

Wheaten Health Newsletter Two

September, 2003

SCWT Health Conference, Keystone, Colorado



In May this year Sandra Jeffries, Barbara Penney and Maria Rigby attended the SCWT Health Conference organised by Janet Petros and her team, at Keystone, Colorado, USA, where they had the unique opportunity to interact with the key researchers involved in the SCWT Health Programme.

A ski resort high in the Rocky Mountains was the beautiful setting for the Conference and the WHI attendees were given a very warm and supportive welcome by the other delegates from America and Canada.

To summarize the seminar, an intense and complicated learning experience, into a Newsletter, is near impossible.

It is hoped that this overview will help in your understanding of the hereditary diseases that can affect our breed.

The one important message emphasised to all attendees was: TEST!

No single test is good enough on its own and to test ALL dogs, especially breeding stock

The main speakers were: ***Wendy Beers DVM, Meryl P. Littman VMD, DACVIM, Paula Henthorn Ph.D, and Shelly Vaden DVM, DACVIM***

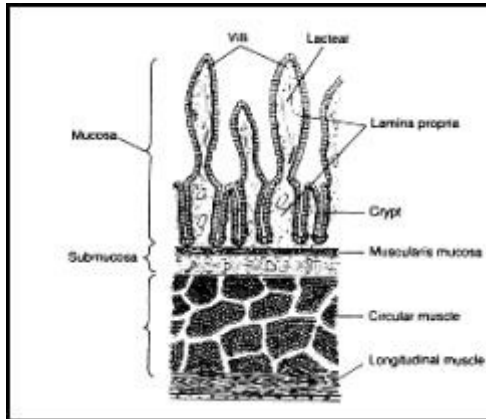


Left to Right - Janet Petros, Wendy Beers, Jackie Gottlieb, Meryl Littman, Shelly Vaden and Paula Henthorn

Dr. Wendy Beers, DVM - a Vet and SCWT breeder was the first speaker whose subject was **anatomy**. This lecture covered the Gastro-intestinal system, Lymphatic system, Kidney (renal) and Adrenal glands.

Functions of the Gastro-intestinal System:

- Transit of Ingesta
- Digestion of Food
- Absorption of Nutrients
- Barrier to Harmful Agents
- Major Immunologic Organ
- Production and Secretion of Digestive Enzymes and Hormones
- Fluid Balance



Cross section of the Gastro-intestinal tract

Dr. Beers explained that the **gastro-intestinal tract** is in essence a hollow continuous tube running from the mouth to the anus. This has to perform many functions in order to absorb the food then excrete the waste products. The inner surface of the tube contains the **mucosal** lining. The **mucosa** is responsible for secretion and absorption of nutrients to the body. The surface area of the mucosa contains **villi**. Damage of the villi can cause villous atrophy, which would lead to **malabsorption** and **diarrhoea**.

The loss of the healthy mucosal layer allows the leakage of vital protein-rich fluids. This is a hallmark of **Protein Losing Enteropathy (PLE)**.

The Lymphatic System:

There is an integral relationship between the small intestine and lymphatic system. The lymphatic system collects protein rich fluid and transports it back to the general circulation after filtering it through the lymph nodes of the immune system. Damage to the small intestine can allow the protein-rich fluid to be lost from the body. Damage to the lymphatic system prevents the return of the protein-rich fluid back to the circulation system.

If a dog has substantial protein loss, fluid can no longer be held in the circulation spaces and it leaks out into the body compartments: oedema (excess fluid) if in the peripheral tissues, ascites if in the abdominal compartment, pleural effusion if in the thorax or chest cavity. There can be other reasons why the dog might develop ascites, pleural effusion, or oedema, but Hypoproteinemia is the major reason in the case of protein losing diseases of PLE (in particular) or PLN.

The Kidney:

Blood is filtered through the kidney to remove waste products and these waste products are excreted from the body in the form of urine. The kidney also serves as an important endocrine (hormone-producing) organ. It is also a vascular organ, receiving 20% of the body's cardiac output.

The functional unit of the kidney is the nephron. Blood is filtered through the glomerulus.

