**HOW I TREAT SELECTIVE NEUROLOGIC DISEASE: HYRODCEPHALUS, CNS NEOPLASIA & DEGENERATIVE MYELOPATHY**

**RM Clemmons, DVM, PhD, CVA, CVFT**

**Gainesville, FL**

Advances in modern medicine have made this an exciting era in the field of veterinary neurology. At no time in the past has the ability to study both the in vivo structure and function of the central nervous system (CNS). New techniques in molecular biology have made it possible to actually diagnose and treat disease at the genetic level or by correcting protein alterations caused by changes at the atomic level. However, in spite these seemingly miraculous enhancements to medicine, we are often left without a practical solution to the patient’s problems. The treatment may be beyond the financial or emotional resources of the client so that alternatives to these new treatments need to be available. At the same time, the improved diagnostics that are available are also critical to deciding what constitutes the best approach to treatment whether conventional or not. While owners may have a trouble affording or may not allow processes needed to achieve a diagnosis, they should be encouraged to seek as complete and thorough an answer as possible.

 In the case of neurologic conditions, the main things which help are a comprehensive evaluation of the systemic system, including blood tests, urinalysis and radiographic or ultrasound imaging of the body cavities. If these tests are unremarkable or cannot explain the neurologic disease, then specific neurologic tests are indicated. These can include electrodiagnostics such as electromyography (EMG) or electroencephalography (EEG), cerebrospinal fluid (CSF) analysis, and neural imaging such as magnetic resonance imaging (MRI). The latter method (MRI) allows for an anatomic diagnosis and can confirm whether a process is likely to be inflammatory, vascular or neoplastic. This knowledge can direct therapy to be far more specific than without that knowledge. Knowing that the disease is a tumor versus a chronic disk protrusion can make treatments more purposeful and specific.

**HYDROCEPHALUS**HYDROCEPHALUS**:**

 Hydrocephalus is defined as an abnormal accumulation of cerebrospinal fluid (CSF) within the ventricular system of the brain accompanied by a concomitant loss of cerebral white matter or gray matter. This condition is a common neurologic disorder of miniature breed dogs and offers a unique challenge to the clinician for diagnosis and treatment.

 ***Pathophysiology***Pathophysiology ***of Hydrocephalus*:** Hydrocephalus develops as a sequel to excessive formation of CSF, to decreased absorption of CSF, or to a loss of cerebral tissue volume. The pathophysiology of the former two conditions is important because these causes of hydrocephalus are likely to respond to CSF shunting procedures. The third condition is not likely to respond to either surgical or medical management.

 As a result of excessive fluid accumulation in the ventricular system from increased formation or decreased absorption of CSF, disequilibrium of forces exists at the ventricular-cerebral interface. Because the ventricular surface is semipermeable, there is a net flux of CSF into the periventricular extracellular fluid compartment. A concomitant decrease must occur in other cranial structures because no "dead space" exists within the cranial cavity. Cerebral vascular structures are most easily compressed, and with increased production of extracellular fluid from the ventricles, the periventricular white matter's reabsorptive capacity is overloaded. The vasculature of the white matter thereby collapses and leads to the development of periventricular white matter ischemia. Because oligodendroglia are sensitive to ischemic insult, demyelination and ventricular enlargement result. Therefore, early treatment must be given for maximal benefit to the patient.

 Some authors have not seen elevated intracranial pressure in dogs with hydrocephalus. In human patients likely to benefit from CSF shunting, however, transient or constantly increased ventricular pressure is common. Although the CSF pressure may be within normal levels in most dogs, increased intracranial pressure does occur in hydrocephalus and may play a significant role in the progression of this disorder. Hydrocephalus in the dog is associated with a higher initial resistance to CSF absorption, but an increased absorptive capacity. The mean rate of CSF formation is also found to be reduced. These findings suggest that canine hydrocephalus would be expected to exhibit low or normal ventricular pressures, but that minor changes in CSF volume would result in pressure increases that could not be normally transmitted or dispersed. Fluctuations in intraventricular pressure, as seen in man, would lead to periods of abnormally high pressures.

 ***Diagnosis***Diagnosis**:** The variability of signs of canine hydrocephalus often makes the diagnosis by clinical criteria alone difficult. In young animals in which a dome-shaped calvarium, open fontanelles, and a downcast gaze are also associated with neurologic dysfunction, however, the diagnosis may be easier. Confirmatory laboratory examinations include electroencephalography and radiology.

 The electroencephalogram of hydrocephalic dogs is characterized by high-amplitude, slow wave activity. This pattern is accentuated during sleep, but remains abnormal even during the alerting response. Although a correlation does appear to exist between the electroencephalographic changes and the degree of ventricular enlargement, these findings do not correlate with the clinical signs.

 Noncontrast radiographs may show some flattening of the gyral impressions upon the calvarium, but such changes are not pathognomonic. Computer-assisted tomography (CAT scan) and MRI have replaced most other methods of brain imaging. Both of these advanced imaging techniques, MRI particularly, can demonstrate the enlarged ventricular system along with changes within the brain’s tissues.

