The Immune System--Part 3

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In the last issue we covered a lot of technical mumbo-jumbo for you to refer to in the event that someone tries to mesmerize you with fancy terms. Granted, the immune system is complex and some kind of label has to be used to distinguish its many, many parts. For the specialist this information is vital. For the average person, it is overwhelming and can be confusing. At least you now have an awareness that mounting an immune response is not totally dependent on vaccination.

The most common reason to vaccinate is to prevent infections. Now that you have the background, lets take a simplified look at the body's natural defense system for prevention of infectious disease.

Microbes attempting to get into the body must first move past the body's external armor. The skin and the membranes lining the body's gateways not only pose a physical barrier, they are also rich in scavenger cells and IgA antibodies.

Next, invaders must escape a series of NONSPECIFIC defenses, which are ready to attack, without regard for any specific antigen markers. These include patrolling scavenger cells, natural killer (NK) cells, and complement.

Microbes that cross the nonspecific barriers must then confront specific weapons tailored just for them. Specific weapons, which include both antibodies and cells, are equipped with singular receptor structures that allow them to recognize and interact with their designated targets.

In addition, Mother Nature designed the system so that once an infectious microbe has invaded and been vanquished, the next exposure will be met with a more rapid, stronger attack of such intensity that the body is literally immune to any future infection of the same disease. When both the humoral and cell mediated systems are functioning at their optimum, infectious disease doesn't stand a chance!

The sad thing is that in today's modern world the average dog doesn't stand a chance of having an immune system that is operating at optimum levels. Starting with inherited genetic defects and adding an onslaught of nutritional imbalances or

deficiencies, hormonal imbalances, exposure to toxic or noxious substances, exposure to infectious agents and drugs, etc., has markedly increased the frequency of ill health that we are seeing in our canine companions. In my opinion, the great "experiment" of this century in providing "nutrition" from a bag and "immunity" from a needle, has been a gigantic failure. Unless we are prepared to work with nature and purposely support and enhance the immune system, we have no right to expect good health for our animals.

Let's take a look at some of the components of the immune system and discuss some of the things that are important for maintaining and enhancing the system.`

In considering the primary organs of the immune system it should now be obvious that first and foremost is the thymus. The thymus gland shows maximum development shortly after birth. During the aging process, the thymus gland undergoes a process of shrinkage or involution. The reason for this involution appears to be that the thymus gland is extremely susceptible to free radical and oxidative damage. Antioxidants such as vitamin C, vitamin E, selenium, zinc and beta-carotene can prevent thymic involution and enhance cell mediated immune functions.

The thymus gland also releases several hormones such as thymosin, thymopoetin and serum thymic factor, which regulate many immune functions. Low levels of the hormones in the blood are associated with depressed immunity and an increased susceptibility to infection. Many nutrients function as important cofactors in the manufacture, secretion and function of thymic hormones. Deficiencies of any one of these nutrients results in decreased thymic hormone action and impaired immune function. Zinc, vitamin B6 and vitamin C are perhaps the most critical. Supplementation with these nutrients has been shown to increase thymic hormone function and cell mediated immunity.

Next we need to consider the importance of the lymphatic system. Approximately one-sixth of the entire body consists of the space between cells. Collectively this space is referred to as the "interstitum" and the fluid within the space is referred to as the interstitial fluid. This fluid flows into the lymphatic vessels and becomes the lymph.

Lymphatic vessels usually run parallel to arteries and veins, draining waste products from tissues and transporting the lymph to lymph nodes which filter the lymph. The cells responsible for filtering the lymph are macrophages (large cells which engulf and destroy foreign particles including bacteria and cellular debris). The lymph nodes also contain B-lymphocytes (the white blood cells which are capable of initiating antibody production in response to the presence of viruses, bacteria, yeast and other organisms).

The spleen is the largest mass of lymphatic tissue in the body. In addition to producing lymphocytes, engulfing and destroying bacteria and cellular debris, the spleen is responsible for destroying worn-out blood cells and platelets. The spleen also serves as a blood reservoir. During times of demand, such as hemorrhage, the spleen can release its stored blood and prevent shock.

Although not considered a lymphatic organ, the liver produces the majority of lymph in the body. In addition, the integrity of the lymphatic system is highly dependent on special types of macrophage (Kupffer cells) that exist in the liver. Kupffer cells are responsible for filtering bacteria, yeast (like Candida albicans) and toxic foreign compounds that are absorbed by the gastrointestinal tract. These cells, when functioning properly, are extremely effective in filtering the blood. Healthy Kupffer cells have been shown to engulf and destroy a single bacteria in less than 1/100 of a second.

Clumps of lymphoid tissue are found in many other parts of the body, especially in the linings of the digestive tract and the airways and lungs that serve as gateways to the body. These tissues include the tonsils, the adenoids, and the appendix.

Thus we can see that the "immune system" is nothing more (or less) than an integral part of natures design of the body and the dynamic interaction of all of its parts.

Obviously, a broad range of nutrients are required for immune function. There are many books, review articles and primary research papers that discuss the relationship between nutrition and the immune system.

