

GLUTEN'S IMPACT ON THE CANINE MUSCULO-SKELETAL SYSTEM and HOW TO RESOLVE IT

Patricia Maria Kortekaas, PT

It is time to think outside the bowl! Dogs and cats are increasingly getting sick at an alarming rate. Might there be a connection to the food they are eating? Most commercial pet foods have grains in their list of ingredients, commonly including wheat, barley, rye, bran, and/or oats. All these grains contain gluten. John Symens, DVM (<http://www.dogtorj.com>) and Roger De Haan, DVM have been sounding the alarm about gluten for over five years; however, there might be more evidence linking gluten with canine illness.

What is gluten? Peter H. R. Green, MD (2006) describes that gluten (gliadin) is the storage protein found in certain grass-related grains such as wheat, barley, rye, bran and spelt. In the grain (seed), the gluten is conjoined with starch, forming a glyco-protein (creates "stickiness"). Gluten is made up of the proteins gliadin and glutenin. Oats have also been added to the list only because of contamination from processing in the mills and/or by other grains containing gluten. Gluten is what remains after the starch granules are washed away from the flour. It is literally "ingrained" in most of our foods we eat daily, even those that we think are healthy for us. Roger De Haan, DVM (2006) thinks sticky "gluten" has become so popular in the last fifty years that its "stickiness" went from 2% to 60% or higher. The increase in gluten in our grains through genetic modification and over refining might also be part of the problem.

What is "gluten intolerance" and "gluten sensitivity"? Gluten intolerance has been recognized for a long time and is associated with celiac disease. Dr. Green (2006) defines celiac disease as a multi-system autoimmune disease in which the gastrointestinal tract is the major site of injury (causing a gluten sensitive enteropathy, another name for celiac disease). Studies at the HIH estimate that 0.5 to 1 out of 100 people in the United States and Europe are suffering from celiac

disease, most of these people are undiagnosed. Dr. Kenneth Fine, MD thinks this is literally the “Tip of the gluten sensitive iceberg”. The part under water, the gluten sensitive people (non-celiac gluten sensitivity), is the group of people who have immune or auto-immune diseases related to the ill effects of gluten, sometimes described as “gluten associated diseases”, (GAD). Another name recently proposed by Rodney Ford for gluten sensitivity is the gluten syndrome. Gluten sensitivity may develop into gluten intolerance. Shari Liebermann, PhD, CNS, FACN thinks that approximately 81percent of Americans have a genetic disposition toward gluten sensitivity. This is a high number to think about. Exactly how does gluten sensitivity work? Various theories have been proposed:

“The Leaky Gut” syndrome:

This term is getting used to describe the impact of gluten on the small and large intestinal walls. Dr. Green (2006) describes this syndrome as gluten causing inflammation and irritation of the villi (the fingerlike surface projections) of the lining (epithelial wall) of the small intestine (especially duodenum and jejunum), and large intestine (cecum and sigmoid). This inflammation breaks down the lining (villous atrophy) and the lining reacts to these antigens by producing antigliadin antibodies (IgA). This is the body’s first response mechanism to fight the invading antigen or infection in an attempt to neutralize the invader. Prolonged gluten irritation of the lining can cause permeability of the lining, and the gluten proteins “leak” through into the bloodstream. This process is called the “Leaky Gut” syndrome. The gluten proteins are now able to enter the blood stream, and can create immune, autoimmune, and nutritional consequences by disrupting body functions locally or further away in the body system. The more sensitive the person or animal is to gluten, the more the proteins will irritate the lining of the intestine. The small intestines are less able to absorb the nutrition from the food (malabsorption syndrome) because of the villous atrophy, and a gluten sensitive enteropathy or IBS can develop. Might the continuing build-up of IgA’s are causing a “silent inflammatory response” in the blood stream? Could that be one reason for the increase of autoimmune and immune diseases, cancer, loss of hormone secretion

by glands (hypothyroidism, diabetes II, pancreatic insufficiencies, etc.), neurological, multiple musculo-skeletal, and skin problems (dermatitis herpetiformis), for example, seen in our patients?