 Laboratory evaluation of ventricular fluid pressure, volume, and chemical and cellular characteristics may furnish helpful information about the underlying cause of hydrocephalus.

 ***Surgical Correction***Surgical Correction**:** The decision to place a ventriculoperitoneal shunt should be based upon the progression of clinical signs. The triad of dementia, gait abnormalities, and incontinence is an accurate predictor of responsiveness to shunting procedures in people and can be used in the dog.

On the other hand, it seems that patients who are less than a year of age seem to do better with shunting than patients over that age. This is probably because of the ability of younger animals to repair and recover from neurologic injuries and from the fact that they may have less overall damage. In older dogs, hydrocephalus may be from loss of neural tissue rather than from increased intracranial pressure as part of normal aging or from canine cognitive dysfunction.

***TCM Diagnosis and Treatment***TCM Diagnosis and Treatment**:**

 Hydrocephalus can be the result of kidney jing deficiency where the kidney fails to support the development of marrow. The kidney does not nourish the child (liver) leading to stagnation of blood and Qi. The grandparent (kidney) does not control the grandchild (heart) leading to mania. The grandchild (kidney) becomes rebellious and insults the grandparent (spleen) leading to accumulation of damp. As such, hydrocephalus can be thought of as the result of a spleen deficient damp pattern, where the accumulation of damp affects the mind and heart. The treatment principle is to dry the damp, dissolve the turbidity, eliminate the excess fluid and clear the mind.

 **The pattern diffe**rentiation of hydrocephalus emphasizes main symptoms in combination with concurrent ones to differentiate whether the disease is deficient or excess in nature. Patients with kidney deficiency have enlargement of skull, separation of skull sutures, sluggish expression and pale complexion. Spleen deficiency will lead separation of skull sutures without closure and other signs of spleen Qi deficiency such as poor appetite, loose stools and dull expression. On the other hand, stagnation with preponderant heat will have closed skull sutures, fever, dysphoria, dark urine and constipation. Patients with blood stasis obstructing collaterals will have skull enlargement, separation of skull sutures, sluggish expression, and purple lips and tongue.

  **The treatment principle** of hydrocephalus centers upon tonifying the kidney to promote water metabolism and tonifying the marrow and the brain. Based on the differences of wind, water and dampness, phlegm and blood stasis in a given patient, strengthening the spleen to promote water metabolism, resolving phlegm and descending qi, calming the liver to stop endogenous wind, clearing away heat and removing toxin, or promoting blood circulation to remove blood stasis will need to be adjusted for the specific symptoms of the patient.

**Local AP points:** BL-10, GV-20, GV-21

**Special AP points:** GV-26, PC-6, LI-4, SP-6, SP-9, KID-10

**TCM herbal:** *Peanut’s Hydrocephalus formula*

|  |  |  |
| --- | --- | --- |
| **English Name**  | **Latin Name** | **Actions** |
| Bai Zhi | Angelica | Dispel Wind-Cold, Relieve Pain |
| Bai Zhu | Atractylodes | Strengthen Spleen Qi |
| Ban Xia | Pinellia | Transform Damp and Stops Vomiting |
| Bo He | Mentha | Dispel Wind-Heat |
| Cang Zhu | Atractylodes | Dry Up Dampness, Strengthen Spleen Qi |
| Chan Tui | Cicada | Dispel Wind, Move Qi to the Head |
| Dang Shen | Codonopsis | Tonify Qi |
| Deng Xin Cao | Juncus | Clear Heat, Drain Damp-Heat |
| Fu Ling | Poria | Benefit the Urination |
| Huang Qi | Astragalus | Tonify Spleen Qi and Dissipate Swelling |
| Jie Geng | Platycodon | Open to the Upper Jiao, Transform Phlegm |
| Jin Yin Hua | Lonicera | Clear Heat, Detoxify |
| Ju Hua | Chrysanthemum | Clear Heat, Detoxify |
| Shan Yao | Dioscorea | Tonify Spleen Qi |
| Sheng Ma | Cimcifuga | Clear Wind-Heat, Move Qi to the Head |
| Ze Xie | Alisma | Benefit the Urination |
| Zhi Ban Xia | Pinellia | Transform Damp and Stops Vomiting |
| Zhu Ling | Polyporous | Benefit the Urination |

**CNS CANCER:**

Cancer represents a unique state whereby the body's healing system fails to eliminate cells with damaged or altered DNA. This allows these cells to escape the normal regulatory signals leading to uncontrolled cell growth. While most auto-immune diseases represent a failure of the healing system from an over-active immune system, cancer represents the extreme opposite, whereby the immune system is hypoactive (at least in regard to the tumor). On the other hand, both chronic immune diseases and cancer probably represent outcomes from the failure of the healing system brought about by living within a polluted environment, coupled with the genetic make-up of the dog.

