

Trapped Neutrophil Syndrome

Affected breeds: Border Collie

Trapped Neutrophil Syndrome (TNS) is a severe inherited disease of Border Collies which results in a deficiency in circulating disease-fighting white blood cells. Affected puppies are often small and suffer from chronic infections; they also typically respond very badly to vaccinations. Signs of infection can occur from as young as six weeks of age, although for others the first sign of the condition may be at the time of their first vaccination. A few cases may be mild and not become apparent to 1 – 2 years of age, although most affected dogs do not live past the age of two years.

This is a serious, fatal disease caused by a recessive genetic mutation. This means that dogs which carry the mutation ("CARRIERS") are healthy but will pass the mutation on to an average of 50% of their offspring. Puppies which inherit two copies of the mutation will suffer from TNS ("AFFECTED").

This test is particularly useful for breeders:

- To identify carriers among their breeding stock so that they can avoid CARRIER X CARRIER mating combinations which would risk AFFECTED puppies.
- To conclusively diagnose TNS in sick puppies

This test will be reported as:

CLEAR : no evidence of the Trapped Neutrophil Syndrome mutation
CARRIER : carries one copy of the mutation, which will be passed to 50% of offspring
AFFECTED : carries two copies of the mutation and will develop TNS

The genetic status of dogs can be used to predict breeding outcomes when different combinations are mated:

CLEAR X CLEAR = 100% CLEAR
CARRIER X CLEAR = 50% CARRIER, 50% CLEAR
CARRIER X CARRIER = 25% AFFECTED, 50% CARRIER, 25% CLEAR

References

Shearman JR, Wilton AN (2011) A canine model of Cohen syndrome: Trapped Neutrophil Syndrome. BMC Genomics 12: 258