

Paroxysmal dyskinesias in dogs and cats

What are paroxysmal dyskinesias?

Paroxysmal dyskinesias (PD) are a group of conditions characterised by episodes of abnormal posture and movement that are self-limiting. The term 'paroxysmal' indicates that the signs can start and stop suddenly. The term 'dyskinesia' broadly refers to a movement of the body that is involuntary, which means that your dog (or cat) has no control over its movement and yet remains fully aware of its surroundings. Episodes are painless, autonomic signs are absent, consciousness is not impaired and abnormal behaviour following the episode is not observed. Episodes can last seconds, minutes or hours, with the beginning and end of the abnormal movement being abrupt. In the great majority of cases, neurological examination is normal between episodes. Many of these features help distinguish PD from epileptic seizures, which are one of the other main causes for abnormal movements in pets.

Based on research in humans it is most likely that PD results from dysfunction in an area of the brain called the basal nuclei that are important in initiating and controlling movement. The underlying cause of many PDs is unknown, with the majority being described as idiopathic (meaning of unknown cause). In some dogs and humans, PD are recognised to be caused by genetic abnormalities and can be familial in origin. In rare cases animals can develop PD as a result of a structural disease (e.g. tumour, inflammation, infection, stroke) or in response to some medications (phenobarbital, propofol). In some breeds such as Border Terriers a gluten hypersensitivity underlies their PD.

Which pets experience paroxysmal dyskinesias?

PD can occur in any dog but have been increasingly described in certain breeds including: Cavalier King Charles spaniel, Border terrier, Cairn terrier, Scottish terrier, Dalmatian, Norwich terrier, Boxer, Bichon Frise, Pugs and Chinook. More recently PD have been reported for Jack Russell terriers (JRT) and Labrador Retrievers in the UK. Anecdotally PD have also been reported in cats, but these episodes are not as well characterised as those in dogs.

What are the signs of paroxysmal dyskinesias?

The most common appearance of affected dogs is 'cramping'/'spasm' of the limbs, which is seen as an increase in the muscle tone of the limbs and markedly abnormal postures. While all four limbs may be affected, the hind limbs are often affected to a greater degree than the fore limbs. During an attack, animals can be severely incapacitated and can appear distressed, since the spasm overcomes any attempts at voluntary movement; however, many dogs will still attempt to walk. In some cases, episodes can be triggered by excitement or exercise. Episodes can last seconds, minutes or hours, with the beginning and end of the PD being abrupt.

How are paroxysmal dyskinesias diagnosed?

Diagnosing a PD is extremely challenging as with the exception of one or two breeds there are no simple tests that can diagnose these conditions. The episodes must be precisely characterised, and this involves the specialist taking a detailed history and reviewing any videos of the episodes you may have. Your vet will then conduct a physical and neurological examination. The most important differential diagnosis for PD is focal seizures which can

cause similar muscle movements. To exclude structural disease of the brain an MRI scan, with cerebrospinal fluid (CSF) analysis, is usually recommended. In most cases blood tests and urinalysis will also be performed to exclude underlying metabolic or endocrine disorders. In rare cases a blood test can be used to identify a genetic mutation (BCAN in Cavalier King Charles spaniels) or an abnormal antibody (gluten-specific antibodies in the Border Terrier) to make a diagnosis.

What treatment options are available?

PD can be challenging to treat and treatment options that work well and for a sustained period of time are limited in most cases. Different classes of medications have been used including skeletal muscle relaxants, anti-seizure medications and drugs that work on ion channels in the brain and muscle. Diet is thought to play an increasing role in management with either gluten-free or ketogenic diets showing some benefit in dogs and humans. Aside from Cavalier King Charles Spaniels, who respond to muscle relaxants and Border terriers who generally respond to gluten free diets, most cases of PD do not respond well to medication.

What is the prognosis?

The prognosis for dogs with PD is variable. In many dogs the condition is self-limiting over time with a third entering remission and an improvement in three quarters of dogs. Remission was significantly lower in dogs with cluster episodes than those without. The frequency of many episodes can also be improved by reducing levels of stress and excitement.