While we are beginning to unravel the complex biochemistry of cancer development and have begun to understand how DNA is damaged and repaired, we still have a long way to go before the cure for cancer will be found. Spontaneous healing of cancer has been documented many times in human beings and animals, suggesting that a cure is possible. On the other hand, there is a great deal of information about the potential for preventing many forms of cancer. Most of these techniques involve the use of diet and dietary supplements. We cannot control the air we breathe, unless we do this as a whole. Using alternative means of transportation, car-pooling and clean energy production are good for the environment and for those living in it. It does pay to fool Mother Nature, she will get even in the end. We can, however, control the food our pets eat and the water they drink; thereby, reducing their pollution load. We can provide our pets with anti-oxidants and bioflavonoids, compounds which help protect DNA and the healing system. We can give them sufficient fiber in their diets to support digestion and protect the GI tract from cellular damage.

 Treatment of cancer with traditional Western medicine involves surgery (to remove or de-bulk the tumor mass), ionizing radiation (to expose the tumor to lethal doses radiation, minimizing radiation exposure to surrounding healthy tissue), and chemotherapy (to poison the rapidly growing cancer cells without poisoning the rest of the body). One or all of these methods may be employed in a given patient in an attempt to delay or prevent further cancer growth. On average, the success of Western approaches to cancer provides 1 to 18 months of relief from the cancer. While longer survival times are seen with certain forms of cancer, the long term prognosis for even the best forms of "systemic" cancer is poor to grave. The best chance for a good prognosis is for localized cancer (particularly benign lesions) which can be removed completely with surgery. When surgical removal of the cancer is not possible, or when the cancer has already spread to other organs (metastasized), control of the tumor may not be possible by conventional means and the owner must make difficult choices about the continued care of their pet. Some of these choices are very expensive. Traditional Western diagnostic methods have advanced dramatically in the last few years and provide the best chance to discover the natural of the tumor and to predict its clinical course. Advanced imaging techniques like diagnostic ultrasound, computer-assisted tomography (CAT scans) and magnetic resonance image (MRI scans) have vastly improve tumor diagnosis. Fine-needle aspirates or "true-cut" biopsies of tumors (sometimes performed in conjunction with an imaging technique) can provide cytological confirmation or histological diagnosis of the tumor type, leading to better therapeutic recommendations.

 In isolated cancers where "focused" radioablative surgery can be performed (such as in brain tumors), this can be a excellent treatment option. It is not inexpensive, but can be performed at selective veterinary medical facilities and provides stereotaxic precision to the radiotherapy. In addition, all of the radiotherapy can be done at one time, under a single anesthesia. Stereotaxic radioablation also minimizes damage to surrounding tissues. Moreover, the patient's immune system (and healing system) is not compromised outside the bounds of the tumor, allowing the patient greater potential for healing. While stereotaxic radioablation is currently limited to the brain (and, in some cases, the liver), it offers great potential for good. I am, personally, not enthralled with other forms of radiotherapy or with chemotherapy. Chemotherapy uses compounds which are toxic to the body and destroys the animal's immune system, hoping that the tumor is killed before the patient. While animals do not suffer all of the side-effects as human beings undergoing radiation therapy or chemotherapy, these treatments can still have significant and, in some cases, life-threatening side-effects in dogs. Owners must weigh the benefits and the risks carefully before making the decision to put their pet through radiation treatments or chemotherapy.

 To me, the answer to cancer lies in the immune system. This is the major reason why I have trouble with Western chemotherapy. Spontaneous remission from cancer only occurs when the patient's immune system acts to clear the cancer. Therefore, stimulation of the patient's immune system to selectively attack the cancer seems to be the key to achieving a successful outcome. New methods in immunotherapy and immune-targeted chemotherapy are likely to be the Western methods which lead to the greatest advances in cancer treatment over the next few decades.

 Traditional Eastern medicine has also been used successfully in the treatment of cancer for thousands of years, long before we understood the basic pathobiology of tumors. It is not a replacement for Western diagnosis and therapy, but may be used with Western approaches to help heal patients. When the option for Western therapy is lacking, there are Eastern therapies which can be employed to help the patient live a quality life, reducing the rate to cancer expansion or, in some cases, leading to remission of the cancer. Eastern medicine may be best suited to prevention of the development of cancer through healthy living. On the other hand, herbal medications have been shown to lead to spontaneous remissions of cancer. In some cases, these herbal products can be used in conjunction with traditional Western therapies, improving the outcome and reducing the side-effects from Western therapy alone. An integrative approach combining the best of both Western and Eastern medicine seems to be the only sensible course of action, providing the best overall care for the patient.

 Reducing risk factors for cancer, eating a properly balanced diet (free of pesticides and preservatives), drinking pure water, providing appropriate anti-oxidants, vitamins and minerals, and exercising regularly can help prevent cancer. Once cancer has been found, additional supportive measures are needed. Cancer cells utilize carbohydrates for fuel and compete for the body for amino acids. However, these cancer cells do not metabolize fats. Some data suggests that high fat diets can help the patient overcome the effects of cancer and even reduce cancer expansion. A number of herbal products can stimulate the immune system to attack cancer or block the mediators which the tumor uses to spread to other areas of the body, mediators which the tumor needs to survive. The following is a guide to the integrative treatment of cancer, using those compounds where there is scientific data to support their use in cancer management, helping the patient survive the disease.

