Nei Wei Qi Represents Immune System in TCM, Part 1

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Immunology has long been well-recognized as an important part of human physiology in traditional Chinese medicine. As explained in the following famous passage of the 72nd chapter of Su Wen (Plain Questions), written 2,000 years ago, "If zheng qi remains strong, xie qi cannot invade the body. Zheng qi must be weak when invasion of xie qi takes place."

More and more diseases have been found to be related to the immune system. Since a specific term for the immune system is not available in traditional Chinese medicine, when we analyze these diseases, the term "immune system" has to be borrowed from Western medicine or translated into mianyi. One has to explain that wei qi, in traditional Chinese medicine, does not mean immune system. Finally, the qi of lung, spleen and kidney is used to represent the immune system in the body. This explanation is not only wordy but also confusing and disappointing. If a new term for the immune system can be created, it will be easy to have a more holistic understanding in the diagnosis, prevention and treatment of diseases. With this new term, the inconvenience in language when describing the immune system in traditional Chinese medicine will be avoided.

Nei wei qi (internal defensive qi) is introduced to represent the immune system in traditional Chinese medicine. Nei wei qi is a part of the zheng qi of the body. It comes from yuan qi and is nourished by acquired nutrients. It belongs to qi and yin. It’s located both inside and outside blood vessels. It runs through the entire body, including the five zang organs, six fu organs, head, limbs, etc. The normal function of nei wei qi is vital in ensuring the normal function of the zang fu organs.

A nei wei qi deficiency is one of the causes of zang fu organ deficiency. The three functions of nei wei qi are defense, surveillance and tolerance. Defense means that nei wei qi recognizes, mobilizes, attacks and eliminates xie qi such as pathogens, microbes, vaccines and toxins. When nei wei qi is deficient, the body suffers from infections. Surveillance refers to nei wei qi attacking and eliminating cancer cells. When nei wei qi is deficient, the chance of tumor development is high. Tolerance means that nei wei qi can recognize and differentiate the foreign from the self; the foreign is attacked and the self is preserved by nei wei qi. When tolerance is disturbed, nei wei qi will act against the self and cause autoimmune diseases.
Zheng qi means an antipathogenic factor in the body, while xie qi refers to the pathogenic factor. The philosophic theory on the struggle between zheng qi and xie qi represents the core idea of immunology in plain words by Chinese ancestors. The fight between zheng qi and xie qi explains the battle between the immune function of the body and the pathogenic factors. Helping zheng qi to expel xie qi is the therapeutic principle.

In the 16th-century Ming Dynasty, the Chinese used dry powder from the skin scabs of smallpox patients to blow into the nose of healthy people in order to protect the body from smallpox. This was the earliest vaccine. Combining modern science with traditional Chinese medicine, Chinese scientists have found many herbs regulating immune functions. Acupuncture and qi gong also have the effect of improving the immune system. In treating the severe and high-mortality disease AIDS, Chinese medicine shows superior advantages.

A Review of Modern Immunology

Immunology is the science of studying the principle and application of the body’s immune phenomena. Immunology started from anti-infection immunology. Modern immunology is far beyond this point. The immune system consists of immune organs (thymus, spleen, bone marrow, lymphatic vessels and nodes), immune cells (T-cells, B-lymphocytes, macrophages, natural-killer cells, neutrophils and antigen-presentation cells), soluble substances such as immunoglobulin, complement proteins, cytokine, major histocompatibility complex molecules and adhesion molecules.

The immune system can recognize both "self" and "non-self." Microbes such as germs or other microorganisms, cancer cells and transplanted tissues or organs are all interpreted by the immune system as "non-self," which the body must ward off. The three functions of the immune system are defense, surveillance and tolerance. Defense means that the immune system recognizes, mobilizes, forces, attacks and eliminates the antigen such as microbes, vaccine and toxin. If defense is weak or absent, the body is vulnerable to severe infections. Surveillance refers to eliminating cancer cells. If the immune system is deficient, the body can develop cancer easily. Tolerance means the immune system can recognize and differentiate "non-self" from "self" and attack the former while preserving the latter. When tolerance is disturbed, the immune system will act against "self" and cause autoimmune diseases.
The Immune Function in TCM

The medical terms related to immune functions in traditional Chinese medicine are zheng qi, yuan qi, yang qi, wei qi, qi of zang fu organs (including lung qi), spleen qi and kidney qi, along with the related materials and function such as jing (essence), qi (energy) and shen (spirit).

Zheng qi. Classical Chinese medical literature has the following famous adage: "If zheng qi remains strong, xie qi cannot invade the body, zheng qi must be weak when invasion of xie qi takes place." There is no doubt that zheng qi is related to the defensive function of the body. Is zheng qi the same as the immune system? Zheng qi consists of yuan qi (primary or congenital qi), zong qi (pectoral qi), yin g qi (nutrient qi), wei qi (defensive qi), and qi of all the zang fu organs. Zheng qi is the physiological functions of zang fu organs, meridian channels and tissues. It also represents the adaptability and accommodation of the body to the environment and the resistance of the body to diseases. Since zheng qi represents such a broad category, it is clear that zheng qi covers (but is not limited to) the immune system. From the holistic point of view, zheng qi is similar to the nerve-endocrine-immune network. Zheng qi represents the whole body function, while the function of the immune system is only a part of it.

Wei qi. Also called wei yang, wei qi (defensive qi) is derived from the fierce qi of food essence. It is part of the yang qi. It circulates outside the blood vessels. It protects the surface of the body, such as skin and muscle, from exogenous pathogenic factors, controls the opening and closing of pores, moistens the skin and hair, regulates body temperature and warms up the zang fu organs. Actually, some functions of wei qi are similar to those of the autonomic nervous system and the central nervous system. The defense function of wei qi is only on the body surface. In traditional Chinese medicine, the vessels mean only arteries but not veins nor lympho-vessels. Of course, lympho-vessels do not appear in traditional Chinese medicine. The only thing for certain is that wei qi does not circulate in arteries. All these tell us that wei qi is related to the defense function, but it is very limited, it is far from enough to explain the function of the immune system.