Damage to just one part of the nephron can lead to the loss of the entire renal tubule. The kidney has several ways it can retain function even with injury.

Kidney function is dependent on the health of the entire nephron. The glomeruli act as filters for the blood that is pumped through the kidney. If albumin is found in measurable amounts in the urine, it signals the presence of disease in the glomerulus.

For the SCWT the importance is in the structure and function of the **glomerulus** and its role in **PLN**.

Protein Losing Kidney Disease (PLN) - Glomerulonephritis is caused by the deposit of immune complexes in the glomerulus.

Proteinuria (protein in the urine) is the hallmark of glomerular disease. Small proteins such as albumin are lost first. Protein lost through the glomerulus also damages the renal tubules. 75% loss in the number of nephrons results in an increase in the BUN and Creatinine (azotemia.)

Early detection is important. There is a need to find the dogs that are showing active glomerulonephritis and urine protein loss, before irreversible damage to the kidney and kidney failure occurs.

The Adrenal Glands:

The adrenal glands are in close anatomical proximity to the kidneys. There is a higher than expected incidence of **Addison's disease** (*hypoadrenocorticism*) in the SCWT in the USA.

The adrenal glands are required for maintenance of life. The development of hypoadrenocorticism is thought to be immune mediated (self-attacking) and possibly inherited. Up to 90% damage can occur before clinical signs are shown.

A dog with Addison's disease has deficiencies in glucocorticoids and mineralocorticoids. Without replacement of these deficiencies, a dog with Addison's disease will die.

Addison's disease, in particular 'mimics' other health problems and is therefore sometimes hard to diagnose. This disease is treatable once the correct diagnosis is made and the dog can go on to lead a long and normal life.

Dr. Meryl Littman, VMD, DACVIM - Began her lecture with an overview of the history of the diseases.

She explained that in the 1980's breeders in America started to report a higher than expected percentage of their dogs dying. Some dogs showed gastrointestinal signs e.g. vomiting and diarrhoea, some had renal failure and some had ascites. Some of the dogs died suddenly, which was probably due to thromboembolism, either pleural (chest cavity) or a saddle thrombus, (loss of hind legs). 10% of dogs in the PLE/PLN group had thrombotic signs.

In the early 1980's Renal Dysplasia (RD) was first studied in the SCWT in Europe. Dr. Littman feels that some RD was, and still is, probably misdiagnosed. End stage PLN can resemble RD (small deformed kidneys) therefore correct diagnosis is of the utmost importance. Dogs with RD usually show symptoms in the first 3 years of their life, whereas dogs with PLE/PLN mostly show symptoms later, at approx 5-7 years.

PLE and PLN 'mimic' other health problems; early diagnosis, diet, medication etc., can in many cases improve a dog's lifestyle and longevity. Education of Vets and owners is of equal importance to help detect the syndromes/diseases sooner rather than later. It was interesting to note that a quarter of dogs diagnosed with PLE did not have diarrhoea.

Dr. Littman wants everyone to test and continue to test no matter what age the dog. The geriatric stock are very important, it will help the researchers tremendously to learn which 'old' dogs are free of the disease when they die. There is a lot of concern at the moment regarding the number of geriatric dogs who are testing positive for PLE and/or PLN but who are asymptomatic i.e. showing **no physical signs** of the disease(s).

Dr. Littman gave attendees four '**Take Home Messages**':

Take Home Message 1

The SCWT breed has a **predisposition** for several diseases which can be confused with one another.

Laboratory tests and **criteria** for inclusion help sort these out.

Take Home Message 2

There are different medications/diets recommended depending on diagnosis.

Further study is necessary for mode of inheritance, pathogenesis and treatment.

Take Home Message 3

There are no tests to predict “carriers” or dogs “at risk” amongst so-called ‘normals’.

Recommendations for **screening** include:

- **Annual CBC, Chemscreen, Urinalysis**
- **Fecal API, Up/c, MA or ERD** - these may be abnormal even before blood tests are abnormal.

Take Home Message 4

Since there are no markers, an Open Registry has been formed by the SCWTCA and SCWTAC.