**The Cancer Diet:**

Although eating healthy is the best tool in the fight against cancer, once cancer takes hold certain dietary changes may be help the patient fight against the effects of the cancer. Tumor cells rely heavily upon carbohydrates for their energy and rob the body of amino acids. On the other hand, tumor cells cannot utilize lipids (fats) for energy while the rest of the body can. As such, diets with increased fat content may slow tumor growth, allowing the patient to fight against the tumor. Protein content must be maintained a levels sufficient for tissue repair, but carbohydrates should be held to a minimum. For those who prefer to prepare their dogs food, the following diet contains the ingredients important for cancer patients. In addition, it supplies the important nutrients for cancer protection. For those who cannot cook for their dog, a commercial food should be of good quality, moderate protein (18-22%) content, low carbohydrate (3-13%) content, and high fat (55-60%) content. One of these is Mighty Dog Bacon & Cheese dog food. Your veterinarian can assist you in finding a food which fits these criteria and is satisfactory to your dog.

 Home cooked cancer diet: (for 60-70 pounds body weight)

8 oz Catfish

8 oz Tofu

2 tbs Virgin Olive Oil

2 Whole Carrots

½ cup Spinach

¼ cup Green Pepper

½ cup Broccoli

¼ tsp Dry Ginger

1 Raw Garlic Cloves

¼ tsp Dry Mustard

1 tab Flintstones

1250 mg Calcium

Prepare by cooking the carrots, green peppers and broccoli in the olive oil in a wok until tender, add catfish (cubed). Once catfish is beginning to cook, stir in spinach to wilt. When spinach is wilted, turn off heat and crumble tofu into the mixture. Add crushed raw garlic and the additional dry ingredient let cool and serve. Diet contains 1355 Calories with a 27/13/60 percent protein/carbohydrate/fat.

**Dietary Supplements:**

 ***Vitamins & Antioxidants:*** The vitamins and antioxidants for cancer patients are the same for all dogs, including vitamin E, vitamin C, selenium, beta-carotene, ginkgo bilboa, green tea and grape seed extract. In addition, the membrane stabilizers omega-3-fatty acids, gammalinolenic acid and coenzyme Q-10 are important for cancer patients. Many of the antioxidants help stabilize DNA and help reduce cancer development or progression. Some data suggests that antioxidants can reduce the effectiveness of radiation and chemotherapy, but this is not well documented. It may be best to stop antioxidants 3 days before radiation therapy or at the start of chemotherapy, reinstituting the antioxidants a few days later. Most of the herbal antioxidants are good for preventing cancer, too.

 ***Immunostimulants:*** **Echinacea:** American Indian medicine gave us a useful native plant that is another immune-system booster: purple coneflower, *Echinacea purpurea* and related species. The root of this ornamental plant is held in high esteem by herbalists, naturopathic doctors, and many lay-people because of its antibiotic and immune-enhancing properties. You can buy echinacea products in any health food store: tinctures, capsules, tablets, and extracts of fresh or dried roots. Although few medical doctors in America are familiar with echinacea, much research on it has been done in Germany, and the plant is in widespread use as a home remedy in Europe and America. Follow the directions for adult dosing.

**Astragalus:** Another Chinese herbal remedy with similar properties comes from the root of a plant in the pea family, *Astragalus membranaceus*. This plant is a relative of our locoweed, which is toxic to livestock. The Chinese species is nontoxic, the source of a very popular medicine called huang qi that you can buy in any drugstore in China for use against colds, flu, and other respiratory infections. Recent studies in the West confirm its antiviral and immune-boosting effects, and preparations are now available in most health food stores here. Follow the directions for adult dosing.

 ***Anti-Cancer herbs:* Cat's Claw (una de gato):** Cat's claw (name derived from the pattern of thorns found on the vines), *Uncaria tomentosa*, comes from the Peruvian rain forest and was traditional used by the indigenous people to treat cancer and arthritis. Recent studies indicate that it contains immune-enhancing substances, including several antioxidant compounds. These compounds may account for the antitumor properties reported for cat's claw. Treatments have been reported to lead to remission of brain and other tumors. While published data is lacking, cat's claw should be considered in tumors of the central nervous system. Use ¼ the adult human dose for small dogs, ½ for medium dogs and the equivalent dose in large dogs.

**Reishi and Maitake Mushrooms:** Like astragalus, mushroom extracts stimulate the patient's immune system by presenting unique macromolecules to the intestinal tract, where they alter the immune regulation by intestinal antigen processing systems. In addition, maitake mushroom extract has been shown to activate NK Killer cells which attack tumor cells and to prevent destruction of T-Helper cells. There is no known toxicity from these mushroom extracts. Use ¼ the adult human dose for small dogs, ½ for medium dogs and the equivalent dose in large dogs.