A. Katz, R.F. Dyck and R. A. Bear reported about untreated human celiac patient with immune complex glomerulonephritis. Antibodies to wheat protein were found in the serum, removing gluten from the diet led to the disappearance of the immune complexes from the serum and resolution of the glomerulonephritis. No other cause for the glomerulonephritis could be found, and no dietary or brush-border antigens could be found in biopsy specimens from the glomeruli.

“Gluing” down of the tissues:

Roger De Haan, DVM, and John Symens, DVM, are both concerned about the glyco-proteins found in four foods: gluten-containing grains, casein (dairy products), soy and corn: the “BIG FOUR”. Most of our animal dry food contains those glyco-proteins. They are commonly used to make glues and adhesives in products. What do they do to our gut? One theory is that they adhere to the intestinal wall, atrophy the villous, and create inflammation and malabsorption in the epithelial wall, especially in the duodenum. The glyco-proteins reduce the motilities of our small and large intestines, and limit the peristaltic movement, and the flow of the vasculature in the gut. A healthy motility of the viscera is necessary for the exchange and absorption of nutrition with the villi, and the general function of all systems in the body. Areas of “vascular damage” (sprains or strains) or genetic weakness might be a perfect “host” for the inflammation from the “Leaky gut” and the “glue” of the glyco-proteins. Might there be a build-up or higher concentration of IgA’s and/or glue? All tissues (vasculature, neurological, viscera, endocrine, lymphatic, and musculo-skeletal) in the body can be impacted by gluten sensitivity. Do gluten proteins (or fragments of partially digested gluten protein), leak through the intestinal wall into the blood stream and create dysfunctions in other parts of the body (adhesions), in addition to any disease that is caused by antibodies to gluten and/or gluten antigen/antibody immune complexes?

Gluten acting on the nervous system: “The Gluten Syndrome”

Recently, R. P. K. Ford postulated that the reason that gluten sensitivity can cause such a broad array of non-celiac symptoms is through interference with the body’s nervous system. He proposes that gluten does this by directly and indirectly injuring the nervous network that control gut functions as well other parts of the body, such as the cardiovascular system, bladder, uterus, and various glands such as the pancreas and gall bladder.

What do we know about gluten sensitivity in dogs? In 1992, a study by Dr. E.J. Hall, DVM and R. M. Batt, DVM concluded that gluten sensitive Irish Setters, reared on a normal diet containing wheat, exhibited partial villous atrophy, intraepithelial lymphocyte infiltration, and increased intestinal permeability. Gluten sensitivity was shown by introduction of a gluten free diet, which resulted in resolution of morphological and biochemical abnormalities and decreased intestinal permeability (Gut, 1992, 33, 198-205). Several other studies are published in regards to gluten sensitive enteropathies in cats and dogs.

Research is continuing to reveal the many ways gluten affects the body. Despite our lack of knowledge about the mechanisms of action of gluten in the body, osteopathy provides us a way to recognize and treat gluten sensitivity in animals (and humans).

Osteopathic Model:

Let’s look at our osteopathic model of the “hierarchy of protection” in the body and how this might fit in with gluten sensitivity:

1. Vascular system - “Quality”
2. Central, peripheral and autonomic nervous system
3. Visceral system
4. Endocrine system
5. Lymphatic system
6. Musculoskeletal system - “Red Flag”

If the vascular system is affected in a gluten sensitive animal, the body will first protect around the blood supply (the vascular system is the most important). Areas with vascular damage or diminished blood flow might increase the IgA's locally and create adhesions and restrictions in fascia, tendons, muscles, joint capsules, and neurological tissues. The musculoskeletal system is the lowest in the hierarchy and can show up as a "Red Flag" system. After informal research on approximately 1,200 dogs and cats last year, I saw a consistent pattern of restrictions on the right side of the body, as listed below.