Qi of zang fu. What is the relationship between zang fu qi and the immune system? In the study of zang fu organs, researchers try to find the relationship between the micro-index in immunology and symptoms in traditional Chinese medicine. For example, the heart governs blood and the vessels. Research shows that in patients with coronary heart disease, heart qi is deficient, several immune indexes are also lower than normal standards, such as E-rosette and T-lymphocyte ANAE test. PHA-induced transform rate of lymphocytes are significantly lower than the control group. T-lymphocyte count is normal.
IgG, IgM and IgA are similar to the control group. It indicates that in patients with heart qi deficiency, the cell-mediated immunity is low but the humoral immunity is normal.

The lung dominates qi, controls respiration and connects with skin and hair. The lung also regulates water passages. In lung-deficient patients, the transformation rate of lymphocytes, IgG and IgM are significantly lower than those of normal individuals. The spleen controls digestion, assimilation and distribution of nutrients and water throughout the body. Hence, the spleen and stomach are viewed as the foundation of the latter heaven-acquired constitution. The eminent traditional medical doctor Zhang Zhong Jing wrote in his Jin Guei Yao Lue: "If the Spleen qi is strong during all four seasons, the body will not be attacked by evil qi." Another famous doctor, Li Dong Yuan, remarked, "All diseases start with Spleen and Stomach deficiency."

Recent research found that spleen deficiency is mainly a result of the dysfunction of the digestive system and it involves the nerve-endocrine-immune network. In experiments using animal subjects, it was found that with spleen deficiency, the ability to produce antibodies is low, humoral immunity is deficient, Th-cell (helper T-lymphocytes) count is low, Ts (suppressor T-cells) is high and cell-mediated immunity is deficient.

The liver stores blood, maintains the free flow of qi and stores the soul. Emotional changes such as depression can cause stagnancy of liver qi, it can cause reduction of lymphocytes E-rosette, namely the ability of releasing H₂O₂ from monocytes and mixed lymphocyte reaction. Overall, liver qi stagnancy causes deficiency of the immune function. The kidney stores vital essence. It dominates water metabolism, development and reproduction. It is in charge of bone and manufacturing bone marrow. In patients with kidney deficiency, helper T-lymphocytes are reduced and suppressor T-lymphocytes exhibit hyperfunction. In patients with kidney yang deficiency, serum IgG is reduced, while in patients with kidney yin deficiency, serum IgM is elevated, urine IgG and IgA are elevated. Furthermore, in patients with kidney deficiency, serum hemolysin and plaque-forming cell assays are low. These reveal that the ability to produce antibodies is low in the kidney-deficient patients. In modern medicine, the pituitary-adrenal cortex-lymphocyte corticoid receptor is the important part of nerve-endocrine-immune network. The lymphocyte corticoid receptor is the peripheral connector of the nerve-endocrine system with the immune system. The kidney, in traditional Chinese medical terms, has a very close relationship with the nerve-endocrine-immune network.
Is *zang fu qi* the same as the immune system? Each organ in traditional Chinese medicine corresponds to several organs and various physiological systems in Western medicine, especially the nervous, endocrine and immune systems. In all of the organ deficiency-type symptoms, there is a certain reduction of the immune function. On the other hand, the nervous-endocrine-immune network runs through every organ in the body. Every organ, aside from having its own function, such as the heart, governs blood and vessels.

The immune system has its special structure and function. It is not the same as *zheng fu* organs. The structural difference is clearly demonstrated by the anatomy which should be distinguished from the unique function of the immune system. For example, spleen deficiency in the common situation is different from the spleen deficiency in AIDS. There are qualitative and quantitative differences between these two spleen deficiencies in the immune aspect. The former exhibits changes in certain immune indices showing a degree of immune weakness, but in the latter, the T-cells are destroyed due to HIV infection. The former shows the weakness of the body, but the latter is extremely susceptible to severe infections, even opportunistic infections, and is difficult to cure by antibiotics. HIV-infected patients also have immune surveillance dysfunction such as tumor growth, but in the former, it is not a significant feature of the disease.

In recognizing immune-related diseases, it is necessary to point out that the major pathological changes are in the immune system. Using *zang fu qi* to represent the immune function cannot reveal the special nature of the immune system and its important role in the development of diseases.

**A Term for the Immune System in TCM**

Along with the increasing recognition of the immune system, more and more immune-related diseases are discovered. These diseases are immunodeficiency disorders, allergy reactions, autoimmune diseases, cancer and transplant rejection. Without a special term for the immune system in traditional Chinese medicine, it will be difficult to explain the nature of these kinds of diseases and differentiate them from others. Simply borrowing the term immune system from Western medicine to explain this key step of the disease is not enough. Also, the term immune system or *mianyi* does not fit in the terminology system of traditional Chinese medicine. They disturb the consistency of traditional Chinese medicine language.

It’s necessary to have a new term which can merge into traditional Chinese medicine to represent the immune system. If to differentiate diseases is to recognize diseases in the vertical direction, then to differentiate symptoms is to recognize diseases in the horizontal direction. If we can combine differentiation of symptoms and differentiation of diseases, the holistic concept will be practiced more correctly. The new
term will make this holistic diagnosis easier. This recognition of disease will be beneficial for treatment. In
dealing with complex symptoms and diseases, adjusting the immune function should be one of the basic
steps of the treatment.

Resources

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