Raising awareness of seizure triggers and pre-seizure behaviour changes in dogs

A new study by the Royal Veterinary College (RVC) has identified pre-seizure behavioural changes and potential seizure triggers that may help owners predict when a seizure is going to occur. The RVC's animal behaviour scientist Dr Rowena Packer explains.

https://doi.org/10.12968/coan.2020.0064

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Owners of dogs with epilepsy are often expert record keepers; whether it is via lists, calendars or smartphone apps, keeping track of their dog's seizures and anti-seizure medication regimen can be an onerous task, with seizure-free streaks becoming an important marker of success in their dog's management.

Epilepsy is the most common chronic neurological condition in dogs and is currently estimated to affect around 70 000 of the 11.6 million dogs kept as pets in the UK (0.6%). Owners can feel distressed, devastated, and dejected when seizures occur, often compounded by feelings of unpredictability and lack of control over their dog's seizures. As such, the Canine Epilepsy Research Team at the Royal Veterinary College (RVC) are motivated to find ways to make seizures more predictable.

From studies of human epilepsy patients, it has been shown that up to half (47%) of people with epilepsy can identify changes in their mental or physical state before a seizure, with this pre-seizure period known as the 'prodrome'. Prodromal changes can occur hours to days before a seizure occurs. In addition, many other patients were able to identify 'triggers' for their own seizures, stimuli that when they were exposed to, reliably led to a seizure. Finding whether these phenomena existed in dogs with epilepsy is of high priority as a potential way of improving epilepsy management.

To explore this important area, we conducted an international online survey of 229 owners of dogs with epilepsy. First, we explored whether owners believed they could predict an upcoming seizure in their dog. Over half (59.6%) believed that they could, and of these owners with a seizure 'crystal ball', nearly three quarters (71.6%) felt able to predict an upcoming seizure over 5 minutes before it began, and almost half (45.5%) had 30 minutes or more warning. With this promising finding, we were keen to identify specific factors helping owners to predict these distressing events.

When questioned on pre-seizure 'prodromal' changes, nearly two thirds of owners reported that they recognised such changes in their dog; and without prompting, the most common signs were increases in restlessness (29.2%), clinginess (25.0%) and fear (12.0%). This is similar to findings in people with epilepsy, where prodromes are commonly characterised by restlessness, irritability, mood changes and cognitive disturbances.

Interestingly, seizure triggers were also commonly reported; nearly half of owners (43.1%) reported at least one, with stress overwhelmingly the most common seizure trigger (38.7%). However, owners reported a wide range of triggers including environmental changes (16.1%), food (15.5%), excitement (13.0%), household products such as cleaning products (6.8%), preventative healthcare such as vaccination and flea or worming products (6.8%), and sleep changes (1.9%).

This knowledge is important for veterinary professionals as when owners report either pre-seizure changes or potential triggers, they should be taken seriously, given how widespread they appear, and how similar they are to those seen in human epilepsy patients. Encouraging owners to keep good records alongside their seizure log could help identify any patterns in seizure occurrence, although owners should not be encouraged to tie themselves in knots identifying changes or triggers that might not be there.

In the future, we hope that identification of triggers (where present) in canine epilepsy patients will improve seizure control by helping owners avoid them where possible or take mitigating action when exposed to them. In addition, we hope owners becoming more aware of the prodromal phase could give them more time to mentally and physically prepare for an upcoming seizure, including getting their dog to a safe space and preparing emergency medications. Eventually, this time period could be exploited to administer anti-seizure drugs in a 'smart' pulsatile manner once pre-seizure signs are recognised, to try and stop an upcoming seizure in its tracks.

When owners of dogs with epilepsy report either pre-seizure changes or potential triggers they should be taken seriously, and owners can be encouraged to keep records of when seizures occur to help identify patterns.

Dr Rowena Packer and Professor Holger Volk created the RVC Pet Epilepsy Tracker, a smartphone app developed to help owners manage canine epilepsy. More information can be found at: www.rvc.uk.com/dog-epilepsy-app

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