

CONTACT INFECTIONS

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Tetanus

- It is an acute infectious toxic disease
- The disease spreads in areas where contact animal excreta is more likely to occur and immunization is inadequate
- **Causative agent:**
- Clostridium tetani, a gram -positive anaerobic spore forming organisms
- Spores are highly resistant in soil contaminated by excreta of animals

Causative agent

- They germinate in anaerobic conditions at the site of injury and devitalized tissues
- They produce powerful exotoxins- neurotoxin known as tetanospasmin-which led to to general toxaemia and systemic manifestations

Reservoir

- **Animal, man and soil**
- **Soil is contaminated by excreta of herbivorous animals-horses-cattle, sheep, goats**
- **Organisms are harmless normal inhabitants in their intestine**
- **Exit: intestinal excreta of animals and man**

Mode of transmission and different types

- **Injury contaminated places:**
- **Puncture, lacerations, burns or unnoticed trivial wounds, get contaminated with spores**
- **Post operative:**
- **Surgical tetanus, a form of hospital infection through contaminated instruments, improperly sterilized catgut and dust containing spores**
- **Reactivation of dormant spores in contaminated past wound**

Mode of transmission and different types

- After labour or abortion:
- A form of puerperal tetanus through contaminated instruments
- Neonatal infection: umbilical stump is contaminated:
- By tetanus spores through contaminated hands, instruments used for cutting the cord and contaminated dressing or fomites or delivery in unclean environment

Susceptibility and Resistance

- Age: all ages are susceptible
- Sex: high incidence in males through their occupation
- Females are exposed to tetanus during labor and abortion
- Occupation:
 - Farmers and agricultural workers and workers with animals are at higher risk
- Social factors:
 - Agricultural communities, presence of animals, and contaminated soil

Immunity

- **Infants of actively immunized mothers acquire passive immunity that protects them from neonatal tetanus**
- **Active artificial immunity is induced by tetanus toxoid and persists for at least 10 years after full immunization**
- **Transient passive immunity follows infection of tetanus, immunoglobulin's**
- **Recovery from tetanus may not result in immunity, second attacks can occur**

Tetanus

- **Incubation period:**
- **3-21 days or more depending on the character, extent and location of the wound**
- **Clinical picture: mainly caused by toxemia:**
- **Painful muscular contractions, first around the wound then the masseter (lock jaw) and neck muscles followed by the trunk muscles**
- **Typical features of tetanus spasms are the facial expression known as (risus sardonicus)**

Fatality: case fatality rate ranges from 10-90%

Diagnosis: history of injury- on clinical examination

Prevention

- **General measures:**
- **Sanitary environment, such as prevention of animals to walk in the streets**
- **Educate the public:**
- **Necessity for complete immunization**
- **Hazards of puncture wounds and closed injuries**
- **Sterilization of operating theatre**
- **Specific prevention:**
- **Active immunization:**
- **Monovalent vaccine:**

Vaccination

- **Adsorbed tetanus toxoid, three doses:**
- **2 doses: 0,5 ml SC injection**
- **4 weeks between the first and 2nd dose**
- **3rd dose after 6-12 months**
- **Booster dose each 10 years in case of continuous exposure**
- **Monovalent vaccine:**
- **5 doses provide full immunization for life, this is recommended for military groups, occupational and young women**

Vaccination

- **Trivalent DPT:**
- **Killed pertussis vaccine and toxoid of diphtheria and tetanus**
- **Divalent:**
- **It is diphtheria and tetanus toxoid**
- **It is given as a booster dose after 4 years and at school entry**
- **Pentavalent vaccine: (DPT-Hep B-Hib I)**
- **Compulsory in Egypt at 2,4,6 and 18 months**
- **Introduced in February 2014**

Vaccination

- **Passive immunization (Sero prophylaxis):**
- **Two preparations are available: human and animal**
- **Combined active and passive immunization**
- **Chemoprophylaxis:**
- **A single intramuscular injection of long-acting penicillin 1,200000 IU to prevent local activity of the organism**

Control

- **Cases:**
- **Early case finding, notification**
- **Treatment**
- **Disinfection concurrent and terminal**
- **Isolation: hospitalization for at most care and management**
- **Contacts:**
- **No specific measures**

Tetanus neonatorum

- **Mode of transmission:**
- **Contaminated umbilical cord stump through:**
- **Cutting the cord with unclean instruments**
- **Using infected catgut**
- **Dressing the stump by contaminated fomites and application of animal manure**
- **Contaminated hands with soil or by dust**
- **Predisposing factor:**
- **Home delivery by traditional birth attendants and non immunized mothers**

Tetanus neonatorum

- **Clinical picture:**
- **Failure of proper suckling after being well breast fed**
- **Spasms in muscles of mastication causing lock jaw**
- **Spasms of other muscles and generalized convulsions**
- **Prevention:**
- **Vaccination during pregnancy**
- **Hospital deliveries**
- **Training of traditional birth attendants for aseptic techniques**
- **Safe clean delivery**

Sexually transmitted diseases (STDs)

- **Group of diseases transmitted by sexual contact:**
- **Venereal diseases: syphilis, gonorrhoea, AIDS**
- **Other occasionally transmitted by sexual contact: HBV, HCV**

HIV infection

- **This syndrome represents the late clinical stage of infection with HIV which results in progressive damage to the immune system**
- **Largest proportion of patients was in sub-Saharan Africa, south and southeast Asia, Latin and north America**
- **Globally, around 3 million deaths occur among AIDS patients annually**

HIV

- **Causative agent:**
- **HIV. It is one of the retro virus groups- slow virus, type HIV-1, HIV-2**
- **Pathogenicity of HIV-2 may be lower than that of HIV-1 with slower disease progression and lower rates of in utero transmission**
- **The virus invades, multiplies and destroys helper T cells lymphocytes with subsequent failure of antibody production**