**Pau D'Arco:** This herbal extract from the inner bark of trees of the *Tahebuia genus* (found in South American rain forests) contains lapachol which has been reported to induce strong biological activity to cancer. No adverse effects have been reported with the drug. Studies with pure lapachol have not indicated that blood levels are inadequate to provide the anti-cancer and anti-inflammatory actions attributed to Pau D'Arco. On the other hand, its effectiveness may not be related solely to lapachol, but influenced by other phytochemicals in the extract. Use ¼ the adult human dose for small dogs, ½ for medium dogs and the equivalent dose in large dogs.

***Other Dietary Supplements:*** **Milk Thistle:** Milk thistle is an herbal product that help protect the liver from toxic damage. It may be useful in treating chronic active hepatitis or as a prevention of injury from other drugs. It has been used to protect the liver from damage from chemotherapy in human patients. It may help prevent damage from traditional anti-convulsants (phenobarbital). I recommend starting at 1 capsule twice a day.

**Shark Cartilage:** Mounting evidence suggests that shark cartilage has anti-angiogenic properties, reducing blood vessel development into tumors. While it is not ecologically sound to harvest sharks for their cartilage, it is hard to deny to benefit of reducing tumor blood flow in reducing tumor size and preventing distant metastasis. On the other hand, a recent study using shark cartilage in terminally ill human cancer patients showed no evidence of benefit either in tumor growth or in the quality of life of the patients. If your dog has neoplasia, you can consider using 1000-2000 mg of shark cartilage daily, taking into account that it may do nothing beneficial.

**Miscellaneous:** You may want to add Essiac tea, Wheatgrass extract, Soybean Concentrate or Chlorella (see www.wheat-grass.com) {these are not proven, only antidotal}; however, soybean concentrate contains many of the same compounds found in Tofu, in a liquid form. My feeling is that if you use the diet which is based upon Tofu for much of its protein, you do not need soy concentrates. On the other hand, this might be useful in dogs who remain on commercial dog food.

**Basic Cancer Approach:**

 Cancer remains a unique case. Sadly, in veterinary medicine the goal is to palliate not cure. This is because animals cannot tolerate the protocols used on human beings with cancer. Even so, 1 to 18 month survivals are possible in animals, representing 5-10 year survival times in human beings. My personal belief is that cancer which can be surgically removed with clean margins is the only good kind. I am not sure that radiation and chemotherapy are the best option, but owners must decide for themselves what they want to do and put their pets through. There are some things which should be done for all cancer patients regardless of whether they are treated with conventional radiation and chemotherapy. These are outlined here. Other information can be obtained at and <http://Dog2Doc.com/chi-files/Acupuncture/TCVM_Diet/TCM_5-E_Diet.ppt> about diet and herbal medications. Step in supporting cancer patients:

1. Low-Carbohydrate food (home prepared is best or use Pedigree Weight Loss Formula)
2. Canine basic antioxidant formula (Westlab Pharmacy 800-4WESTLA)
3. Canine arthritis formula (Westlab)
4. Canine cancer formula (Westlab)- -use at 2 times prevention dose
5. COX-2 inhibitor (daily- -particularly for carcinomas)
6. Melatonin at night (0.1-0.2 mg/kg, which is now included in the Canine cancer formula)
7. 5-hydroxyurea for meningiomas (50 mg/M2 every 3-4 weeks)
8. Stasis in the Mansion of the Mind formula (0.5 gm/10 lbs BID, Jing Tang 800-891-1986)
9. Max’s formula (0.5 gm/10 lbs BID, Jing Tang)

The rationale for each of these products is sound, but more than I wish to explain at the moment. Antioxidants do protect and help stabilize the immune system. Collagen support may help inhibit angiogenesis by the tumor. Mushrooms and astragalus help boost the immune system. COX-2 drugs double life expectancy with carcinomas while melatonin appears to improve survival times in all solid tissue tumors including gliomas. None of these measures will necessarily treat or cure cancer, but they will not do any harm and may provide quality of life. That is probably what is important in cancer which cannot be surgically removed.

**TCVM Patterns for Cancer:**

 Cancer in TCVM represents blood stagnation leading to a mass. It can result from excess conditions which accumulate phlegm and lead to damaged Qi and blood flow by the liver. Once the damage is done, generally the pattern of deficiency remains even if there is local stagnation. The underlying deficiencies are: Qi & Blood Deficiency and Qi & Yin Deficiency.

**Qi & Blood Deficiency:** Patients with the pattern of Qi & Blood Deficiency have a lower cell immunity response than normal. Symptoms include: hair loss; dizziness; fatigue; a thin body; shortness of breath; poor appetite; insomnia; palpitations; abdominal pain; a pale complexion; loose stools; scanty urine; a pale tongue with a white tongue coating; and a deep, thin, and weak pulse.

 **Qi & Yin Deficiency:** Patients with lung Qi deficiency may have a lower lymphocyte transformation rate and lower levels of serum immunoglobulins such as IgM and IgG. Symptoms include: sweating; palpitations; shortness of breath; insomnia; chest congestion; cough without phlegm; lassitude; dry mouth; a thin tongue coating; and a thin pulse.

