Ancient Concepts, Modern Disease: The Historical Development and Current Treatment of Leukemia

by Simon A. Becker

Introduction

Chinese hematology is a relatively new modern Chinese medical speciality that is part of Chinese internal medicine (内科), indeed the first comprehensive Chinese textbook of Chinese hematology appeared only recently. This book, as well as the Chinese hematology book I authored, are arranged according to modern Western diseases. This means that their chapters are titled anemia, leukemia, thrombocytopenia, etc; and they do not carry such traditional Chinese medical disease names as “vacuity taxation”, “bleeding condition”, or “concretions and conglomerations”. One of the reasons for this “Westernisation” of Chinese medicine is the dominance of biomedical science and Western medical healthcare not only in the US but also in China. Another reason is that most Western diseases, particularly in the speciality of hematology, are defined by laboratory values. Because most patients will at some point undergo such lab tests and thereby be diagnosed with a Western disease, their use in organizing medical books seems more suitable in Western medically dominated healthcare systems compared to the more loosely defined Chinese medical disease categories. Regardless of this categorization however, it is very important for the practitioner of Chinese medicine to realise from whence our medicine's theory stems so as not to make the common mistake of confusing and mixing Western and Chinese medical concepts; they are paradigmatically different. For example, the Western medical term ‘anemia’ stands for a lack of blood only in Western medicine; it is not synonymous with the Chinese medical concept of blood vacuity. As a matter of fact, anemia's two main clinical manifestations, fatigue and shortness of breath upon activity, are both characteristic Chinese medical signs of qi vacuity, not blood vacuity. Contemporary Chinese medicine as taught and practiced in China bases its treatment on patterns, not diseases, particularly not modern Western diseases. Strictly speaking, modern diseases do not
exist in Chinese medicine. Rather, the signs and symptoms of each modern disease correlate to one or more traditional Chinese medical diseases. This is no different in Chinese hematology. For example, the Chinese medical disease categories for aplastic anemia are vacuity taxation (xu lao), bleeding condition (xue zhang), and blood vacuity (xue xu); the traditional disease categories for chronic leukemia are also vacuity taxation and bleeding condition and, in addition, concretions and conglomerations, accumulations and gatherings (zheng jia ji ju). Which traditional Chinese medical disease category is the correct one depends on the signs and symptoms presenting at the time of diagnosis. In the above examples, if bleeding is the main manifestation in either aplastic anemia or leukemia, then, despite the fact that these are different Western diseases, the Chinese medical disease would be bleeding condition (xue zhang) for both.

There is no mention of modern hematological diseases in ancient Chinese medical classics; however, this does not mean that Chinese medicine has not been confronted with hematological diseases. Elaborations on signs and symptoms of traditional diseases elucidate their similarity to modern hematological diseases. By explaining and treating traditional diseases resembling modern hematological diseases, Chinese medicine, over the past 2000 years, has accumulated a wealth of knowledge and experience in the treatment of these illnesses. Hence, the Chinese medical speciality of hematology is nothing other than a collection of and elaboration on the ancient medical explanations and treatments of traditional diseases presenting with signs and symptoms identical or very similar to the ones of modern hematological diseases.

This article clarifies the above statements by exemplifying the evolution from traditional concept to contemporary theory and treatment, tracing the development of the modern disease of leukemia throughout the Chinese dynasties. Preceding this, however, is a biomedical overview of leukemia.

**Western medical aetiology, pathogenesis, and treatment**

Leukemias can be divided into acute and chronic types. Acute leukemias are rapidly progressing and quickly fatal; without treatment, patients die within approximately two months. By contrast, chronic leukemias are much less aggressive than acute leukemias. Hence their symptoms, and therefore their Chinese disease classifications, pattern discrimination, and treatments, differ. For this reason, this article will focus on the contemporary Chinese medicine disease explanation and treatment of chronic leukemias; the biomedical discussion will therefore also be limited to the chronic type. The historical analysis, however, will not make this distinction.

Leukemias are malignant neoplasms of the hematopoietic (blood forming) tissue. The cause in humans is unidentified, although two viral associations have been made: one with the Epstein-Barr virus (which is the causative agent of infectious mononucleosis and a suspected cause of malignant lymphoma), and one with the human T-cell lymphotrophic virus (HTLV-1). Furthermore, exposure to ionizing radiation and certain chemicals (benzene and some antineoplastics) is associated with an increased risk of leukemia. Certain genetic defects (Down’s syndrome) and familial disorders (Fanconi’s anemia) are also predisposing factors to leukemia.