HIV

- **Reservoir:**
- **Human cases and chronic incubatory carriers lasting up to 10 years or more**
- **Exit:**
- **Blood, semen, vaginal discharges, CSF and other tissue fluids**
- **Lower concentrations of the virus is found in saliva, breast milk, urine and tears**

HIV

- **Modes of transmission:**
- **Sexual**
- **Contact with body secretions**
- **Blood transmission with needles, IV drug users, transfusion**
- **Mother to child (vertical transmission)**
- **From 15-35% of infants born to HIV positive mothers are infected at birth**
- **Mother to child HIV transmission occurs through breast feeding in about 50% of cases**

HIV

- **Susceptibility and resistance:**
- **Age:** sexually active adolescents and adults from 15-40 years are at higher risk
- **Sex:** AIDS epidemics are commonly among homosexuals
- **Other STDs** with ulcerative lesions increase susceptibility to HIV infection
- **Circumcision:** increase susceptibility among non circumcised males, related to penile hygiene

HIV

- **Incubation period: from less than a year to 15 years or longer**
- **Clinical pictures:**
- **Early infection:**
- **Patients may have no signs or symptoms at all, or develop a brief flu like illness 2-4 weeks after being infected**
- **Fever, rash, headache, sore throat, swollen lymph glands**
- **Late infection:**
- **Immune system has been severely damaged, making patients susceptible for opportunistic infections**

HIV

- **Signs and symptoms of these infections may include:**
- **Night sweats, dry cough and shortness of breath, chronic diarrhea, headache, blurred vision and weight loss**
- **Period of communicability:**
- **Starts from beginning of infection and lasts for life**
- **Complications:**
- **Bacterial infections:**
- **Pneumonia, TB, Salmonellosis**
- **Viral infections:**
- **Hepatitis, Herpes simplex, human papilloma virus**

HIV

- **Fungal:**
- **Candidiasis, meningitis**
- **Parasitic infections:**
- **Toxoplasmosis**
- **Cancers:**
- **Non -Hodgkin's lymphoma, Kaposi sarcoma**

Diagnosis: depends on:

Clinical picture

Detection of HIV infection before the presence of antibodies by identifying the p24 antigen in patients' serum

HIV

- **Prevention:**
- **General**
- **Use of disposable syringes and sharp objects, sanitary precautions during any piercing procedures, dental surgical operations and haemodialysis**
- **Use personal protective equipment**
- **Testing blood donors and blood products**
- **Routine HIV testing and counselling in areas of high prevalence such as antenatal clinics**
- **Immunization of HIV infected children with BCG, DPT, measles, MMR, hep B vaccines**

HIV

- Control:
- Early case finding and screening of STDs
- Notification of cases to authorities
- Isolation is ineffective and unnecessary
- Disinfection concurrent of equipment with chlorine
- Specific treatment for opportunistic illness and lifelong treatment with a combination of antiretroviral drugs

Rabies (hydrophobia)

- It is an acute viral fatal zoonotic infection of CNS with acute encephalomyelitis
- Causative agent:
- Rabies virus, single antigenic type
- Virus affects the salivary glands and CNS characteristic Negri bodies in CNS
- Reservoir: animals
- Urban type: (canine type)
- Dogs, cats and rarely rats
- Sylvatic type:
- Wildlife, wild canines as foxes and wolves
- Man, since the virus is found mainly in saliva

Rabies

- **Exit: saliva of rabid vampire bat, animal and man**
- **Mode of transmission:**
- **Bites or licks (saliva) of rabid animals**
- **Contact with saliva or brain tissue of rabid animals**
- **Inhalation of aerosolized rabies virus and bat excreta**
- **Some occupations are hazardous, night guards, cave explorer, vets, zoo workers, farmers and agricultures**

Rabies

- **Incubation period:**
- **From few days up to 4-8 weeks depending on:**
- **Distance between the site of the bite and CNS,**
- **Amounts, dose of virus introduced and whether the skin is covered or not**
- **Virulence of the virus, number of bites**
- **Patients are presented with acute encephalomyelitis with fever, malaise and excitability**
- **Spasms of swallowing muscles lead to hydrophobia, fear of water,**
- **Increased susceptibility to air currents (aerophobia)**

Rabies

- **Period of communicability:**
- **The animal remains infective 3-5 days before onset of disease and throughout the course of the disease**
- **Diagnosis:**
- **Clinical pictures**
- **Fluorescent rabies antibody test for detection of virus antigen**
- **Detection of the virus by PCR**
- **Detection of Negri bodies in the brain**

Rabies

- **Prevention:**
- **Registration, licensing and vaccination of pets by inactivated or modified live virus vaccines**
- **Avoid handling and feeding of unfamiliar animals**
- **Specific prevention for human:**
- **Active vaccination pre and post exposure**
- **Chemoprophylaxis's (human anti-rabies immunoglobulins)**

Rabies

- **Rabies vaccines:**
- **Human diploid cell vaccine given pre or post exposure**
- **It is given IM 1 ml in deltoid and in children in the thigh**
- **Nerve tissue vaccine**
- **Made from infected sheep and mouse brains**
- **Sero prophylaxis**
- **With vaccination after severe exposure as soon as possible to neutralize the virus (half the dose given around and into the wound by infiltration and half IM**
- **Clean the wound with plenty of water 20% soap solution and 70% alcohol and never suture the wound**

Rabies

- **Control:**
- **Isolation at fever hospital**
- **Notification**
- **Concurrent disinfection of saliva and terminal on death**
- **Treatment**
- **Contacts:**
- **Surveillance of contacts and animals**
- **Protection of contact with vaccination**

THANK YOU