**Local AP points:** Surround the Dragon (just don’t needle the actual tumor)

**Special AP points:** GV-14, ST-36, LI-4, TH-5, LIV-3

**TCM herbal:** While the following 2 herbs are my main TCVM herbals of choice in treating CNS Neoplasia, they can be redirected by adding additional formulas such as *Cervical Formula* or *Hindquarter Weakness Formula* in order to bring the medicines to the affected region of the spinal cord. In addition, *Stasis Breaker Formula* may be used as a substitute for *Stasis in the Mansion of the Mind Formula* based upon the preference of the TCVM practitioner.

*Max’s Formula:*

|  |  |  |
| --- | --- | --- |
| **English Name**  | **Latin Name** | **Actions** |
| Bai Zhi | Angelica | Clear Wind-Cold and Relieve Pain |
| Da Huang | Rheum | Clear Stagnation/Stasis and Clear Heat |
| Jie Geng | Platycodon | Open the Upper Jiao and Transform Phlegm |
| Mu Li(Shu) | Ostrea | Soften Hardness and Clear Mass |
| Tian Hua Fen | Trichosanthes | Clear Heat and Promote Body Fluids |
| Xia Ku Cao | Prunella | Clear Liver Heat and Resolve Nodules |
| Xuan Shen | Scrophularia | Clear Heat and Cool Blood |
| Zhe Bei Mu | Fritillaria | Soften Hardness and Resolve Nodules |

*Stasis in the Mansion of the Mind Formula:*

|  |  |  |
| --- | --- | --- |
| **English Name**  | **Latin Name** | **Actions** |
| Bai Zhi | Angelica | Warm the Channel, Relieve Pain |
| Ban Xia | Pinellia | Transform Phlegm |
| Chuan Xiong | Ligusticum | Move Blood |
| Dan Shen | Salvia | Move Blood |
| Di Long | Lumbricus | Clear Wind, Invigorate Channel |
| Gao Ben | Ligusticum | Relieve Pain |
| Ge Gen | Pueraria | Bring Qi Upward |
| Hong Hua | Carthamus | Break Down Blood Stasis |
| Jiang Can | Bombyx | Transform Phlegm, Resolve Nodules |
| Quan Xie | Buthus | Break Down Blood Stasis |
| Sheng Ma | Cimcifuga | Ascend Qi |
| Zhe Bei Mu | Fritillaria | Transform Phlegm, Resolve Nodules |

**DEGENERATIVE MYELOPAHTY**Degenerative Myelopathy of German Shepherd Dogs**:**

Degenerative Myelopathy (DM) was first described as a specific degenerative neurologic disease in 1973. Since then, much has been done to understand the processes involved in the disease and into the treatment of DM. Hopefully, this will help you understand the problem and to explain further the steps that can be taken to help dogs afflicted with DM.

 The age at onset is 5 to 14 years, which corresponds to the third to sixth decades of human life. Although a few cases have been reported in other large breeds of dogs, the disease appears with relative frequency only in the German Shepherd breed, suggesting that there is a genetic predisposition for German Shepherd dogs (GSD) in developing DM. The work presented here and by others on the nature of DM has been performed in the German Shepherd breed. Care must be taken in extrapolating this information to other breeds of dogs. It is currently not known whether the exact condition exists in other breeds of dogs. Many dogs may experience a spinal cord disease (myelopathy) which is chronic and progressive (degenerative); but, unless they are caused by the same immune-related disease which characterizes DM of GSD, the treatments described herein may be ineffectual.

 The gross pathologic examination of dogs with DM generally is not contributory toward the diagnosis. The striking features being the reduction of rear limb and caudal axial musculature. The microscopic neural tissue lesions consist of widespread demyelination of the spinal cord, with the greatest concentration of lesions in the thoracolumbar spinal cord region. In severely involved areas, there is also a reduced number of axons, an increased number of astroglial cells and an increased density of small vascular elements. In the thoracic spinal cord, nearly all funiculi are vacuolated. Similar lesions are occasionally seen scattered throughout the white matter of the brains from some dogs, as well. Many patients have evidence of plasma cell infiltrates in the kidneys on throughout the gastrointestinal tract, providing a hint to the underlying immune disorder causing DM.

I have studied this disease over the last 37 years and continue to do so. The current program is unique and designed to improve the diagnosis of GSDM and offer a sensible treatment for GSDM based upon what we know of the underlying cause of the disease. From that work and the genetic data available on GSDM, we believe the evidence says that GSDM is an animal model of Primary Progressive Multiple Sclerosis in human beings. So, at least, we think we know what GSDM is when we separate those who do have it from those who do not.

