REOVIRUS INFECTIONS
Viral arthritis

Viral arthritis/tenosynovitis:The most frequent reovirus-associated disease in poultry, clinically it is manifested by lameness and swellings affecting primarily tarsometatarsal joints and the feet. Many infected birds are in a good general condition, but some could be lethargic and exhausted. The mortality is very low. The infections affect predominantly meat type poultry.

Reovirus infections are ubiquitous in commercial poultry flocks. They are global in distribution, although the virulence of viruses appears to differ between regions. Most strains are nonpathogenic and appear to survive harmlessly in the intestine, whereas others have been associated with several disease conditions, including malabsorption and other enteric disorders, hydropericardium, and occasionally respiratory disease.

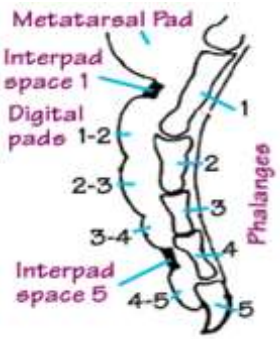
Viral arthritis results in severe lameness in heavy broiler breeds of chickens and occasionally in laying breeds. Although lameness in turkeys has sometimes been reported to be associated with avian reoviruses.

However, recent field evidence from the USA indicates the presence of novel reoviruses causing arthritis and tendon rupture clinically identical to that in chickens. Reoviruses have been isolated from a range of other avian (including wild) species, and it is possible that cross-infection occurs, although ducks and geese have reoviruses that differ genetically from those of chickens.

Etiology and Pathogenesis

Viral arthritis is caused by avian reoviruses, which are RNA viruses. Strains differ in virulence, ranging from those causing **arthritis and sometimes death** to those that **exist harmlessly in the gut**. The mechanisms that determine whether a reovirus is pathogenic or harmless are poorly understood. Several antigenic types are known, and although some cross-protection occurs between types, it is rarely complete.

Most infections are acquired by ingestion. After intestinal replication, the virus spreads via the bloodstream to all parts of the body. Pathogenic viruses localize in the hock joint, where they cause arthritis. Other organs, such as the liver, may be affected



Transmission and Epidemiology

Avian reoviruses **can be egg transmitted**, so infected breeder hens pass virus to chicks.

Transmission is short-lived, and only a small nucleus of chicks carry virus**. Infection is spread locally to hatch mates by the fecal-oral route.** The virus is quite resistant to inactivation and can persist on farm materials for many days or weeks. Fomites are important.

Serious outbreaks of viral arthritis are followed by a decreased incidence in later hatch groups of birds from the same parent flock and may be related to decreased egg transmission and development of maternal immunity. Day-old chicks are more susceptible than older birds when exposed by natural means. The younger the chick when infected, the more likely it is that disease will develop.

Clinical Signs

1-Viral arthritis usually is seen in broilers 4–8 wk old as unilateral or bilateral swellings of the tendons of the shank and above the hock.

2-The birds are reluctant to walk and when forced up have a painful, trembling gaite.

3- In the most severe form, rupture of the gastrocnemius tendon is common, although digital flexor tendons are sometimes affected and many cull birds are seen around the feeders and waterer.

4-The most severely affected birds do not recover; less severely affected birds may recover in 4–6 wk.

5-Infection is asymptomatic in many birds.

6-Birds suffering from viral arthritis exhibit lameness and swollen hocks, reduced feed consumption, and reduced weight gain.

7-Mortality is 2%–10% and morbidity 5%–50%.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Lesions:

1- Edema around the tendons of the leg is marked, petechial hemorrhages develop in the synovial membranes above the hock, and fusion and calcification of the tendon bundles are common.

2-Blood clots and hemorrhages are seen accompanying rupture of the gastrocnemius tendon.

3-Erosion of articular cartilage. Staph will often invade afterwards causing purulent arthritis.

Histologically

The synovial cells are hypertrophied, hyperplastic, and infiltrated by lymphocytes and macrophages. The synovia contain lymphoid aggregates with **heterophils** and macrophages. In the heart, infiltration of heterophils or lymphocytes between myocardial fibers is a consistent finding.

Diagnosis

1-Leg problems in broilers or broiler breeders associated with swelling
of shank tendons or tendons above the hock joint sometimes accompanied by ruptured tendons, are indicative of reovirus infections.

2-A positive blood test (Elisa/AGP test) is of some value as an indication of exposure to reovirus, but does not constitute proof of diagnosis.

3-Histopathological examination of affected tissues and isolation of virus.

4-In many laboratories, PCR is used for virus identification and is more rapid and sensitive than isolation.

Treatment and Control

There is currently no treatment available for viral arthritis. Treatment Reovirus infection cannot be treated successfully, but antibodies are of help in preventing secondary bacterial infections, particularly Staphylococcal infections.

Control

1-Besides biosecurity, cleaning and disinfection between the cycles
2-vaccination of broiler breaders is a must for reovirus control.
3-A good reo vaccination program consists of live (priming) followed by one or two boosting injections with inactivated reo vaccines during the rearing period.
4-The goal is to prevent vertical transmission and induce high and uniform “maternal derived antibodies” (MDA) in the breeders that will be passed, via the egg, to the progeny to protect the progeny during the most susceptible period of life.