The malignant transformation in all leukemias appears to occur in a single cell with subsequent proliferation and clonal expansion. Once a cell has transformed into a leukemic cell, it tends to have longer cell cycles and shorter growth fractions than normal cells. Accumulation of leukemic cells defective in maturation and differentiation then leads to clonal growth advantage. Inhibitory factors produced by the defective (leukemic) cells or replacement of marrow space by leukemic cells may suppress normal hematopoiesis, with ensuing anemia, thrombocytopenia, and granulocytopenia. Organ infiltration by leukemic cells leads to enlargement of the liver, spleen, and lymph nodes. If the meninges are infiltrated, clinical features of increased intracranial pressure manifest. Two distinct
types of chronic leukemias are differentiated: chronic myelocytic leukemia (CML) and chronic lymphocytic leukemia (CLL).

CML constitutes about 20% of all leukemias in the West and occurs in either sex at any age; however, it is more common in the middle aged and elderly with the median age of onset at 50 years. Patients suffering from CML have pronounced granulocytosis, but anemia, thrombocytopenia and basophilia are also present. The CML clone is genetically unstable. With loss of differentiation and maturation capacity of the granulocytic precursor cells, accumulation of blast cells in medullary and extramedullary tissues occurs; this is termed blast crisis and terminates the chronic stable phase of CML in two thirds of patients, turning into acute leukemia. 

Symptoms of early CML may be subclinical and discovered only at a routine CBC (complete blood count). Insidious onset of such symptoms as fatigue, weakness, anorexia, weight loss, fever, night sweats, or a sense of abdominal fullness appear in other patients. Splenomegaly progresses from moderate to very severe throughout the stable phase of two to eight years (with a mean of three to four years). With progression of the disease, manifestations such as pallor (anemia), bleeding (thrombocytopenia or qualitative platelet defects), fever, and marked lymphadenopathy may appear. Chemotherapy and interferon-alpha is used in the treatment of CML. Good results have been obtained with bone marrow transplantation. 

CLL largely affects the B-cell lineage and is thus termed B-CLL. This type of leukemia is the most common one in Western countries and constitutes 30% of all leukemias. It is two to three times more common in men than in women and the average age of onset is 60 years. The cause of B-CLL is unknown. Lymphocyte accumulation begins in the lymph nodes and spreads to other lymphoid tissues such as the spleen and liver. Infiltration of the bone marrow and displacement of viable hemopoietic tissue leads to anemia, agranulocytopenia, and thrombocytopenia. Immunoregulatory problems render patients with CLL susceptible to autoimmune diseases such as rheumatoid arthritis, immunohemolytic anemia, thyroiditis, and vasculitis, as well as second and even third malignancies. Onset of CLL, similar to CML, is insidious and may manifest as asymptomatic adenopathy. Nonspecific complaints such as fatigue, anorexia, weight loss, dyspnea on exertion, and a sense of abdominal fullness from an enlarging spleen are common during the early stages. The course of disease is highly variable. The overall mean survival rate is six years, but in some patients, the disease progresses rapidly, leading to death in two to three years; contrarily, some patients remain asymptomatic for 10 to 20 years. Bacterial and other infections (i.e. viral and fungal infections) are common in advanced CLL. Therapy is not indicated for patients not manifesting with any symptoms. For symptomatic patients, treatment is supportive for presenting symptoms and antineoplastic treatment (irradiation, antineoplastic drugs) for the leukemia. However, treatment does not prolong survival and may be associated with significant side effects. The Merck Manual points out that “overtreatment is more dangerous than undertreatment.”

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5 As stated above, this portion of the article is an extract from my book on Chinese hematology. Furthermore, all source material for the Chinese medical treatments in that book come from mainland China. Since B-CLL is rare in China and other Asian countries, the treatment formulas below are tailored to CML. However, considering the similarity in symptomatology, B-CLL can be differentiated along the same patterns and thus similar medicinal prescriptions, with certain modifications, should prove to be helpful in treatment. Moreover, even though CLL is rare in China, one of the sources used for this work clearly states that chronic leukemia includes CLL. This confirms the above statement and it is safe to assume that the following differentiating patterns and treatments thereof are also indicated for CLL.

