Integrative Management of Canine Allergic Bronchitis with Veterinary Chinese Herbal Medicine
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Abstract
A middle-aged Jack Russell Terrier, diagnosed as having chronic allergic-type bronchitis with a dry cough, presented for alternative therapy options. Throughout the course of treatment, the patient’s dependence on steroidal medications was decreased and she was transitioned to a lower dosage antihistamine/steroidal combination with the use of supplemental herbs.

Signalment
Sydney is a seven-year old spayed female Jack Russell Terrier, with a presenting weight of 10.2 kg. She was being medicated with 5.0 mg prednisone daily for control of her cough.

Medical history
Sydney presented for evaluation of a chronic, dry cough that has been present for over two years. She has been on 5.0 mg prednisone daily to help control the cough for over this time, however, the cough was still present. The previous veterinary facility had performed thoracic radiographs that indicated end-on bronchi in the hilar region as well as a mild interstitial pattern. Sydney has been allergy tested via intra-dermal technique at a specialty facility and is receiving weekly desensitization injections for grass, mold and ragweed. She is fed an organic-type diet, high in grains with no supplementation of human foods. The owner is concerned about long-term steroidal usage as well as weight gain and increased water consumption, not to mention long-term health effects.

Examination and clinical progression
Sydney first presented to Timbercreek Veterinary Hospital on 8.12.2010 for evaluation of a chronic, dry cough that was being treated with daily prednisone therapy. The cough was diagnosed as being an allergic bronchitis after extensive intra-dermal skin testing. She was receiving weekly desensitization injections as described above. The cough improved while on the prednisone but was still present. The owner’s concern was Sydney’s overall health as well as weight gain since starting the steroidal therapy.

On the initial examination, there was a slight wheezing noted in the lung fields with normal cardiac auscultation. Sydney was markedly overweight. There was a dry, honking-type cough elicited on manipulation of the trachea. She was currently being treated by her primary veterinarian for a moist Malassezia otitis with topical otic medications. A complete blood count and chemistry panel showed the only abnormal value was ALKP (see Table 1), and was associated with chronic prednisone therapy.
Thoracic radiographs indicated a normal tracheal diameter with no noted narrowing. There was a bronchial pattern in the hilar region with end-on bronchi noted. There was marked right heart enlargement, plus hepatic enlargement with rounded margins noted on both views. There was no evident compression of the trachea by the enlarged heart, which, if present, would contribute to the cough. The Traditional Chinese Medicine (TCM) examination indicated a red/dry tongue with very superficial, rapid and thin pulses. TCM diagnosis of Yin Deficiency with deficient Heat present was based on the exam. The herbal formula Zhi Bai Di Huang Wan (ZBDHW) was started at 1 teapill per 10 lbs twice daily, or 60-75 mg/kg split BID, to tonify Yin and reduce deficient Heat. Enalapril 5 mg one daily was prescribed along with CoQ10 30 mg daily for overall cardiac support.

It was recommended that the owner continue the current prednisone therapy, but reduce the dosage to 2.5 mg once daily after one week if Sydney was well clinically. She was started on a canned holistic tuna-based diet that was grain and preservative free. It was hoped the canned food would be less heating to the body, more cooling in nature and support the digestive process.

First follow-up
Sydney presented in two weeks for a recheck examination. The cough was noted to be unchanged per the owner and she had reduced the dosage of the prednisone as recommended. On examination, the cough was still present but more moist in nature with some wheezing noted on auscultation. The owner reported that Sydney becomes congested when off prednisone and begins to chew at her feet and scratch diffusely. The TCM examination indicated a red tongue with moist, white coating. The pulses were rapid, thin and had a slippery component bilaterally. The TCM diagnosis of Damp Heat was made based on the TCM examination, with a suspected Yin deficient component. The red tongue is indicative of Heat while the white, moist coating is reflective of Dampness. The rapid pulse implies Heat, while the thin component is suggestive of Blood or Yin Deficiency. The slippery component of the pulse also supports Dampness.

The Yin Deficiency was suspected to be a result of the long-term prednisone therapy, which can be very drying in nature. The Yin Deficiency could also be a result of long term Spleen Qi Deficiency. The ZBDHW formula was discontinued due to concern over worsening Dampness and the formula Si Miao Wan (SMW) was prescribed at 1 teapill per 10 lbs twice daily to support the Spleen, reduce Heat and resolve Dampness. The owner was advised to continue the prednisone at 2.5 mg daily along with CoQ10 and Enalapril as described.

Second follow-up
Sydney was rechecked in one month. The cough was improved per the owner and she had been able to reduce the prednisone to 1.25 mg daily. Pruritus and chewing the feet appeared to be reduced, but still present. No cough was noted on examination and there was a slight wheeze in the lung fields, however, the moist component was also improved. TCM examination indicated a red-mauve colored tongue with moist coating. The pulses were rapid, thin and wiry bilaterally. The TCM examination was indicative of the presence of a Stagnant Qi, Heat, Dampness and Yin/Blood Deficiency. At this time, the presence of Dampness was not as pronounced. It was still believed that
the Yin Deficiency was present as a result of long-term prednisone usage.

