**Advances in Treating Drug Resistant Epilepsy**

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**Disclosure:**

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**Objectives:**

 1. Attendees will be able to understand the diagnosis and integrative treatment of Seizure.

 2. Attendees will be able to assess new information about seizure regulation and methods to help refractory cases with acupuncture implants and the Gamma Core device.

While the number of cats with seizures is less, it is estimated that 1% of the canine population has some form of seizure disorder. Due to the presence of idiopathic (inherited) epilepsy in certain breeds of dogs, the incidence can be as high as 15 to 20% in those breeds. Any reproducible change in behavior, usually associated with altered consciousness and increased voluntary or involuntary motor tone, can be a seizure. Generally, the seizure represents a paroxysmal, uncontrolled, transient electric discharge from the neurons in the brain. Anatomically, seizures can develop from conditions affecting the forebrain, cranial to the mesencephalon. The presence of a seizure disorder, then, localizes (at least part of) the disease process in the cerebral cortex, thalamus, hypothalamus or mesencephalon. A typical seizure is characterized by a prodromal period (when the animal may recognize that a seizure event is coming and react in a characteristic manner), the ictus (the actual seizure event), the post-ictal phase (which may including pacing, eating or sleeping, but which is characteristic for that patient), and the inter-ictal phase (the period between seizures, where the animal may appear normal). During the seizure (ictus), there is usually a decrease in consciousness followed by increased motor tone including alternative tonic and clonic activity. In addition, autonomic tone increases which can lead to salivation, defecation and urination.

Seizure disorders can be differentiated into epilepsy or active seizure disease. Epilepsy can be inherited (idiopathic) or acquired. As such, epilepsy can be defined as a seizure disorder characterized by an inborn biochemical defect of neurons or by the presence of an old injury, both of which lead to abnormal electrical activity in the brain. The former defines idiopathic epilepsy, while the latter defines acquired epilepsy. In general, epilepsy represents a seizure disorder where the seizure is the disease and treating the seizure treats the disease. On the other hand, active seizure disease is defined as a seizure disorder where the seizure represents only one symptom or manifestation of the true disease process. In this case treating the seizure only treats the symptom, not the disease. The goal of neurologic assessment of patients with seizures is to determine whether the problem is due to epilepsy or secondary to an active seizure disease. The latter condition requires the greatest effort to diagnose and treat, since the active cause must be found and eliminated in order to control the brain abnormality. Failure to do so will eventually result in failure of seizure control. Seizures are now all consider epilepsy; however, the epilepsies can have different origins and meanings. Idiopathic or inherited epilepsy is now termed primary epilepsy, a generalized and symmetrical seizure disorder usually seen in purebred dogs. Secondary epilepsy includes all forms of seizures that are due to an organic lesion within the brain. This is now called symptomatic epilepsy. Some of these are due to active causes like neoplasia or infection; whereas, other seizures are due to inactive causes resulting from past injury leaving an electrically active area in the brain that causes seizure activity. This latter form is what used to be called acquired epilepsy. It is now called probably symptomatic epilepsy since it has a cause, but the cause cannot be found. The last category is reactive epilepsy which is a seizure disorder caused by systemic metabolic or toxic disorders which result in seizures as a consequence of the systemic problem.

Seizures from TCM are either excess or deficiency. There are three of each. The excesses are invasion of pathogens with accumulation of wind, phlegm and heat in the interior or stagnation which is locally excessive. The wind-phlegm syndrome usually has an acute onset with seizures. The phlegm-fire syndrome also has sudden seizures (which probably represents encephalitis-related seizures). The third form of excess is Blood Stagnation (which probably represents acquired epilepsy). There is often a history of head injury. The deficiencies represent liver blood, liver and kidney yin and kidney jing deficiencies. Liver Blood deficiency has chronic seizures (like inherited epilepsy) and may have dry or burnt hair and anemia. Liver and Kidney Yin deficiency also causes chronic seizures, but the nose and mouth are fry, the tongue is red while the pulse remains weak and thready. The seizures also happen often late afternoon or at night. The final deficiency is for seizures that occur before a year of age due to kidney jing problems.

 The wind-phelgm syndrome usually has an acute onset with seizures. The tongue is usually pale or purple with a white greasy coating. The pulse is wiry (liver) and slippery (damp). Treatment principles are to expel phlegm, extinguish the wind, open the orifice and stabilize the seizures. You can use a formula, Ding Xian Wan.

 The phlegm-fire syndrome also has sudden seizures (which probably represents encephalitis-related seizures). There may be agitation, insomnia, or barking at night. There may be constipation or cough. The tongue is red or purple with a yellow, greasy coating. The pulse is rapid (heat), wiry (liver) and slippery (damp). Treatment principles are to clear the liver, drain the heat, transform phlegm and open the orifices. You can use Di Tan Tang (herbal equivalent of phenobarbital) and Long Dan Xie Gan Tang (Snake and Dragon). The former formula stops the seizures and the latter clears the heat, soothes the liver, and moves the damp.

 The third form of excess is Blood Stagnation (which probably represents acquired epilepsy). There is a history of head injury. The tongue and pulse are like wind-phlegm. It is the history of previous head injury that accounts for the deference. So treatment principles are the same except that you need to invigorate blood. Use Ding Xian Wan and Tao Hong Si Wu San (moves blood). You could also use Di Tan Tang plus Saliva (Saliva is a single herb which is almost the same as Four Substances).

 The deficiencies represent liver blood, liver and kidney yin and kidney jing deficiencies. Liver Blood deficiency has chronic seizures (like inherited epilepsy) and may have dry or burnt hair and anemia. There may be weakness from loss of stamina (liver sign). Tongue will be pale and dry and the pulse will be weak and thready. The treatment principle is to tonify Qi and Blood and quiet the wind. You can use Bu Xue Xi Feng San (build blood and extinguish wind formula) or Di Tan Tang plus Rehmannia 8 (Four Substances plus Four Gentlemen).

 Liver and Kidney Yin deficiency also causes chronic seizures, but the nose and mouth are fry, the tongue is red while the pulse remains weak and thready. The seizures also happen often late afternoon or at night. Treatment principle is to nourish Yin and extinguish wind. you can use Yang Yin Xi Feng San or Di Tan Tang and Left Side Replenished (Zuo Gui Wan). You can also use Tian Ma Gou Teng plus for this condition.

 The final deficiency is for seizures that occur before a year of age due to kidney jing problems. The nose and mouth are often dry. The tongue will be pale or red and the pulse will be weak and thready. The treatment principle is to extinguish the wind and astringe or nourish the kidney jing. Use Di Tan Tang or Tian Ma Gou Teng plus for the seizures and use Epimedium Powder for the Jing issues.

 One way to approach all seizures is to use Di Tan Tang for the seizure and then add whatever else you need to treat the excess or deficiency. That is a simple approach. Each condition also has acupuncture points that can be used. All can use points to extinguish wind like GB-20 and LI-11. Other points are for the specific excesses or deficiencies. Most of the time you can treat LIV-3 and BL-18 (to tonify the liver), An-Shen and GV17-20 and may want to add ST-40 for phlegm, but then add specific points for the problems you see.

 Again, as a classical neurologist, don't put in gold or other beads around the head until you have explained that an MRI might be needed to rule out structural disease. Western medicine is sometimes still better in treating structural disease. You don't want to lose that opportunity.

Regulating refractory seizures may require combinations of Western medications, TCVM herbal support and use of acupuncture including bead implantation. Unfortunately, there are is little help with Western herbs; however, TCVM herbal medications can be very effective.