**Historical development**

Inherent to hematological diseases, referred to in Chinese as *xue ye bing*, blood diseases, is the concept of blood. Hence, any historical discussion of leukemia, which belongs to the modern speciality of *xue ye bing*, needs to begin with an examination of the concept of blood.

The earliest references to blood engenderment and function and its relationship to *qi* and the viscera and bowels stem from the Chinese medicine locus classicus, the *Huang Di Nei Jing* (The Yellow Emperor's Internal Classic), composed and compiled during the Han dynasty (206 BCE to 220 CE). In the *Ling Shu* (Spiritual Pivot), one of the two books of the *Nei Jing*, the chapter 'Deciding Qi' says: "The middle burner receives qi and fluids [which it] transforms and [turns] red; this is then called blood." In the chapter 'Channels and Vessels' it comments: "[At the] beginning of a person's life, essence develops first; when essence has become, the brain and marrow are engendered, bones are hardened, vessels are constructed ... [and hence,] blood and qi can move." Similarly, the *Su Wen* (Simple Questions) points out: "If bone and marrow is hard and secure, then qi and blood can both be formed." Furthermore, the chapter 'Great Treatise on the Five Movements' says: "The Kidneys engender bone and marrow." The combination of these statements explains the Kidneys' role, via essence marrow, in the construction (i.e. nourishment) of vessels and the engenderment of blood.

Moreover, the *Nei Jing* also says that the Heart governs all the body's blood vessels and is in charge of propelling the blood throughout the body, that the blood collects in the Liver when one lies down (i.e. sleeps), and that the Liver stores the blood. Therefore, besides the Spleen and Kidneys' role in blood engenderment, the Heart and Liver are the two other viscera closely involved in the physiology, and therefore pathology, of the blood.

The blood's chief function is the construction and nourishment of the entire body. This is clearly pointed out in the *Ling Shu* chapter 'Engendering and Becoming of the Five Viscera' which says: "The Liver receives blood and [one] can see, the feet receive blood and [one] can walk, the hands receive blood and [one] can grasp ..." All aspects of the body rely on nourishment by blood, exterior as well as interior, viscera as well as bowels.

Blood is the mother of qi; qi is the commander of blood. When qi moves, blood moves. When qi gathers, blood is engendered. A statement in the *Su Wen* 'Treatise on Heat' clarifies not only this close relationship between qi and blood but also confirms the above-stated importance of blood nourishment of all viscera and bowels: "When construction (ying) and defense (wei) do not move, then the five viscera are inhibited." Construction is rooted in yin-blood; defense is engendered from yang-qi. If qi and blood are not harmonious, they do not move and flow to nourish the viscera and protect the body from external evils; hence the viscera suffer detriment. Harmony between qi and blood, between yang and yin, is vital for the proper functioning of the body.

Besides outlining the engenderment and functions of blood, the *Nei Jing* also educates on general treatment strategies that guide the treatment of modern diseases in everyday clinical practice. Of particular importance in the treatment of leukemia are the two insights that i. treatment needs to precede the onset of disease, and that ii. the branch is treated in acute diseases and the root in chronic ones. In the *Su Wen* 'Treatise on Harmony and Spirit of the Four Qi' it says: "The greatest people [i.e. best doctors] treat not when there already exists a disease but treat when there is no disease [yet]." This may sound like exceedingly simple advice from 2000 years ago; however, in the treatment of leukemia and many other blood and non-blood diseases, early treatment when no or only very few symptoms manifest, is of great importance. Similarly important is the second *Su Wen* statement: "During acute diseases [one] treats the branch; during chronic diseases [one] treats the root." Taking this statement one step further, it also means that during chronic diseases with acute exacerbations or simultaneous acute and chronic diseases, one needs to address both the root and
Incrusted skin, also referred to as encrusted skin (jia cuo) is a technical term in Chinese medicine and stands for dry, rough, scaly, and hardened skin. It is usually observed in emaciated patients with abdominal fullness and inability to eat.

For example, the above-referenced hematology book by Dr. Sun (see footnote #2) advocates this formula for the treatment of myelofibrosis.

Also known as Liu Wan-su, lived from 1110-1200.
Re Lun, in turn, has proven of profound importance in the understanding and treatment of febrile diseases in general and the many externally contracted heat patterns manifesting in leukemia in particular.