At this time, the decision was made to switch tactics. Sydney was changed to a taper course of Temaril-P®1, a low dose antihistamine/prednisone combination, in order to help reduce her reliance on a strictly corticosteroid product and minimize health side effects. The herbal formula was changed to San Reng Tang (SRT), ½ tsp BID, or 60-75 mg/kg split BID, in order to help reduce Heat, address Spleen support and further Dampness resolution. The herbal formula was changed from SMW to SRT due to a perceived decrease in the amount of Heat present as well as reduced Dampness, negating the need for a strong formula such as SMW.

Third follow up
Sydney was checked again in 30 days and seemed to be doing much better per the owner. She was currently on ½ tablet Temaril-P® on an every-other-day dosage, as well as the organic canned diet which she was tolerating very well. She was still on the SRT formula in addition to the Enalapril and CoQ10 for cardiac support. The cough was markedly improved and frequency was dramatically reduced. The overall pruritus was resolved as was the feet chewing and otic infection. TCM examination indicated a red/pink tongue with slight moisture coating. The pulses were less rapid but still slightly thin in nature.

She was continued on SRT, the cardiac medications and Temaril-P® and is currently doing well. The chemistry panel was repeated and reflected improvement in ALKP values (see Table 1) secondary to herbal therapy and reduction in prednisone usage.

Herbal treatments
During the course of Sydney’s therapy, three herbal formulas were utilized to help control her condition and reduce dependence on corticosteroids.

The herbal formula Zhi Bi Di Huang Wan (8 Flavors) was utilized to tonify Kidney/Liver Yin, subdue Deficiency fire and clear mild Damp Heat. ZBDHW contains Shu Di Huang (Rehmannia glutinosa) which nourishes Blood and Liver/Kidney Yin; Shan Yao (Dioscorea) tonifies Q, nourishes the Spleen and tonifies Yin; Shan Zhu Yu (Cornus) tonifies the kidney and liver; Mu Dan Pi (Paeonia) clears Heat, cools the blood and invigorates circulation; Fu Ling (Poria) resolves Damp and supports the Spleen; Ze Xie (Alisma) resolves Damp and clears deficient Heat; Huang Bai (Phellodendron) clears Heat, dries Damp and sedates fire; Zhi Mu (Anemarrhena) clears Heat and nourishes Yin (Wrinkle 2008 p. 116). This formula was chosen based on a red/dry tongue in addition to a rapid and thin pulse, which implied a Yin Deficiency and Heat presence.

The herbal formula Si Miao Wan (Four Marvels) was chosen to clear Heat and resolve Dampness. SMW contains Huang Bi (Phellodendron) which clears Heat and dries Damp; Yi Yi Ren (Coix) strengthens

Table 1. Laboratory Values

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the Spleen, resolves Damp and clears Heat; Cang Zhu (Atractylodes) dries Damp and strengthens the Spleen; Huai Niu Xi (Achyranthes) tonifies the Liver and Kidney and activates blood circulation (Wrinkle 2008, p. 58). SMW was chosen based on the presence of a red, moist tongue coating and a rapid pulse with a slippery component, which indicated Damp Heat. SMW was shown to significantly inhibit excessive production of NO, TNF-alpha, IL-6 and the overexpression of relative genes in LPS-stimulated macrophages (Fan 2010). This action indicates that SMW has anti-inflammatory effects by reducing pro-inflammatory cytokines which may be present in cases of allergic bronchitis. The ethyl acetate extract of Coix also exhibited potent inhibitory activity that suppressed degranulation and histamine release from RBL-2H3 cells, which supports an inhibitory effect on allergic responses (Chen 2010).

The final herbal formula chosen was San Reng Tang (Three Seeds Combination) to unblock the descent of Lung Qi, resolve mild Damp Heat and support the Spleen. SRT contains Xing Ren (Apricot) which arrests cough and relieves wheezing; Yi Yi Ren (Coix) strengthens the Spleen, resolves Damp and clears Heat; Hua Shi (Talc) clears Heat and resolves Damp; Ban Xia (Pinellia) dries Damp and redirects rising Qi; Bai Dou Kou (Cardamon) regulates Qi, strengthens the Stomach and dissolves Damp; Dan Zhu Ye (Lopatherum) clears Heat; Hou Po (Magnolia) regulates Qi, reduces Stagnation, dries Damp and relieves wheezing; Tong Cao (Rice Paper) resolves Dampness (Marsden 2009, p. 55). SRT was finally chosen to continue to support the Spleen, resolve Damp Heat symptoms and secondarily tonify Yin and Blood. It is noted that restoring the normal flow of Lung Qi helps to resolve Dampness (Chen 2009, p. 1093). The three seeds that help to unblock the descent of Lung Qi, transform and dry Damp in the Middle Burner as well as drain Damp are: Apricot Seed, Coix Seed and Cardamon (Marsden 2009, p. 120). The SRT formula contains a similar component to SMW formula, Coix, which has been previously documented to inhibit mast cell degranulation in allergic conditions.