Part of the program is the diagnosis of the condition. Unfortunately, it is correct that the only current method to be absolutely sure is with a necropsy, which does not help patients before death. We have established criteria that help us make accurate diagnosis. I think that we do better than what has been reported by some authors where only 25% of the patients enrolled in the study were found to have the disease. The complicating factors which confused the diagnosis in that study would have been found by our diagnostic criteria. So, what do we do. Basically, they are routine clinical test, but applied in a specific sequence to help us find out all of the patient's problems. First, is the clinical examination. That includes looking at who the patient is. If the patient is a German Shepherd, then there is a higher probability that a chronic progressive spinal cord problem might be due to GSDM. If it is not a German Shepherd, it may have a myelopathy, but it may be from another cause. We are not sure that the disease in the Corgi or in the Boxer is related to the disease in the German Shepherd. On the other hand, we can distinguish the disease that Corgis and Boxers get from GSDM based upon genetic aspects that these breeds have that related to their form of DM. Since these diseases are genetically different, applying our treatment to these breeds may not do any good. The second criterion is based upon the EMG (electromyogram) which evaluates the muscle-nerve connection. The EMG and all peripheral tests of neuromuscular function are normal in uncomplicated GSDM. On the other hand, the spinal cord evoked potential evaluated over C1 is abnormal in GSDM. This indicates that there are problems in the white matter of the spinal cord. We also look at the difference between the cerebrospinal fluid (CSF) collected from the cisterna magnum and the lumbar cistern. The latter shows elevations of CSF protein without concurrent increases in CSF cell counts. While many of these proteins are inflammatory in nature, one of the ones that can be measured easily is CSF cholinesterase. The CSF cholinesterase is elevated in the lumbar CSF (above 300 IU/ml) in most cases. Unfortunately, this change is not specific for GSDM, only for inflammation (GSDM is one of the inflammatory disease of the spinal cord). Titers for infectious diseases are normal or, at least, do not indicate another disease process. Finally, we look at special imaging to evaluate the structure of the spinal column and whether there is evidence of spinal cord compression from some disease process. This does not rule-out GSDM, rather imaging rules-in complications. The former criteria are what help diagnose GSDM: the clinical picture, the EMG with spinal evoked potential, and the CSF analysis with cholinesterase. The imaging only looks for a surgical disease (or its absence). Depending upon the condition and clinical signs, we do myelography plus or minus CT scan or MRI scans to help us determine whether there is a local compressive disease.

The other part of our program is the treatment outlined on our web site. It includes exercise, diet, supplements and medications. Each of these has an impact upon health and upon the disease. The components of the treatment work together to reduce the progression of GSDM. They target the processes which we have uncovered as the causes of the pathologic changes we see. We have seen few side-effects (mostly GI upset) in the patients we diagnose and treat. There are things which can happen as rare occurrences when using any drug. If they complications resolve on stopping the drug and return on re-introduction, then it is probably drug related. If your veterinarians feel there is a problem, then the medications should be stopped until it is determined whether they are the cause or not. Many times it is discovered that some other disease is present rather than the medications. All of the medications have been used in dogs for many years (not just for treating GSDM) so they are not new. Only the application is new. N-acetylcysteine is the newest and we have used it for over 10 years. On the other hand, we do not like to use medications unless we know what we are treating.

So, we do not treat without reaching a diagnosis. The 2 parts of our program, diagnosis and treatment, work together. We diagnose early and treat early, which is why we have success. In the past, most patients progressed to posterior paralysis in 3-6 months. This would progress to all 4 legs in another 3-6 months with death from brainstem failure (in those patients allowed to progress that far without intervention) 9-18 months from the first diagnosis of GSDM. That has changed now. In our hands, most GSDM patients will remain functional for 12 months, while many outlive their disease.

***TCM Diagnosis and Treatment***TCM Diagnosis and Treatment**:**

From a TCVM perspective, GSDM and probably BM are wei syndromes. Most of the patients we evaluate are combined Qi and yin deficient. Of course, there is a spectrum and we, therefore, need to assess each patient to find their pattern. Dr. Xie’s formulas appear to help several; but, in general, acupuncture and herbs are palliative and designed to improve quality of life rather than to achieve a cure. Cures seem to put the diagnosis in question; whereas we do see dogs that outlive GSDM. If the standard TCVM therapies do not work, the formulas that I prefer to use in GSDM and BM patients (both diseases are closer from TCVM pattern diagnosis than Western diagnosis) are Hu Qian Tang and Di Huang Yin Zi Tang. These are available from Jing Tang.

*Wei Zheng* (flaccidity syndrome) in Western medicine is any disorder of the PNS (Peripheral Nervous System) that may cause weakness or numbness, such as MS (multiple sclerosis or spinal & muscular disorders). This leads of flaccidity of muscles, paralysis, hemiplegia, and muscular atrophy of the limbs. TCVM patterns include excess and deficiency causes, but those that we tend to see in DM patients are chronic deficiencies. The root cause of these problems lies in Kidney Jing deficiency, since the problems are now known to have a genetic basis (even though they take years to develop). Generally, the patterns recognized are:

1. Spleen/Kidney Qi Deficiency; 2) Qi & Yin Deficiency; and 3) Yin & Yang Deficiency. This is also the apparent order in which the signs progress to an extent as well.