The second of the four great masters of the Jin-Yuan period was Zhang Zi-he\(^1\), proponent of the “school of attacking and precipitating”. The use of attacking and precipitation (xia; draining) finds application in diseases or patterns in which toxic evils have accumulated but construction and defense still flourish, or where concretions and conglomerations have formed in the absence of marked vacuity. Again, many of the modern blood diseases fit this category, most notably diseases marked by splenomegaly or acute febrile attacks in the absence of severe vacuities. One of the attacking and precipitating medicinals re-discovered and emphasized by Zhang Zi-he for its special value in the treatment of hematological diseases is Da Huang (Rhizoma Rhei).\(^1\) Da Huang’s attacking and precipitating function and its ability to quicken and cool the blood and hence stop bleeding make it useful and effective in the treatment of a) bleeding due to frenetic movement of hot blood and b) external toxic heat evils assailing leukemic patients due to their weak defense function, in turn due to either a congenital Kidney insufficiency or an acquired vacuity of qi and blood.

The last of the four great masters of the Jin-Yuan period was Zhu Dan-xi\(^1\)\(^2\). He was the founder of the “school of enriching yin” and developed the theory of the six depressions, i.e. qi, blood, food, phlegm, dampness, and fire depression. In his masterwork Dan Xi Xin Fa (Dan Xi’s Heart Methods), he listed the formula Yue Ju Wan (Overcome Depression Pill), designed to free all types of depressions. This formula contains one medicinal for each of the six depressions\(^1\)\(^3\) and hence can be regarded as the precursor of any and all later formulas addressing the various depressions. Inherent to Zhu Dan-xi’s theory of the six depressions is the concept of transformative heat, since all depressions block the free flow of the inherently warm qi and thereby engender heat. Hence, any depression may transform to heat and fire and give rise to heat symptoms, such as heat effusions (i.e. fevers). Zhu Dan-xi’s theory on depression and transformative heat, and hence depression opening medicinals to treat heat symptoms, is effectively applied in contemporary Chinese hematology to treat the lingering low-grade fevers common in leukemia patients. In Chinese medicine, these fevers are not due to external evils (for which the common exterior-resolving, heat-clearing, and toxin-resolving medicinals work), nor to such patterns as yin and blood vacuity and even qi vacuity) but rather are primarily due to internally transformed heat (for example damp heat, liver heat, phlegm heat and all other depressions).

Zhu Dan-xi, undoubtedly one of the greatest of the four great masters, developed scores of other formulas that are now invaluable in the treatment of hematological diseases. For example, Dang Gui

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\(^1\) Also known as Zhang Zhong-zheng, lived from 1156-1228.

\(^2\) Also called Zhu Zheng-heng, lived from 1281 to 1358

\(^3\) Note that Rhizoma Atractylodis (Cang Zhu) addresses the depression of phlegm and dampness.
Long Hui Wan (Dang Gui and Aloe Pill), a formula that also first appeared in Dan Xi X in Fa, has been shown to be effective in the treatment of certain patterns of chronic granulocytic leukemia. Of course, the above are only examples of medicinal formulas shown, through clinical tests, to effectively treat certain symptoms or patterns of certain modern diseases. However, as clearly stated in the introduction, contemporary Chinese medicine bases its treatment on pattern discrimination and not on disease discrimination, and formulas may vary widely among one and the same modern disease as they must fit the patient's presentation, not the disease name. Still, most modern formulas are based, at least in part, on ancient prescriptions; hence, the entire score of traditional formulas, most of them developed prior to the Jin-Yuan period, finds application in modern hematology.

As briefly referred to earlier when discussing Zhang Zhong-jing’s first mention of taxation during the Han dynasty, this is the most common traditional disease category vis a vis leukemia and other hematological diseases of the blood characterised by a qualitative deficiency of at least one of the formed elements of the blood; hence, its discussion is of profound importance in the development of Chinese hematology. The Song dynasty (960-1279) work Sheng Ji Zong Lu (Collection of Sagely Aid) points out that taxation can be divided into different types: cold taxation\(^{14}\), heat taxation, and acute taxation. The description of heat taxation says: "[In the] heat taxation pattern, the Heart spirit [is] vexed and agitated, the face red, the head painful, the eyes dry, and the lips scorched; [there is] vigorous fever of the body, vexing thirst which will not stop, sores on the tongue and mouth, no flavour for food and drink, achy and sore limbs and joints, much lying with little raising, night sweats, and emaciation [getting worse] day by day." About acute taxation, it says: "[As for] acute taxation illness, this disorder is very similar to heat taxation but there is a difference." The difference between acute and heat taxation is that acute taxation transforms acutely and undergoes rapid and vigorous transformations of its symptoms of fever, night sweats, oral cavity sores, bone pain, and progressive emaciation. The descriptions of both acute and heat taxation, when compared to the symptomatology of acute leukemia, accurately describe its manifestations; hence this Song dynasty quote seems to be the earliest record discussing, in quite some detail, the symptoms of two of the common traditional disease categories corresponding to acute leukemia, warm and acute taxation.