Sydney was changed to an organic canned tuna-based diet which was grain and preservative free in order to help reduce further Heat as well as tonify the digestive process. The ZBDHW and SMW formulas were both dosed at 1 teapill per 10 lbs body weight twice daily, while the SRT formula was dosed at ½ tsp twice daily in the food, or 60-75 mg/kg split orally BID.

Discussion

Allergic bronchitis typically involves an inflammatory response within the airways, usually due to an inhaled allergen. In chronic cases, excessive mucus is present within the airways which can lead to small airway obstruction. Chronic bronchitis is generally treated symptomatically from a western perspective, commonly using glucocorticoids, bronchodilators, cough suppressants and antibiotics (Nelson 1992, p. 295).

Sydney had originally presented for evaluation of a chronic dry cough that was believed to be an allergic type of bronchitis based on prior laboratory testing. The condition was mildly responsive to corticosteroid therapy, however, there were concerns over increased water consumption and weight gain while on medications. The initial examination
indicated the presence of a Yin Deficiency, noted by a red/dry tongue and rapid/thin pulses. When the herbal formula ZBDHW was implemented to tonify Kidney Yin, along with reduced a reduced dosage of prednisone, Damp Heat signs became apparent at the next recheck, noted by a moist cough as well as chewing and pruritus. The prior history of a moist otitis was suggestive of a Damp Heat presence, but was not considered early in the course of therapy. With the presence of Damp clinical signs, such as weight gain and moist otitis, the initial choice of ZBDHW was improper due to most Yin tonics being ‘cloying in nature’ and likely to contribute to Dampness.

Prednisone is thought to be drying and cooling in nature and thus can help to reduce the presence of Heat and Dampness, but with chronic use it can be very Yin depleting to the body. After reducing the prednisone dosage, the Dampness that was being controlled was now becoming more obvious and possibly aggravated by the richness of the ZBDHW formula. The tongue continued to be red, indicative of Heat, but began to show a very moist coating which was suggestive of Dampness, especially when considering a slippery and rapid pulse. It is noted the side effects of polyuria/polydypsia while on corticosteroid therapy are indicative of the presence of Dampness. The herbal formula SMW was implemented at this time to address Damp Heat and appeared to be successful with improvement in the cough as well as reduced pruritus.

At the next recheck, the condition was improved with reduction in Heat and Dampness signs but a continued need for support was still evident. The formula SRT was chosen to continue to reduce Damp Heat, but to a lesser degree than SMW, and to continue to support the Spleen. The patient was changed to a more tolerable combination of an antihistamine and prednisone, reducing the clinical impact of the medication, and the overall cough was much improved in the long term.

In reviewing this case, it is now obvious that the underlying problem was likely a Spleen Qi Deficiency, possibly related to diet. The Spleen Qi Deficiency likely led to Damp formation. This became prominent not only in the skin but in the lungs, which then contributed to the cough. The accumulation of Dampness then led to the formation of Heat, which depleted Yin over time. The prednisone therapy aided the condition in drying Dampness and reducing Heat, but in the process, it further depleted Yin. The Yin Deficiency was the most prominent clinical sign in the early stages, but efforts to tonify the Yin resulted in exacerbation of the Damp signs. In the end, Spleen Qi tonification and Damp resolution yielded the best results and allowed us to reduce prescription corticosteroids. Tonification of Yin should be a secondary event to Spleen tonification over time.

Notes
1. Temaril-P®, Pfizer Animal Health (Trimeprazine/Prednisone)

References

**Appendix. TCM Examination Findings and Interpretation**

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<thead>
<tr>
<th>Physical examination Finding or History</th>
<th>Possible TCM Diagnosis</th>
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<tbody>
<tr>
<td>Weight Gain</td>
<td>Dampness</td>
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<tr>
<td>Polyuria</td>
<td>Dampness</td>
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<tr>
<td>ALKP elevation</td>
<td>Liver Blood Deficiency</td>
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<tr>
<td></td>
<td>Liver Qi Stagnation</td>
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<tr>
<td>Dry cough</td>
<td>Yin Deficiency</td>
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<tr>
<td></td>
<td>Q Deficiency/Stagnation</td>
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<tr>
<td>Moist otitis</td>
<td>Damp Heat</td>
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<tr>
<td>Moist cough</td>
<td>Dampness</td>
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<tr>
<td>Pruritis</td>
<td>Damp Heat</td>
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<tr>
<td>Tongue – red/dry</td>
<td>Yin Deficiency with empty Heat</td>
</tr>
<tr>
<td>Tongue – red/mauve with moisture</td>
<td>Qi Stagnation</td>
</tr>
<tr>
<td></td>
<td>Heat, Dampness</td>
</tr>
<tr>
<td>Pulse – rapid/thin</td>
<td>Yin Deficiency with Heat</td>
</tr>
<tr>
<td>Pulse – wiry</td>
<td>Qi s Stagnation</td>
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