Characteristics of a gluten sensitive dog:

1. Cervical spine: C1 side-bend right, C2 rotation left.
2. C6-7 facet joint dysfunction
3. Right Temporal bone is caudal
4. Right Diaphragm is flat and restrictive
5. Right kidney is tight and motility is severely reduced
6. Soreness and heat over the right kidney
7. Left Kidney is often affected as the right kidney
8. Inflammation over the pancreas
9. Lumbo-pelvis twist: Right ventral/left dorsal ilium
10. Right cauded sacrum
11. Right hip restricted for internal rotation
12. Tight in the viscera especially the small and large intestines
13. Musculo-skeletal symptoms: Intermittent right rear limping and/or front right limping

Why do we see this musculoskeletal pattern? The most damage from gluten in humans was found at the cecum area of the colon, because of its specific anatomical position. In cats and dogs, the right kidney is located the closest to the ilio-cecal valve. That might be the reason why the right kidney and ureter are often the most

effected by the impact of gluten. The right kidney is the home reflex base for gluten in animals.

CONSEQUENCES of gluten on humans and animals:

- Humans: Gluten reduces the motility of the cecum.
- Cats/dogs/horses: Gluten reduces the motility of the right kidney.

We see in both animals and humans a slow reducing of the motilities of the small and large intestines, sometimes combined with decreased motility of the kidneys, ureters, bladder, and other viscera “higher up the chain”. We also find restrictions in the fascia or pleura of organs. Where the body has a weak link due to an old injury, infection and/or genetic weaknesses, you might find a “gluten irritation” build up in those areas. The restrictions can be in the muscular-skeletal, endocrine respiratory, neurological, and /or visceral systems. They can appear at all different levels of tissues and in varying severity, especially at areas where there is poor circulation and/or damaged tissues, independent of the age of the injury.

Common gluten sensitivity problems in cats and dogs are in the urinary tract system such as bladder infections, kidney or bladder stones, frequent urinating or not able to urinate easily, and/or kidney failure. This could be because by the alterations in the mechanics of the kidneys, ureters and bladder during the gait cycle.

Treatment Protocol (as taught in my classes):

For cats and dogs, use the third router, the XYPHOID to the right kidney, to restore the normal gait motility in the right kidney. The kidney will become the home reflex base for gluten to resolve all the other restrictions caused by gluten.

The gluten response can be in any tissues of the body, so scan any old injury areas for reduced motilities. If you find any effected areas, hook it up with the right kidney, to restore normal energetic levels.

The diet of gluten sensitive individuals must have gluten permanently eliminated for lasting, successful healing to occur. A homemade gluten-free diet, or a commercial gluten-free food is a must! It only takes “one gram of gluten” to continue the impact of gluten on health! So, no more gluten snackies!

References:

1. James Braly, MD and Ron Hoggan, MA. Dangerous Grains.
2. Kenneth Fine, MD. Early Diagnosis of Gluten Sensitivity: Before the Villi are Gone.
3. Peter H. R. Green, MD and Rory Jones. Celiac Disease - a Hidden Epidemic.
4. Roger De Haan, DVM. We DON'T die, We KILL ourselves.
5. Shari Lieberman, PhD. The Gluten Connection.
6. Melissa Diane Smith. Going Against the Grain.
7. Chris Reading, MD and Ross Meillon, Your family TREE connection.
8. Chris Reading, MD. Trace your GENES to health.
9. John B. Symens, DVM. Food Intolerance in our Veterinary patients.
10. Charles Wharton, PhD. Ten Thousand Years From Eden.
11. National Digestive Disease Clearing House, NDDCH (2004). Celiac Disease.
12. National Institute of Health (NIH) consensus Development Panel on Celiac Disease, 2005. Celiac Disease.
13. A. Katz, R. F. Dyck, R. A. Bear. Celiac disease associated with immune complex glomerulonephritis. Clin. Nephrol. 1979 Jan; 11(1): 39-44.
14. Rodney Philip Kinvig Ford. The gluten syndrome: a neurological disease. Medical Hypotheses, 2009. (in press).