

Spirochaetosis

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➤ **Definition:**

It is an acute septicaemic disease of poultry characterized by fever, locomotor disturbance (leg weakness), diarrhea, progressive paralysis and death.



➤ **Occurrence (susceptibility):**

Affect chickens, turkeys, water fowls, and other birds as pheasants and canaries. Pigeons are refractory to natural infection. Young birds more susceptible to infection, while the birds of all ages may become infected if not previously exposed. The disease is widely distributed in the tropical and temperate regions.

➤ **Etiology:**

The etiology agent is *Borrelia anserina*, spirochete, which is difficult to be cultured on artificial media or cell culture; it can be cultured in E.C.E. in yolk sac 5-6 days old. Spiral shape, not very resistant outside the host and must be maintained in some vectors between hosts. It can be isolated in E.C.E. yolk sac 5-6 days or in young chickens or turkeys.

➤ **Mode of infection and transmission:**

- *Borrelia anserine* can be transmitted through infectious droppings (ingestion) but usually is transmitted by the bite of blood sucking arthropods including: *Argus persicus* (soft tick) and *Culex* mosquitoes.
- The ticks pass the spirochete to its progeny. It is doubtful that there are carrier birds.
- Transmission can also occur orally from ingestion of infected ticks, cannibalism of moribund birds or infected carcasses.
- *Argus persicus* remain infective up to 430 days after feeding on an infected host. *Argus persicus* is infecting by all stages (Eggs, nymph, larva) and transovarian transmission of the organism occurs in ticks.
- Ingestion of feed or water contaminated with the infected droppings of infected birds.



➤ **Incubation period:**

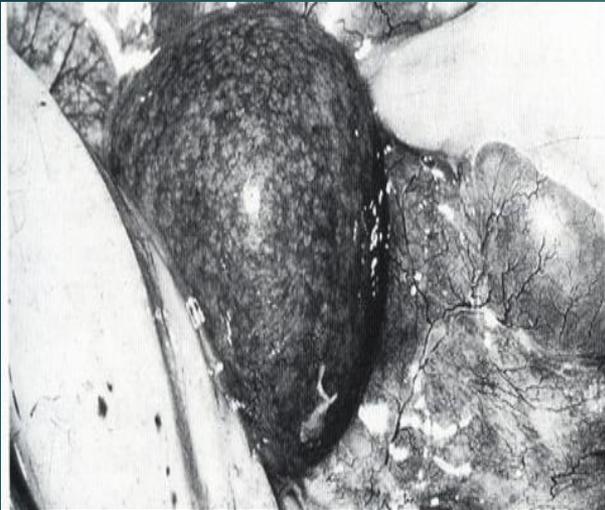
It ranges from 3-9 days.

➤ **Symptoms and course:**

1. **Acute stage:** fever, thirsty, cyanosis, depression, swelling of the feet and claws, greenish diarrhea with excessive amount of urates, off food, ruffling and comb become pale. The birds are weak, squat on the ground and later become paralyzed before death. The average duration of the disease is about 5 days. Mortality and morbidity may reach up to 90% to 100% in the highly susceptible flocks.
2. **Chronic cases:** the course of the disease is prolonged for up to 21 days with marked anemia, emaciation and temperature drops to subnormal a day or two days before death and mortality may reach 60%.

➤ **Lesions:**

- Enlargement of the spleen markedly (splenomegaly) with mottling (mottled) by ecchymotic hemorrhages, infarcts or foci of necrosis.
- The kidneys and heart may be enlarged and pale (barboiled heart). A greenish – yellow (bile stained mucoid enteritis), fibrinous pericarditis and myocarditis.

