Proceedings of the
World Small Animal Veterinary Association
Sydney, Australia – 2007

Hosted by:

Australian Small Animal Veterinary Association (ASAVA)

Next WSAVA Congress

DUBLIN, IRELAND
20th - 24th August 2008
Most historians date the historical roots of Chinese medical thinking to 4000 years ago. The history of anatomic dissection is scattered; allowed in some cultures, forbidden by taboos in others. This was not a time of microscopic analysis and blood chemistry analyzers. To look at ancient Chinese medical thinking we must understand how they looked at the world around them and the diseases in their patients and then were able to formulate diagnoses, treatment strategies and even prognoses.

Chinese medical thinking is heavily rooted in philosophy and the base philosophical belief in all Chinese thinking is the concept of Yin and Yang. Yin and Yang represent opposites that exist simultaneously, give rise to each other and control each other. Without one you cannot have the other. There is always some Yin within the Yang and some Yang within the Yin as the continual cycle of transformation takes place. They are used to explain all things as a contrast or complement; as a gradation. Simple characteristics of Yin are: cooling, nurturing, calm, structure; for Yang the opposites: warming, destroying, active, function. They give rise and transform into the other just as the heat from the sun evaporates the water into steam, the steam rises and condenses into clouds and rain forms to cool the earth and air. They balance each other and control each other, as the product of a chemical reaction will first slow and then inhibit the reaction which created it.

Chinese Organ Physiology

The Chinese applied the concept of Yin and Yang to all things – their environment, the heavens and themselves, including the body’s functions. The body kept itself in balance, free of disease, in homeostasis, based on the principles of Yin and Yang. They did not understand hormonal negative feedback loops, only the concept of them. The organs are responsible for maintaining Yin/Yang balance, thus, they also have to be defined as part of the Yin/ Yang system. In other words, they have the properties to support each other, balance (control) each other and lay the foundation for the other. Each Organ was described according to its Yin/Yang nature or phase as metaphorically determined by Chinese medical study and was responsible for nourishing the next Organ phase and balancing/ controlling its opposite phase and associated Organ. This organization of Organ Systems maintains homeostasis and provides the mechanism for nourishment, movement of the body, its ability to interact with the environment, integration of information, and rest for recovery and health as one Organ promotes the function of the other.

In addition to understanding Yin and Yang one must understand and respect the use of metaphors in the Chinese medical model. As one understands the complexity of Chinese medicine it becomes apparent that the metaphors are
as complex as any metabolic cycle modern science has discovered. The
metaphors were used to explain what they could not quantitate physically as
we can now. There is a saying: “a picture says a thousand words”. In a time
when paper and pen weren’t easily accessible and few literate people, what
better way to explain complicated processes such as the inner workings of the
human body.

In keeping with metaphorical principles each Organ was associated with an
Element or Phase in nature. The Phases were chosen based on their
physical attributes. Seasons were also assigned to the different Organs – the
times when the Organs were strongest or most susceptible to disharmony.

**Kidney** is associated with the Phase/Element of Water and the season
winter. In conventional physiology the Kidney is associated with water and
water metabolism. In Chinese physiology the Kidney is associated with
cooling, providing moisture and storage of Essence, (one of the Fundamental
Substances). It also has a Yang function in providing the underlying flame for
metabolism.

**Liver** is associated with Wood and spring. In Chinese physiology the Liver
is associated with providing the smooth flow of Qi and Blood through the
body.

**The Heart** is associated with Fire and summer, as it provides warmth and
represents activity and life but, when unchecked, can rage out of control with
complete destruction.

**The Lung** is associated with Metal and autumn. The Lung collects the Qi
from the air we breathe, oxygen, and descends this oxygen to the Kidneys
and throughout the body for utilization. As metal condenses mist into drops of
water, so in part does the Lung condense the air we breathe and this
condensed moisture nourishes the tissues and provides water for the cooling
function of the Kidneys.

**The Spleen** is associated with the Earth and Indian summer. The Earth
provides the balance and the nourishment for the rest of the phases. As the
Earth provides the grains and plants we harvest and on which animals forage,
so to the Spleen is the organ responsible for the transformation and
transportation of the nutrients of the food and drink we ingest.

Chinese medicine has always recognized the physiologic pathways we in the
west understand so well. The aspects of nourishing, circulation, distribution
are crucial to Chinese physiology as well. The heart pumps the blood in the
blood vessels; the stomach receives the food and fluids we ingest and “rotten
and ripens” these sources of nourishment, passing them to the small intestine,
etc. However, they could not know that HCL was present in the stomach to
decompound proteins and that the pancreas secreted amylase and lipase to
decompound sugars and fats. Instead they devised an intricate and detailed
description of organ function that may be described as metaphorical, but was based on detailed clinical observations of a body in health and in sickness. The characteristics associated with the Organ’s phase of Yin/Yang perversed the body and in illness specific signs and symptoms, physical changes in the tongue and pulse, gait and posture were seen as well as emotional (behavioral) changes. Pathophysiology resulted when an Organ was stuck in its phase and thus did not promote the next phase nor balance its opposite phase.

