forms develop and/or asexual reproduction takes place.

The main host

- The main (primary) host is the organism in which the parasite most often lives and develops.
- An accidental host
- An accidental host is a host in which the parasite lives only very seldom and is unable to fully develop in that host

A paratenic host

- A paratenic host is an organism, in which a parasite does not develop, but the larval stages are accumulated
- A reservoir host
- It is mainly arthropods that transmit pathogens in their body

Sources of parasite infestation

- Blood-sucking arthropod vectors
- Soil and water –
- Animal breeding faciclities situated in housing areas
- The invasive stage of various parasitic species may settle in intermediate host.

Sources of parasite infestation

- One person may be a direct source of another person's infestation with parasites
- A person may become infested with his/her "own" parasites as a results of autoinvasion.

Routes of parasite invasion

- Microorganisms and invasive forms of parasites may enter the human body via various routes. These are:
  - ingestion route (per os)
  - inhalation route
  - genital route
  - Infection through the skin, mucous membranes, conjunctiva or cornea
  - Intrauterine infection

Transmission of parasites

- Parasite enter into the body may be active or passive process

Passive invasion

- When the parasite comes in through the natural body openings, in other words through the oral cavity , the vagina, the anus the nasal cavity, through direct contact, through the skin with the help of arthropods or via the intrauterine route
- Active invasion
- When parasite actively penetrate through the skin

Mechanical effects

- Parasite affect the human in various ways. Internal parasites may cause obstruction of the small intestine ,bilary duct, pulmonary alveoli, blood vessels and lymphatic vessels
- Deprivation of nutrients
- Parasite impoverish the host of enzymes, hormons and vitamins

Toxic effects

- Parasite toxins may cause toxicoses

  Contact with parasite proteins may lead to the development of host alergy manifesting as skin

  Inflamatory reactions of the upper respiratory tract and bronchial astma or anaphylactic shock

Parasitic disease (parasitosis)

- Parasitic disease is an infection with parasites. The parasitosis names are created by adding –osis or asis ending to the genus or species stem
- Infections in which parasites are transmitted from animals into humans are named antropozoonoses