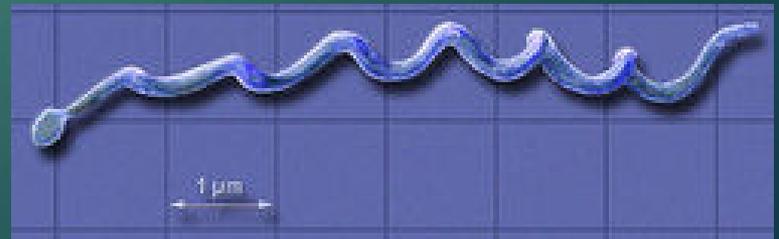
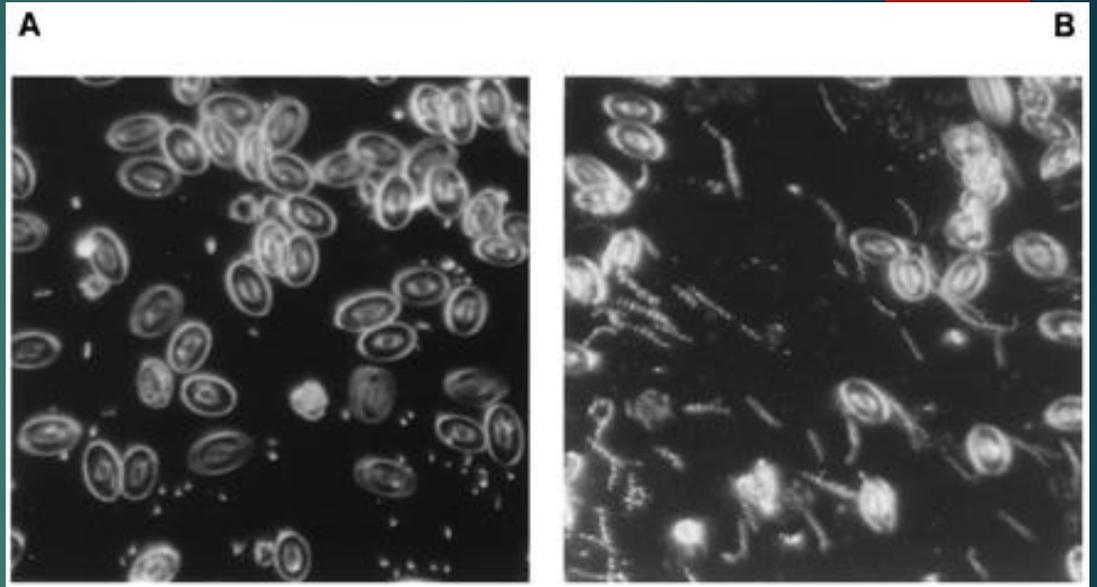
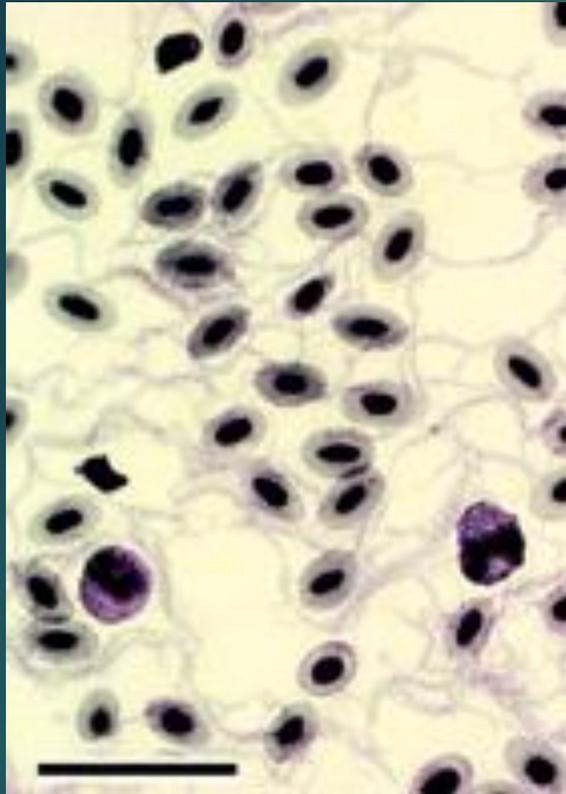


Diagnosis:

- Suspension of spirochetosis should be expected if the tick *A.persicus* is found on typical sick birds, larval stages (seed ticks) (nymph) while adult ticks live in the house and feed mostly at night.
- To find the organism in peripheral blood, smears taken during the febrile stage and stained with Giemsa is diagnostic.
- In freshly dead birds to demonstrate the organism in smears made from the pericardial fluid or heart blood and in sections from the liver or spleen.
- Spirochetes can be identified by blood smears or dark field or phase contrast microscope of blood and other fluid.

Diagnosis:

- Spirochetes can be concentrated in the buffy coat of centrifuged blood especially in the birds with low spirochetemia.
- Spirochetes may not be observed during late stages of the disease. In doubtful cases, isolation in 6 days old chick embryos inoculated with defibrinated blood from typical early cases, alternatively, young chicks or poults can be inoculated serum or tissue suspension and their blood can be examined daily for spirochetes, which usually in 3-5 days.
- Identifying the spirochetes in specially stained sections. Fluorescent antibody test can be used to identify it in tissues or blood. Agar gel precipitation test have been used to detect spirochetal antibodies and antigens.





➤ **Prevention and control:**

1. Clean and hygienic poultry houses.
2. Eradication of ticks and other insects, by suitable insecticide.
3. Using the chick embryo adapted vaccine produced locally , two months before summer season (inactivated formalized vaccine).
4. Treatment with specific drugs as penicillin, or arsenobenzol drugs and oxytetracycline. A single dose of penicillin at the rate of 10-15.000 I.U per birds or oxytetracycline 40mg/kg of body weight is highly effective under field conditions. Recovered birds are solidly immune.



 ***Thanks***