The Fundamental Substances

In conventional medicine many fundamental substances have been determined necessary for sustaining life: O₂, H₂O, amino acids, carbohydrates, lipids, etc. The Chinese Fundamental Substances are Qi, Xue, Jin Ye and Jing.

Qi

Qi is the most difficult Fundamental Substance to translate into conventional understanding of physiology. Often translated as vital energyl force this is only part of the Chinese concept of Qi and is insufficient to explain all, leading to confusion and misunderstandings. There are over 30 known ideograms for the word pronounced chee. Most have to do with movement, function, activity. One of the oldest characters of Qi means vital air. The ideogram depicts currents of warm air rising from the earth. When this is combined with da, the ideogram for big, the combined ideogram da qi means “big air” or the air we breathe. The current ideogram for the concept of Qi as a fundamental substance depicts the warm vapors as they arise from a grain of rice to show the relation between Qi and consumed food.

Da qi: as stated above, is the “big air”, the air we inhale with all the nitrogen, hydrogen, carbon dioxide and oxygen, plus pollutants.

Qing qi: is the pure qi extracted from the air we inhale. It is extracted by the Lungs and is used to produce the other forms of Qi within the body that circulate and nourish the organs and tissues. This is oxygen.

Gu qi: is derived from the foods and fluids we partake. In terms of conventional physiology this would be the amino acids, the carbohydrates, lipids, vitamins and minerals that are absorbed by the body and then utilized to maintain body tissues and their functions.

Zong qi: is formed by the combination of Qing qi and Gu qi in the chest. This qi is responsible for maintaining the beat of the heart with a relationship to respiration.

Zhen qi: is produced by the conversion of Zong qi in the chest. It is the basic dynamic force of all vital function. Western medicine defines Zhen qi as energy production and use at the cellular or mitochondrial level. The energy...
we get from the foods we eat; Gu qi – the proteins, CHO and lipids – are broken down via various metabolic processes of oxidation (phosphorylation) that occur at the cellular and mitochondrial level ultimately ending up stored in the high energy phosphate bonds of ATP. It has two forms, Wei qi and Ying qi.

Wei qi: circulates within the superficial layers of the body protecting the body from external pathogenic factors. (also Defensive Qi) Wei qi is the instinctual, reflexive part of our immune system and environmental defense system. When we are too hot, Wei qi opens the pores and allows sweating; when we are too cold, it closes the pores to retain the heat and keep the cold out; it stimulates the piloerector muscles to create an air insulatory barrier. It will cause us to shiver to prevent hypothermia and death. It is also our humoral and cell mediated immune system, lymph fluid and the lymphatic system – our instinctual response to pathogenic factors.

Ying qi: Nutritive Qi circulates in the body and nourishes the organs and tissues. Specifically equated to the amino acids, carbohydrates, lipids, vitamins, mineral and electrolytes we understand as important for normal physiologic function. It also includes in part the hormones and various neuropeptides necessary for proper integration of the body’s metabolic and regulatory functions. Ying qi travels within the blood vessels and the extracellular spaces, within the cerebrospinal fluid and synovial joint fluid to nourish all tissues.

Yuan qi: Original Qi. In Chinese Medicine (CM) this qi is derived from the Kidneys and is intimately related to the Jing. It serves as the catalyst for every function in the production of the other forms of Qi and Blood (Xue) in the body. Western medicine would refer to this as the spark of life and the genetic disposition.

Xue

The translation for Xue is Blood and is just that – the red fluid that circulates in the vessels bringing vital nutrients to all organs and tissues. In CM Blood nourishes Qi and it carries the Ying qi to all organs and tissues.

Jin ye

Jin ye is body fluids. Jin refers to the thin fluids of the body circulating with the blood, our conventional understanding of serum. It is also the fluid that is excreted as sweat, tears and saliva. Ye refers to the thick, viscous fluids of the body that moisten and nourish the joints, brain and bone marrow; is the thick component of fluids that moisten the orifices of the sense organs; the eyes, ears, nose and mouth; thus, the synovial joint fluid, CSF, and viscous fluids of the sense organs.
**Jing**

*Jing* is *Essence*; the reservoir and the base for all things. *Jing* is inherited from our parents. This coincides with DNA and our heritable strengths and weaknesses, our abilities – physical or mental – to survive/ flourish in this life. It also involves heritable and congenital traits, defects and deformities. It is related to the immune system and *Wei qi*, as we would see in the instinctual immune response the young develop. It is related to the regulatory hormones and reproduction, and neurochemicals important in proper CNS function.

**Shen**

Sometimes referred to as a fundamental substance it is really the product of *Qi* and *Jing*, what is referred to as *Shenjing*. *Jing* is the foundation and *Qi* activates and brings the vitality of one’s self forward. It is reflected in the eyes and is equated to the function of the mind, mental processes and behavior.