The OR does not list suspects Yet

The OR cannot list ‘normals’, since dogs may be at risk throughout their lives.

The Open Registry (OR):

In regard to the **Open Registry**, Dr. Littman said she would hopefully have an update around September as she gets an assistant June to September. Some people asked if it would help to grade the severity of the diseases and she replied she was not comfortable to do this. In some ways this shows itself on the OR anyway with the results of tests and how long a dog lives with the illness.

For example:

Irritable Bowel Disease (IBD) - low grade **PLE** - high grade

She emphasised that breeders **SHOULD NOT** feel guilty if they produce a problem. Get the dog diagnosed correctly and put it on the OR as this may help the entire breed in the future. Openness dispels rumours.

Dr. Littman stated that there is a strict criterion of tests to be completed before a dog is put onto the OR. She also has approx. 40-50% more dogs who had/have the diseases but who have not completed the full compliment of tests before death and/or at the present time and therefore cannot be listed.

Dr. Paula Henthorn, Ph.D - Talked on the complex subject of **Genetics**.

In response to a question about whether PLE/PLN/RD and Addison’s disease are hereditary; she replied that they were and added we know this because there is a greater frequency of the disorders among related individuals (e.g. family group or breed).

At present there is no clear answer as to the *mode of inheritance* of PLE/PLN in the SCWT.

To determine the mode of inheritance requires:

1. literature review
2. pedigree examination
3. test matings

Inbreeding produces an increased frequency of the disorders, therefore we need to lower the co-efficient of inbreeding (COI); i.e. keep inbreeding down, broaden the gene pool, avoid the use of 'matador' sires and mix the lines as much as possible. Breed type does not have to be lost to achieve this.

Do not breed from young males and females this will help to limit 'affecteds' in the gene pool. Tracking annual test results and watching for the 'high and low' patterns can achieve this. If a dog shows any worrying trends she recommends it is not used in a breeding programme.

(**Anna Marzolino** - is in the process of developing a computer programme (in Excel) which was demonstrated at the seminar. This is an excellent tool for plotting/tracking test results. It will be available later in the year.)

Already geneticists have plotted approx. 40-50% of the dog genome map. Once this is fully achieved it will help tremendously to find the mode of inheritance for these diseases.

Dr. Shelly Vaden DVM, DACVIM - Dogs with PLE lose protein through their gut.

Dr. Vaden feels that PLE and PLN are the same disease. The primary disease is PLE and is found in the intestinal tract and probably related to immunological defence of the intestinal tract. Some dogs only present with symptoms of PLN but they have occult ("don't see it") gastrointestinal disease (PLE).

Dogs with 'grumbly tums' could simply be allergic to their diet; they can become allergic to their diet at **any point** through life.

PLE - Fecal API Test - Dogs should have been wormed for parasites at least one month before undertaking this test. This test is proving more reliable in the first 3 years of a dog's life however testing should be continued throughout life.

This test has shown both false positive and false negatives when used in certain areas of the USA, especially where there is a high incidence of certain parasitic diseases.

Therefore, owners need to learn what parasitic diseases are common in their own locality as some could affect the accuracy of this test.

PLN - Sometimes there are no signs the dog is ill until late in the disease.

Albumin is made in the liver. The liver can initially replace lost albumin and it isn't until lots of damage has occurred and the liver fails to keep up with replacement that you see the drop in albumin.

Urinalysis is very important. The new **Heska E.R.D (MA) Test** is helping with the early detection of this and other renal diseases.

PLE AND PLN Testing - Dr. Vaden agreed with Dr. Littman that one test alone is not reliable, the entire dog needs to be evaluated. The best screening tests at the present time are those illustrated in "Take Home Message box 3."

Colony Dogs - Hereditary studies with the colony dogs show:

The breeding of affected to affected SCWT producing primarily affected SCWT is consistent with an autosomal recessive mode of inheritance, the development of PLE and PLN in the SCWT x Beagle outcross (Wheagle), suggests an autosomal dominant trait. The risk for SCWT to develop PLE and PLN is clearly inherited however; further breeding and clinical follow up is needed to reach a definitive conclusion.