***Deficiency of Qi:*** Signs include muscular flaccidity or atrophy of the limbs with motor impairment, marked by lassitude, listlessness, short breath, weak voice, sweating on slight exertion, dizziness, palpitation, pale-wet tongue, and weak pulses.

***Deficiency of Qi & Yin:*** Signs are mostly seen in elderly people. Typically symptoms are muscular flaccidity of the limbs come on slowly, a mild to moderate amount of motor weakness in the legs, accompanied with soreness and weakness of the loin and knees, dizziness and blurring of vision, impotence or seminal emission, red-dry tongue, and thready-rapid pulse.

 ***Deficiency of Yin & Yang:*** Signs are a combination of the aforementioned processes with the addition of cold signs. The tongue may be pale or red while the pulses are deep and weak.

**Local AP points:** Hua Tuo Jia Ji, GV-14, Bai Hui

**Special AP points:** BL-62, BL-64, SI-3, Er Yan, Lie Feng

**TCM herbal:**

|  |  |  |
| --- | --- | --- |
| **English Name**  | **Latin Name** | **Actions** |
| Bai Shao Yao | Paeonia | Nourish Blood |
| Chen Pi | Citrus | Move Qi and Relieve Pain |
| Gan Jiang | Zingiberis | Strengthen Stomach and Promote Appetite |
| Gui Ban | Plastrum | nourish Yin, anchors Yang, tonify Blood, Nourish Heart |
| Huang Bai | Phellodendron | Clear Heat, Nourish Yin |
| Niu Xi | Achyranthes | Strengthens the Kidney and Benefit the Knees |
| Shu Di Huang | Rehmannia | Nourish Yin, Blood and Jing |
| Suo Yang | Cynomorium | Tonify Yang and Jing, Nourish Blood, Strengthen Sinews |
| Zhi Mu | Anemarrhena | Nourish Yin, Clear Heat |

*Hu Qian Wan:*

*Di Huang Yin Zi:*

|  |  |  |
| --- | --- | --- |
| **English Name**  | **Latin Name** | **Actions** |
| Ba Ji Tian | Morinda | Tonify Kidney, Strengthen Yang |
| Fan Shi Hu | Descurainiae Herba | Nourish Yin, Clear Deficient Heat, Nourish Stomach Yin |
| Fu Ling | Poria | Drain Damp, Strengthen Spleen |
| Fu Zi | Aconite | Warm Spleen |
| Mai Men Dong | Ophiopogon | Nourish Yin |
| Rou Cong Rong | Cistanche Salsa Caulis | Tonify Kidney, Strengthen Yang |
| Rou Gui | Cinnamomum | Tonify Kidney Yang |
| Shan Zhu Yu | Cornus | Nourish Yin |
| Shi Chang Pu | Acorus | Open Orifices, Transform Phlegm, Calm Spirit, Harmonize Middle Burner |
| Shu Di Huang | Rehmannia | Nourish Blood and Yin |
| Wu Wei Zi | Schisandra | Consolidate and Nourish Lung Yin |
| Yuan Zhi | Polygala | Calm Spirit, Quiet Heart, Clear Orifices |

**Referrences:**

*Hydrocephalus*

1. Clemmons RM: Surgical corrections of hydrocephalus by ventriculoperitoneal shunts. In: MJ Bojrab (ed), Current Techniques in Small Animal Surgery II, Philadelphia, Lea & Febiger, pp. 18-20, 1982.

2. Dewey CW: Encephalopathies: Disorders of the Brain. In: CW Dewey (ed), A Practical Guide to Canine and Feline Neurology, Ames, Wiley-Blackwell, pp. 126-129, 2008.

3. Xie H: Common Disease. In: H Xie (ed), Traditional Chinese Veterinary Medicine, Beijing, Beijing Agricultural University Press, pp. 427-428, 1994.

*CNS Neoplasia*

1. Dewey CW: Encephalopathies: Disorders of the Brain. In: CW Dewey (ed), A Practical Guide to Canine and Feline Neurology, Ames, Wiley-Blackwell, pp. 156-172, 2008.

*Degenerative Myelopathy*

1. Clemmons RM: Degenerative myelopathy. In: RW Kirk (ed), Current Veterinary Therapy X, Philadelphia, WB Saunders, pp. 830-833, 1989.

2. Clemmons RM: Degenerative myelopathy. Vet Clin N Am, 22:965-971, 1992.

3. Clemmons RM: Degenerative myelopathy. In: MJ Bojrab (ed), Disease Mechanisms in Small Animal Surgery, Philadelphia, Lea & Febiger, pp. 984-986, 1993.

4. Clemmons RM, Wheeler S, LeCouteur RA: How Do I Treat? Degenerative Myelopathy. Prog Vet Neruol, 6:71-72, 1995.

5. Dewey CW: Myelopathies: Disorders of the Spinal Cord. In: CW Dewey (ed), A Practical Guide to Canine and Feline Neurology, Ames, Wiley-Blackwell, pp. 344-345, 2008.

6. Xie H: How to Treat Degenerative Myleopathy (DM)? Proc 12th Chi Instit Ann Conf, 197-202, 2010.