In the Ming dynasty (1368-1644), Wu You-xing developed the Wen Yi Lun (On Warm Epidemics); in the Qing dynasty (1644-1911), Ye Tian-shi expanded on the Wen Yi Lun and, as seen above, Liu Wan-su’s school of cooling, to bring forth the Wen Re Lun (On Warm Diseases). One idea which was first referred to in the Su Wen but developed further by the warm disease school is the concept of latent evils\(^{15}\). Up to this point in Chinese medical history, external evils attacked the external defensive division and from there penetrated towards the interior. Latent evils, however, act differently; the theory postulates that they a) effuse long after they have been contracted, and b) move to the interior and effuse from there. Hence, latent evils attack through the exterior, most commonly in the late fall and winter season, but do not elicit an external disease at that time; rather, they move to the interior of the body and become deep-lying evils. Then, in the spring, the deep-lying evil is activated by either the physiologic effusion of yang qi or by the contraction of a new exterior evil. Because the evil resides in the inside, it effuses at the qi or even construction or blood level. In case of activation by an exterior evil, the resulting disease is characterized by a latent internal evil in the qi, construction, or blood level consuming the body from the inside and an external evil causing a defense or qi level pattern. In case of evil activation through physiologic yang qi effusion,

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\(^{14}\) The Summary on Sagely Aid's discussion of cold taxation is now regarded as the first detailed reference in the Chinese medical literature to the modern disease of megaloblastic anemia.

\(^{15}\) The Su Wen' statement says: "Damage by cold in the winter necessarily engenders warm diseases in the spring."
the evil consumes the body internally without the presence of an external disease. Furthermore, diseases caused by latent evils tend to be of acute and severe nature. The theory of latent evils finds direct application in the understanding and treatment of acute leukemia; its effusion, mechanism, progression, and prognosis all accurately describe the pathology at hand in acute leukemia. Therefore, the latent evil theory provides both a model for the explanation of the disease mechanism and an outline of the treatment of the modern Western disease of acute leukemia.

Also in the Ming dynasty, Qi Shi, author of the Li Xu Yuan Jian (The Source Mirror of Rectifying Vacuity), gave a detailed account of the condition of vacuity. He outlined six causes of vacuity: earlier heaven insufficiency, later heaven insufficiency, pox papules and other post-disease disorders, external contraction of evils, circumstantial causes, and doctor-induced (i.e. iatrogenesis). The Li Xu Yuan Jian further says: "The treatment of vacuity has three roots: Lung, Spleen and Kidneys. The Lungs are the heaven of the five viscera, the Spleen is the mother of all the limbs and bones, and the Kidneys are the body's source." Maybe less so than the concept of latent evils, Qi Shi's work still represents an important piece in the development of the current Chinese medical theory of leukemia. All leukemia patterns have vacuity at their root. Hence, Qi Shi clarified from whence such vacuity issues and thereby guided later generations in the treatment of this condition. In contemporary China, modern leukemia formulas clearly reflect the clinical importance of the treatment of the three roots of vacuity.

Late in the Qing dynasty, about 1800 years after the first commentaries on blood production and blood function in the Nei Jing, Tang Rong-chuan authored the Xue Zheng Lun (On Bleeding Conditions). This work presented, for the first time in the long history of Chinese medicine, a comprehensive discussion of the mechanisms and treatments of bleeding conditions - one of the most common leukemic signs.

Master Tong proposed four basic mechanisms for bleeding: obstruction and counterflow of qi; Spleen loss of containment; fire and heat accumulation and exuberance; and static blood obstructing the network vessels. Furthermore, Master Tong pointed out that all blood that leaves the vessels will become static and thus aggravate bleeding by internally obstructing the network vessels. The Xue Zheng Lun states: "[When] static blood resides [inside], then new blood cannot move quietly and be well; eventually, it moves frenetically and [there is] spitting and seeping [of blood]!"