A Beagle (not in her colony) has recently been diagnosed with a familial glomerulonephritis and this has now put the Wheaten/Beagle (Wheagle) mode of inheritance research into question. This is a setback and very disappointing.

Dr. Vaden said she may have to start again with a different breed to mix to the Wheaten.

A Question & Answer period was headed by Wendy Beers, Meryl Littman, Shelly Vaden & Paula Henthorn.

Listed are some (not all) of this section;

Q. Why are some dog's sick and dead by age 2 years and other dogs can be 11-13 years who have the disease but show not signs?

A. No real idea except some dogs progress the disease very quickly and others more slowly - different states of progress.

Q. Is the drop in albumin normal to ageing/older dogs?

A. No, albumin drop is not an ageing thing and is worrying at ANY age.

Q. It is true that known affected dogs are being diagnosed earlier?

A. It could be more dogs are picked up sooner now for two reasons.

1. People are more educated and looking for the diseases and reporting.

2. Fecal API and Heska E.R.D. (MA) tests pick up the symptoms sooner.

One of the benefits of annual monitoring is the possibility of picking up 'affected' before they are used in a breeding programme. Fecal API can show 'carriers' in humans with Crowns disease but we are not sure it can show carriers in Wheatens.

Q. What do you think of the BARF diet and diet in general?

A. Not too keen on raw diets as they can cause infections in the gut and e-coli can be a risk to the whole family. Infection could damage the gut and could possibly trigger IBD and or PLE?

General - diet plays an important role in the management of PLE/PLN and RD; some dogs do best on a hydrolysate diet although some don't always like these diets.

Q. How does IBD relate to PLE/PLN?

A. We need to learn more about IBD; Dr. Vaden felt end stage PLE starts with IBD but more study is required to find the percentage of dogs with IBD who go onto develop PLE.

Other:

Research shows animals that are put into stressful situations can compromise their immune system. Any dog with PLE/PLN/RD or Addison's disease needs to lead life at a more sedate pace to ensure their stress levels are kept low.

Environment plays a part in the trigger of these diseases.

These triggers could be: **Food allergies** **Alpha toxins in grains** **Stress** **Smog**
Vaccines

What can we do?

- Breeders need to keep contact with every puppy throughout its life
- Breeders need to inform all puppy owners if a sibling is affected and test ALL litter mates

- Test annually and **KEEP A RECORD OF ALL TEST RESULTS**

Dr. Littman said "

she cannot be everyone's vet"; she needs help to educate vets. She suggested SCWT owners give all vets the following.

- "Familial Protein-Losing Enteropathy and Protein-Losing Nephropathy in Soft Coated Wheaten Terriers: 222 Cases (1983-1997)"

(Dr. Littman feels this paper emphasizes how widespread these diseases are.)

- Latest research paper on inheritance by Dr. Shelly Vaden
- Table showing comparisons of PLE/PLN/RD and Addison's disease (Addison's disease paper)
- Encourage Vets to read further papers by visiting the SCWTCA website.

***** If you do not have access to the internet, please request your copies from any of the WHI group. *****

We must help educate vets, as this is too large a job for the researchers to do alone.

In conclusion:

Having met the key people dealing with the health of our lovely breed, we feel we can look forward to a happy and healthier future for the SCWT on a global scale ... They are in good hands.

Come along to the WHI [Seminar](#) and gain the confidence to identify the early symptoms which could so easily be overlooked, should they occur.

Please click the following links for more details.

[Health Seminar](#)

For further reading on:

Renal Dysplasia (RD), Protein Losing Enteropathy (PLE), Protein Losing Nephropathy (PLN) and Addison's disease please visit the American Club website at www.scwtca.org and click on 'Health'.

And finally...

We are always willing to listen to your thoughts and ideas. We have an open door, so please, talk to us.

Acknowledgements: *Our sincere thanks to Merrilee Ford and Janet Petros for permission to reproduce the Keystone Health Conference logo and the Gastro-intestinal tract slide respectively.*