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Popular Article**Leptospirosis: an overview**

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Abstract:

The bacterial illness leptospirosis can affect both people and animals. It can have a wide range of symptoms in people, some of which may be confused for those of other illnesses. However, some infected people might not even exhibit any symptoms. Without treatment, leptospirosis can result in liver failure, respiratory distress, meningitis (inflammation of the membrane around the brain and spinal cord), kidney damage and even death.

Key words: Leptospirosis, zoonotic disease, rodents, abortions.

Etiology:

Leptospira interrogans (Group I spirochaetes)

Leptospira biflexa-saprophytic, non-pathogenic.

Leptospira are flexible, motile (cork-screw like rotating axial filament), helicoidal (spiral) rods with one or both hooked ends. They are best viewed by dark field microscope, FAT and silver impregnation but not by any ordinary microscope.

Leptospira interrogans serovars include *L. canicola*, *L. icterohaemorrhagica*, *L. Pomona*, *L. hardjo*, *L. grippityphosa*.

Highly prevalent in tropical countries with heavy rain fall and neutral or alkaline soils.

Hosts:

Host specific i.e., *L. canicola*-dogs, *L. Pomona*-pigs, cattle.

Leptospira is a disease of animals and man is considered as dead-end host, at times may serve as reservoir.

Domestic animals (cattle, buffalo, sheep, goat, pig, horse), wild animals, rodents (rats, mice, gerbils, wolves, bats, rabbits, hares, squirrels), carnivores, amphibians (fish, frogs) may act as carriers. Organism can survive for weeks in soil. Organisms shed in urine.

Transmission:

- Indirect contact with infected/contaminated water and soil
- 1) High risk groups including swimmers, agriculture workers
- 2) Persons venturing into natural wild habitat of rodents or when rodents and feral animals intrude into cleared, populated areas
- 3) Persons ingesting food and water in rat infested places, lower level of community hygiene, offers high risk environment
- 4) Huge rodent population
- 5) Large number of free grazing cattle
 - Direct contact with infected animal as a result of
 - Bite
 - Handling animal/tissue
 - Handling live organisms in laboratory
 - Penetration of the organism in to the skin, mucous membranes through abrasion, cut, injury etc
 - Bathing in animal urine contaminated water

Symptoms in humans:

I.P-7-14 days

Disease is manifested in 2 phases

1. Early or leptospiraemic or anicteric phase (milder and subclinical)

It is a flu-like syndrome characterized by sudden high fever, chills, headache, muscle aches, myalgias, conjunctivitis, stiffness in the neck, nausea, vomiting. Recovery (90%) even without treatment, but may intensify to second phase.

2. Icteric or immune phase or weil's syndrome or hepatonephritic type

Less frequent than icteric phase and mild fever is noticed as the blood infection disappears due to action of phagocytes, IgM and complement. See headache, myalgias, conjunctivitis, nausea, vomiting, diarrhoea or constipation. Prostration may be severe.

Petechiae on the skin, haemorrhages in the GI tract leading to anaemia, coma and finally death (elders).

Red eye (conjunctival suffusion due to immune reaction) is a constant and characteristic feature (uveitis)

In rare cases atypical pneumonia or aseptic meningitis or even myocarditis

Hepatomegaly latter resulting in jaundice

Renal insufficiency with marked oliguria or anuria, proteinuria and electrolytic imbalance develop with disappearance of leptospiruria and fever. If patient condition improves, diuresis is reestablished and jaundice decreases

Convalescence lasts for one/two months, during which fever, cephalgia, myalgia and general malaise may reappear for few days

Mortality is 5-10%

Symptoms in animals:**In cattle-**

Acute form: see elevated temperature, anorexia, anaemia/jaundice, haemoglobinuria, abortion (late in pregnancy) i.e., 3-12 weeks post infection, depression.

Sub-acute form: milk drop syndrome due to mastitis resulting reduced yield, thick flaking (like colostrum), yellow to blood colouration, jaundice may be seen.

Chronic form: Abortions (3rd trimester), still births, foetal deaths, weak calves, retained placenta.

In swine:

Mild or inapparent, anorexia, pyrexia, diarrhoea. Abort in late pregnancy or weak piglets. They become renal shedders for at least 6 months.

In dogs:

Fever, depression, deep sunken eyes, anorexia, muscle tenderness, vomiting, fowl breath, ulcerated gums associated with anaemia and extensive jaundice. The acute form known as "stuttgart disease" characterised by vomiting, rapid dehydration, collapse, necrosis and sloughing of buccal mucosa and tongue, occasional blood-stained faeces.

In horses:

See periodic ophthalmia (moon blindness, iridocyclitis), abortion and still births.

Diagnosis:

- 1) Based on clinical signs
- 2) Direct examination of blood, urine, CSF, tissue scrapings
- 3) Isolation by-cultural method (from blood and CSF during acute phase and after 7 days for urine) using EMJH media, Korthof's media, Stuart's media etc) and by animal inoculation in gerbils, hamsters, guinea pigs.
- 4) MAT (microscopic agglutination test) Gold standard test
- 5) ELISA, CFT, Indirect haemagglutination test, Immunoperoxidase test, PCR.

Treatment:

Streptomycin (25mg/kg) in cattle and pig

Dihydrostreptomycin (25mg/kg) for carriers

Tetracycline @ 400-800g/pig in swine

Prevention and control:

- Prevention of environmental contamination by animal excreta
- Rodent control in human habitation, crop fields, animal feed and grain processing units, recreational sites, animal houses, domestic environments
- Personal hygiene and protection
- Sanitation
- Vaccination
- Health education

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