Wholesome nutrition is a key component of maintaining a healthy immune system. You're probably tired of hearing me

say this but a raw diet is unsurpassed in providing the best nutrition for both dogs and cats. Proper digestion is a requirement for optimum health, and incomplete or disordered digestion can be a major contributor to the development of many diseases. The problem is not only that ingestion of foods and nutritional substances are of little benefit when breakdown and assimilation are inadequate, but also that incompletely digested food molecules can be inappropriately absorbed into the blood stream. This can lead to various diseases and the development of food allergies. Dogs and cats were designed to digest RAW FOODS! Cooking and processing is totally a "man made" concept and is foreign to nature's digestive design for these animals.

The basic premise of natural rearing is to provide an animal with the best chance of having an immune system that functions at an optimal level. THE HEART AND SOUL OF ANY NATURAL REARING PROGRAM IS AND ALWAYS WILL BE A RAW FOOD DIET !

Thousands of years of traditional usage and more recent scientific research has shown that certain substances and approaches (generally not in the realm of conventional medicine) can be incorporated into an immune enhancing program. In past issues of our newsletter we have provided information on many of these and will continue to do so in future issues.

For example:

- Herbal supplements and medicines such as garlic, ginsing, licorice root, echinacea, astragalus, etc. have been show to impart numerous benefits to immune function (particularly the cell-mediated branch). Now that you have the background it is more meaningful when you understand that these benefits include macrophage stimulation, increased phagocytosis, increased NK (natural killer) cell counts, increased interferon, and enhancement of delayed hypersensitivity response. A number of herbs also have direct antiviral and anti-tumor activity.
- Medicinal mushrooms such as shiitake and ganoderma, also stimulate the production of interferon and other well defined immune parameters.
- Glandular extracts, particularly thymus and spleen, have

been considered potentiators of immune function by many naturopathic physicians and veterinarians and are frequently prescribed.

- Acupuncture has been found to enhance many immune parameters. It can increase the number of T cells, lymphocytes in general, T cell ratios, NK cell activity, B cells and phagocytic activity.
- Homeopathy has been used effectively to treat infections and immune deficiencies. One of the theories behind the use of "Nosodes" is that this homeopathic form of immunization provides the system with the "pattern" of a particular disease. The pattern will be stored in "memory" cells, thus preparing for a rapid immune response to that infection in the future.

In a full natural rearing program, of equal importance to immune system enhancement, is the avoidance of chemical toxins, drugs, vaccinations, flea collars, pills, chemical wormers, antibiotics, steroids, etc. to the greatest extent possible. Each of these has a detrimental effect on the immune system and can trigger an overload that is difficult and sometimes impossible for the body to handle.

To quote Dr. Jean Dodds, D.V.M. "Viral disease and recent vaccination with single or modified-live virus vaccines, ...are increasingly recognized contributors to immune-mediated blood disease, bone marrow failure and organ dysfunction."

Lets put a little perspective into the relative importance of the cell mediated system with a quick summary along with some percentages.

The "workers" of the immune system are various white blood cells. A lymphocyte is a specialized form of white blood cell, representing 25-40% of the total blood count, whose numbers increase during viral infection and when fighting cancer.

Lymphocytes are produced in the bone marrow and come in two basic forms. B cells mature in the bone marrow and produce antibodies to neutralize foreign cells (this is know as the humoral system). B cells account for 10-15% of all lymphocytes.

T cells mature in the thymus gland and react to and destroy specific invading antigens (this is known as cell-mediated

immunity). 75-80% of lymphocytes are T cells. T cells are predisposed to respond to specific foreign substances (antigens) or infections.

Natural Killer (NK) cells are a type of nonspecific, free-ranging lymphocyte that is neither a B nor T cell. Unlike other lymphocytes, NK cells are not activated by a specific antigen. They can recognize and quickly destroy any antigen on first contact. They have a potent cell-killing activity, being armed with an estimated 100 different biochemical poisons for destroying foreign cells. Their role is surveillance, to rid the body of aberrant or foreign cells before they can grow and produce cancer or infection. NK cells account for 5-10% of all lymphocytes

Main Types of T-cells:

Helper T cells (also known as T-4 or CD-4 cells) secrete immune proteins (particularly the interleukins and interferon) to stimulate B cells, macrophages, and activate Killer T cells. They account for 60-75% of all the T cells.

Killer T cells (T-8 or CD-8) cells bind to the specific invader and secrete enzymes to destroy it. They account for 25-30% of all T cells.

Suppressor T cells prevent excessive immune reactions by suppressing antibody activity.

If you pay close attention to the aforementioned percentages you will note that conventional vaccination attempts to stimulate B cell recognition only, or about 10% of the total lymphocytes. It ignores 90% of the overall immune system. With all the additional risks involved, does it really make any sense to subject an animal to this kind of questionable immune "enhancement" ??? Repeatedly???

Or does it make more sense to work on the other 90% with good nutrition and natural, non-harmful methods of enhancement ?

When I adopted the natural rearing method for my animals, I had very little of this information available. I just knew that there had to be something better than what I had been doing in the past. After many years of experience and research, I have found nothing to make me regret my decision. On the contrary,

the more I learn the more convinced I become that I am truly providing my dogs with the opportunity to be "the best that they can be".

The choice is yours. I hope I have given you enough basic information to really "think for yourself" about the care and maintenance of the immune system in your animals

Feel free to contact us if you have questions or concerns.

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