**The Fundamental Substances and Organ Physiology**

The Chinese considered there to be twelve main organs involved with Chinese physiology and the production, maintenance, circulation and distribution of the Fundamental Substances. They are responsible for physiologic maintenance of the body and mind and are described not only in terms of physiology that is directly equal to conventional thought but also in terms of metaphorical functions. Each of the 5 organs mentioned above are considered Yin Organs or the *Zang Organs* and they are paired with a Yang or *Fu Organ*.

**Spleen – Stomach/ Earth/ Indian Summer**

The Stomach is the rottening and ripening vat. The Spleen transforms and transports the pure essences from the food and drink we ingest, the *Gu qi*, and ascends it to the Lungs. The Stomach descends the rest of the ingestia down to the Small Intestine.

**Lung – Large Intestine/ Metal/ Autumn**

The Lung extracts *Qing Qi* from *Da qi* and, with the aid of the Spleen, Heart and Kidney Yang, synthesizes the different forms of *Qi* that circulate in the body; primarily *Wei qi* and *Ying qi*. The Lungs circulate the *Wei qi* to the surface of the body and circulate the thin fluids that moisten the skin, subcutaneous tissues, tendons and ligaments. We now know that the components of *Ying qi* and *Wei qi* are not formed in the Lungs, but the Chinese noted the blood leaving the lungs was a different color than the blood entering the lungs and this blood was pumped by the Heart through the vessels to all organs and tissues of the body. The Large Intestine is responsible for the absorption of fluids and the elimination of wastes.
However, the Large Intestine in CM anatomically is different based on the vasculature. The CM Large Intestine extends from the ileum to the anus.

**Kidney – Bladder/ Water/ Winter**

The Bladder excretes wastes from the body; it is the final *Fu Organ* where the pure and impure fluids are separated. Overall the Kidney is responsible for water metabolism, excretion of wastes, retention of salts, electrolytes and proteins that maintain body fluids, electrolyte balance and prevent dehydration. However, CM also considers the Kidneys the Mother of the Bone; they support the Marrow and help with the production of Blood. In the 1980’s the discovery of erythropoietin confirmed this connection.

There are two kidneys and CM sees two aspects of the Kidneys; Kidney Yin and Kidney Yang. The Kidney Yin is the nourishing foundation of the body; Kidney Yang is the primordial fire (catalyst) for virtually all metabolic processes in the formation of Qi and Blood. An important point to note; anatomically the adrenal glands were described as part of the Kidneys. The Kidney and Bladder regulate storage in the body and the Kidneys provide the basis for Fire and Water in the body’s homeostatic mechanisms.

**Liver – Gall Bladder/ Wood/ Spring**

The Gall Bladder accepts the bile produced by the Liver and excretes it into the small intestine to aid in digestion. The Liver is responsible for the smooth movement of Qi and Blood throughout the body. It stores and releases the Blood as needed. As Qi and Blood are intricately entwined the Liver with the Gall Bladder are responsible for the smooth circulation of both.

**Heart – Small Intestine/ Fire/ Summer**

The Heart pumps blood through the blood vessels; in CM the Heart is considered to Govern the Blood and Control the Vessels. It is through this close relationship to the vessels that the Heart is paired with the Small Intestine. The CM Small Intestine includes only the duodenum and the jejunum as defined by the intense number of blood vessels distributed to these two segments. The Heart is also considered to be the Organ responsible for the transformation of *Gu qi* to *Xue*. The Lung Qi pushes the *Gu qi* into the Heart and under the catalysis of *Yuan Qi*, *Xue* is formed. The Small Intestine is responsible for the absorption of water and nutrients from the body; in CM its function also includes the separation of pure from the impure; keeping what is good for the body (the Heart’s domain) and eliminating the substances that are not good.
**Pericardium – Triple Heater/ Fire/ Summer**

The Pericardium is also called Heart Protector, as it envelops the heart and the pericardial fluid is a buffer from trauma. The Chinese saw this metaphorically as well; if the Heart was having a problem one could go to the Heart Protector to help. The Triple Heater really has no tissue relation. Some authors have equated it to the peritoneal and pleural linings of the body cavities, and there can be some foundation for that, but primarily the Triple Heater is a functional concept in the Chinese model. It is closely related to the Kidneys and Yuan Qi as it is the Organ responsible for the dissemination of Yuan Qi to the Organs. It is important in directing the movement of Qi through the meridians and in the regulation of Fluids. In western medicine we have equated part of the function of the Triple Heater with those of hormones, especially the thyroid hormone.

There are many similarities between Western and Chinese thought but also some significant differences. These differences rest mainly in the translation of the metaphorical language of Chinese medicine to the exact quantitative and qualitative language of Western Medicine. Chinese thought works in circles and is highly integrated; opposites can exist at the same time, conflicting signs and symptoms can be due to one process. With Western thinking and theory there is a tendency to put things in neat boxes and clarify disease diagnosis and treatment with linear algorithms. The two methodologies actually complement each other well once you understand and respect the “language” of both.

**References**