

## Leptospirosis

Leptospira bacteria is of spirochete group bacteria ,it is tightly coiled bacteria threads with both ends bent as a hook (corkscrew shaped bacteria ) ,it is motile by bending and rotating movement . It is zoonotic bacteria where the bacteria infect animals and remain indefinitely in convoluted tubules of the kidneys of animals discharge with their urine , like *leptospira(L) icterohaemorrhagiae* the classical parasite of rats , *L. hebdomadis* parasitise the cattle ,*L. canicola* parasitise the dogs and *L. Pomona* parasitise the pigs .

### Mode of transmission

The water is contaminated with infected animal urine it remain active in water for months then when human contact infected water the bacteria enter the body through skin ,eyes ,mucous membrane ,wounds ,cuts and abrasions ,so infection is ensues then bacteria pass to brief bacteremia where main organ affected later the kidneys ,liver , meninges and brain ,the mechanism of tissue damage till now is uncertain but often associated with lyses of organism rather than multiplication .

Incubation period : 1-2 weeks .

### Clinical features :

After a brief bacteremia multiple organs (like kidneys ,liver ,meninges and brain ) are invaded with bacteria . It may presented in four clinical features .

- 1- Bacteraemic leptospirosis : The patient presented with intense headache ,nausea ,vomiting with fever ,muscle pain and tenderness especially calf and back ,conjunctival congestion and then improve after one week or changed to another form of the disease presentation .
- 2- Aseptic meningitis :  
It is usually occur with leptospira canicola infection it is similar to viral meningitis but associated with conjunctival congestion ,neutrophil leucocytosis , abnormal liver function test and albumin with cast in urine .
- 3- Icteric leptospirosis ( Weil's disease ):  
It is a life threatening condition , occur in 10 % . The condition started with fever ,conjunctival congestion , jaundice and hepatomegally rarely associated with encephalopathy and liver failure ,papular rash then changed to purpuric rash with bruising ,echymosis may be associated with epistaxis ,haematemesis and melaena ,it may be associated with bleeding in the pericardium ,pleura or subarachnoid haemorrhage ,

there is thrombocytopenia due to consumption of platelets in the capillaries by aggregation and adhesion in the endothelium , acute renal failure may occur due to acute tubular necrosis by low renal blood flow presented as oligurea and active sediments in urine exam (RBCs ,protein and casts ) . Weil's disease is may be associated with myocarditis ,encephalitis or aseptic meningitis . Iritis and uveitis usually occur after the recovery .

4- Pulmonary syndrome :

It presented as haemoptesis and pulmonary infiltrate by chest X-ray . In sever condition it progress to acute respiratory distress syndrome (ARDS ) , it may be associated with multiorgan failure where mortality rate is about 50% .

## Investigations

- 1- Non specific investigations : Complete blood picture showed polymorphous neutrophilia leucocytosis , may be associated with thrombocytopenia . Features of acute hepatitis ,elevated serum bilirubine and elevated liver enzymes . In aseptic meningitis CSF study showed elevated CSF proteins and normal sugars .
- 2- Specific tests : To prove the leptospira either by isolation of bacteria ,serology or DNA detection :
  - a- Isolation of bacteria by : blood culture it need special media and several weeks to be positive results , while bacteria appear in urine at the end of second week and may remains for several months .
  - b- Serological study : By anti-leptospira antibody IgM or four rise in the titer of IgG . Immunochromatographic study their sensitivity 50% in first week and 85% during 2-4 weeks and its specificity is high .
  - c- PCR study : This technique used to detect the DNA of leptospirosis it differentiate the pathogenic from non pathogenic micro-organism , it needed two leptospire in blood to prove the diseases and 10 leptospire in urine to make diagnosis .

## Management

Leptospirosis is treated with doxycyclin capsule 100 mg twice daily for 7 days or benzyle penicillin 1.5 mega unit intravenously 6 hourly for 7 days , ceftriaxone vail 1 gm intravenously for 7 days . All may cause Jarisch –hexheimer reaction but it is mild condition . Uveitis and iritis occur several weeks after treatment it is treated with systemic and local corticosteroids and antibiotics .

Supportive treatment is needed blood transfusion for anemia . Renal failure is treated with conservative treatment and may need haemodialysis or peritoneal dialysis .

## Prevention

The disease is common in military conditions especially with *Leptospira interrogans* and it can be prevented by doxycycline capsule 200 mg once weekly .