Applying this concept of residual stasis in the treatment of bleeding, Master Tong states: "... in all bleeding, the elimination of stasis is important." Accordingly, blood quickening medicinals are commonly included in prescriptions addressing bleeding. In terms of leukemia, the most obvious clinical example for the application of this theoretical concept is the leukemia complication of disseminated intravascular coagulation (DIC): although the main manifestation of acute DIC is bleeding, its treatment formulas contain a large number of blood quickening medicinals.

Master Tong also proposed the "four big [i.e. main] methods" for treating bleeding. They are stopping bleeding, dispersing stasis, quieting the blood, and supplementing the blood. The combination of these four treatments was referred to as harmonisation and Master Tong pointed out that "harmonisation is the number one root [treatment] method for bleeding conditions." Only after carrying out these four steps are the vessels and blood harmonised. Furthermore, the Xue Zheng Lun teaches: "Mainly precipitate [xia; drain]; harmonisation is suitable; fear sweating; [and it is] contraindicated to eject [tu; cause emesis]." Clarifying his opinion to "mainly precipitate," when

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16 The "doctor-induced" cause of vacuity mainly refers to vacuity due to the erroneous prescription of medicinals, such as emetics, purgative and other rightous qi draining medicinals.
addressing the treatment of different types of bleeding, Master Tong said of the treatment of
frenetic movement of hot blood, the most common type of bleeding in acute leukemia: "[As for a]
bleeding condition due to greatly exuberant fire qi, precipitation is correct to protect yin; attacking is
as good as supplementing."

Wu Cheng, another famous physician who lived during the Qing dynasty, developed the concept of
external detriment pattern (wai sun zheng). External detriment pattern described the condition of a
contraction of an external evil while suffering from simultaneous detriment internally; accordingly,
the disease symptoms reflect the mix of external repletion and internal vacuity. On the one hand
there is fever, aversion to cold, cough, and headache, and on the other hand there is muscle
dessication, spirit overwork, exhaustion, no appetite, fearful throbbing, insomnia, and spirit
disquietude. Furthermore, these conditions tend to last for prolonged periods of time. The treatment
of this vacuity-repletion mixture is based on the Su Wen statement quoted above: if acute, treat the
branch, if chronic, treat the root. Acute is yang, chronic is yin; similarly, external is yang, internal is
yin. Hence, treating the internal detriment is the root treatment and treating the external evil
contraction is the branch treatment. Wu Cheng extended and explained this theory to come up with
the following guiding treatment principles: during early external contractions with evil qi just
beginning to enter and the body's qi and blood not yet greatly depleted, use the resolution (jie) and
drawing\textsuperscript{17} methods. For later stages of the disease, with lingering evil heat and dispersed and
exhausted source qi, use the supplementation and drawing methods.

These guiding treatment principles find ample application in the treatment of leukemia where there
is almost always a root vacuity and branch repletion. To repeat a sentence from the leukemia disease
mechanism section of my book on Chinese hematology: "Because of vacuity, there is disease, and
because of disease, there is vacuity."\textsuperscript{18}

With the end of the Qing dynasty, China entered the present chapter of its history, and Chinese
medicine became, after overcoming strong governmental opposition and after being "saved" by
General Mao, a government funded system of medicine. This means that there are modern
universities teaching Chinese medicine and that there are standards of care within Chinese medicine
which are set by congresses attended by some of the best Chinese practitioners. All-China symposia
are convened for different specialities, including the speciality of hematology, to set parameters and
standards for diseases, patterns for these diseases, and the treatment of these patterns. Regardless of
its modern nature, however, the discussions on the explanation and treatment of modern diseases
and pattern discrimination are mostly based on Chinese medicine's rich history. Ancient sources are
analysed to extract conclusions about modern diseases. These conclusions are then applied in clinical
practice. A point in case is the following discussion of the contemporary Chinese medical theory of
leukemia.

**Contemporary Chinese medical disease explanation and treatment**

The ensuing discussion is an abbreviated extract from the leukemia chapter of my book on the
Chinese medical treatment for hematological diseases. It details the contemporary theory on the
disease causes, disease mechanisms, and treatments based on pattern discrimination for chronic
leukemia. This section (as well as my book) is based on personal studies with Dr. Sun, chief editor of
China's first blood diseases book and department head of the hematology ward at the Heilongjiang

\textsuperscript{17} Drawing is a term used in connection with toxins and refers to the treatment of drawing toxins (i.e. external evils) out of the body.

