

Autoimmune Diseases in Dogs

Vipan Kumar, R. Ralte, Pallvi Slathia and P.N. Dwivedi
Department of Veterinary Microbiology, KCVAS ,Amritsar

An autoimmune disease is a condition in which our immune system mistakenly attacks our own body cells and destroys them. Generally, a healthy immune system is capable of differentiating the self from non self. The immune system generally spares the “self” and attacks on the “Non self”. But during autoimmune diseases this ability of immune system is impaired and it becomes unable to differentiate the self from non self. At this stage the immune system mistakes the part of our body like joints, skin, eye, brain, kidneys, bone marrow or blood. It starts reacting against its own body cells/ components and produces autoantibodies. Thus, there is an abnormal immune response.

Some common observations made on affected dogs are:

1. Lack of energy or weakness and sometime collapse
2. Loss of weight
3. Heavy breathing
4. Increased heart rate
5. Pale or discoloured gums/mucous membranes, eye, skin
6. Jaundice

Causes of Autoimmune diseases

1. The causative agents for the autoimmune diseases include
2. Genetics
3. Cancers
4. Tick borne diseases
5. Medication side effects
6. Immune system deformities
7. Environmental factors like exposure to chemicals and toxins

Types of Canine autoimmune disease

An autoimmune disorder can be life threatening to dogs depending on which organ or tissue the immune system rejects. A variety of autoimmune diseases have been reported from the dogs. Some of the very common autoimmune diseases are as under

1. Immune mediated polyarthritis (Joint inflammation)
 2. Immune mediated thrombocytopenia (Platelet destruction)
 3. Kerato conjunctivitis (Dry eye)
 4. Inflammatory brain disease (For toy breed dogs)
 5. Systemic lupus erythematosus (SLE)
 6. Autoimmune haemolytic anaemia (AHA)
1. Immune mediated polyarthritis

Immune mediated polyarthritis is a disorder of the immune system leading to inflammation in multiple joints. This condition in dogs is similar to rheumatoid arthritis in humans. Immune mediated polyarthritis is different to osteoarthritis which occurs more commonly in dogs after injury or due to old age.

The symptoms visible during immune mediated polyarthritis are Stiffness and reluctant to move Lameness in different limbs at different times Lethargy and poor appetite

Dogs with polyarthritis are usually having stiff, painful and swollen joints in more than one limb.

2. Immune mediated thrombocytopenia (ITP)

It happens when the immune system attacks thrombocytes, the cells responsible for forming blood clots. Dogs with this condition will not likely experience a collapse or crisis like they may with autoimmune haemolytic anaemia, but it can be serious condition if there is any bleeding.

The common symptoms observed with ITP are

Bruising

Excessive bleeding after an injury or surgery

Excessive bleeding during menstruation

Blood in the urine

Blood in the faeces

3. Keratoconjunctivitis

Keratoconjunctivitis or dry eye is an ocular condition commonly diagnosed in dogs .

It results most often from an inadequate quantity of tears or a deficient quality of tears. Tears are produced by the lacrimal gland and the gland of the third eye .It is actually the inflammation of the cornea and surrounding tissues due to drying.. Tears are required to lubricate the cornea and remove the debris or infectious agents that may contact the eye. The tear film is the mixture of mucus, fatty liquid and water.

The body immune system attacks the cells that produce a portion of the tear film resulting in decreased production. This is thought to be inherited disorder. The other causes of dry eye include systemic diseases like canine distemper virus infections, medications such as certain sulfonamides, hypothyroidism, nervous system effects on an inner infection .

The main signs and symptoms observed are painful, red and irritated eyes. They often squint, blink excessively or hold the eyes shut. There is often a thick, yellowish, mucoid discharge present as a result of the decrease in the aqueous component of the tear film. Corneal ulceration is often seen. Most dogs will develop corneal scarring called hyperpigmentation.

4 Inflammatory brain disease

The severity of the disease symptoms depends on where in the brain and / or spinal cord the inflammation is located. The most common signs seen are decreased alertness, difficulty in maintaining balance, and neck pain. There are several types of diseases that can cause inflammation of the

brain, which also affect the meninges and the spinal cord. Other symptoms also include behavior changes, blindness, circling, depression, facial tremors, fever, lethargy, loss of coordination, paralysis, stiffness etc.

5. Systemic Lupus Erythematosus

Systemic lupus erythematosus (SLE) is an immune mediated disease in which a dog immune system begin to attack his own tissues. Every tissue in the body contains substances that may stimulate an immune system reaction. The important signs are muscle pain and weakness, arthritis in multiple joints, skin rashes or sore, lethargy, loss of appetite, swollen lymph nodes and seizures or tremors. The typical symptoms appear around 6 years of age but can show up at any age. SLE can affect the skin, lungs, heart, kidneys, joints, blood and nervous system. The antibodies in the blood attack own tissues and cells. Usually more than one organ is affected.

6. Auto immune haemolytic anaemia (AHA)

In this condition the immune system of the body attacks and destroys its own red blood cells. In dogs with AHA, red blood cells are still being manufactured in the bone marrow but once release into the circulation, they have a shorter than normal life span.

In Primary AHA, the immune system of the dog does not work properly, and it incorrectly makes antibodies that target its own red blood cells. Approximately 75% of the cases are

primary.

With secondary HA, the surface of the red blood cells become altered by an underlying disease process or a toxin. The immune system of the dog recognizes the altered red blood cells as a foreign invader and destroys it. Once targeted the red blood cells are either destroyed within the blood vessels by a process called intravascular haemolysis or destroyed when they circulate through the liver or spleen by a process called extravascular haemolysis. In both the situation the haemoglobin will be released.

The affected dogs show severe anaemia, The gums become very pale. Animal become listless and gets tired quickly because there are not enough red blood cells to carry oxygen to the tissues. The dog may faint or appear disoriented due to low oxygen levels in the brain. To compensate for the oxygen to the tissues, the heart rate, and respiration rate are increased.

Diagnosis of systemic autoimmune diseases

Diagnosis of systemic autoimmune diseases is difficult as all dogs don't exhibit the same symptoms, and many symptoms overlap with other diseases. In this regard a complete blood picture of the dog should be analysed in order to measure red and white blood cells and determine if the dog has a low platelet count, low blood cortisol. A blood chemistry analysis will enable us to determine if the dog is positive for anti-nuclear antibodies, thyroid hormone level,

high plasma potassium concentration, high calcium concentration, high blood urea and creatinine. These blood parameters will determine if the dog has systemic autoimmune disease and if so, what type.

For example, a positive anti-nuclear antibodies test indicate lupus, a low platelet count indicates thrombocytopenia, low thyroid hormone level indicates lymphocytic thyroiditis.

Diagnosis of autoimmune skin diseases

Autoimmune skin diseases in dogs are not very common. A thorough history of the case is important to rule out any possibility of drug induced conditions. Parasitic conditions should also be eliminated as cause of the skin lesions. A skin biopsy is required for accurate diagnosis.

An ideal biopsy should capture a vesicle or pustule before it erodes. These are very delicate lesions and are rarely found intact in time to do biopsy. Also, any treatment prior to biopsy may affect the results.

Thus, autoimmune disease in dogs do occur and most of the time it goes either undiagnosed or wrongly diagnosed.

For the better care in this regard a proper follow up of the case supplemented with laboratory diagnostic aids is required.