\textsuperscript{18} *A Handbook of Chinese Hematology*, p. 156.
University Hospital in Harbin, and the contemporary Chinese medical literature. The two patterns of chronic leukemia below differ from more standard discussions of leukemia presented, for example, in Dr. Sun’s book. This difference is mainly to be explained by the two facts that i. all information for my book (and hence the following section) is based on recent clinical reports on the treatment of leukemia published in the Chinese medical literature in China and is therefore very clinical in nature, and ii. no standard textbook of Chinese hematology was available at the time of the writing of my book. However, just as the signs and symptoms of leukemia patients are different for different individuals, their patterns vary; hence, the presentation below is a guiding compass to a) understand the disease mechanisms at work and b) serve as a starting point for formula selection and modification.

Regardless of textbook discussions, contemporary Chinese medicine as taught and practised in modern China bases its treatment on pattern discrimination. This means that one needs to first analyse and then treat the patient’s presenting condition according to the logic of Chinese medicine - a logic that is the collection of ideas and experiences of great physicians and even greater scholars who, over the past 2000 years, developed the many Chinese medical theories as a consequence of having been confronted with diseases no different from diseases today.

In Chinese medicine, chronic leukemia (including CML and CLL), is classified according to presenting symptoms and signs. If the main manifestations are fatigue, lack of strength, shortness of breath, spontaneous and night sweating, torpid intake, and emaciation, this disease is classified as vacuity taxation (xu lao). If there is bleeding, it is classified as a bleeding pattern (xue zheng). If the enlargement of the spleen and liver are very pronounced, it falls into the category of concretions and conglomerations, accumulations and gatherings (zheng jia ji ju).

Causes leading to the engenderment of chronic leukemia include depletion of the right qi, emotional repression and depression, and unregulated food and drink. In children, it is commonly related to earlier heaven insufficiency. Repression and depression of emotions can lead to qi stagnation and blood stasis. Unregulated food and drink damages the Spleen and Stomach leading to the accumulation of phlegm and turbidity. If right qi is vacuous and depleted, nourishing and warming of the five viscera and six bowels loses strength and the qi of these viscera becomes weak. Therefore, protection against invading disease evils is weak and insufficient. Toxic evils assail the spleen and liver are very pronounced, it falls into the category of concretions and conglomerations, accumulations and gatherings (zheng jia ji ju).

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During the early stages of disease, the righteous is only slightly vacuous and repletion of evil qi is not yet severe. Symptoms at this stage include an accumulation lump (i.e. splenomegaly) which is still relatively small and soft. Other signs are often not yet present or manifest only mildly. The middle stages are characterised by gradual debilitation of right qi with increasing strength of evil qi. Symptoms present as an accumulation lump which has increased in size and become harder, fatigue, lack of strength, low-grade fever, copious sweating, the effusion of macules, spontaneous blood ejections, and emaciation. During the late stages, righteous qi has been depleted and is greatly vacuous and evil qi is fiercely replete. Manifestations include a large accumulation lump, a withered yellow complexion, and an emaciated bodily form. Pain in the limbs and body, high fever, and bleeding may be present.

The bleeding manifestations in the middle and late stages are due to either of three reasons: if qi is vacuous, evil toxins invade, progress to the blood aspect, and cause frenetic movement of hot blood; on the other hand, vacuous qi may not contain the blood. Bleeding caused by either heat or qi
vacuity may precipitate a third bleeding mechanism; bleeding into the tissues blocks and obstructs the blood and network vessels. Such obstruction by malign blood backs up the blood flow and again leads to blood spilling outside the vessels. Furthermore, obstruction by static blood leads to the pain in the limbs and body which manifests in the late stages of this disease.

Treatment follows pattern differentiation. During the early stages, emphasis should be put on attacking without much supplementation. In the middle stages, simultaneous supplementation and attacking is appropriate. In the late stages, the focus is on supplementation of vacuity accompanied by dispelling of the evil.

Below, chronic leukemia is broken down into two patterns. Pattern number one is characteristic of the early and middle stages; pattern number two includes middle and late stages. The practitioner must differentiate the preponderance of repletion and vacuity and select and modify the proposed formulas accordingly.

Treatment based on pattern discrimination

1. Essence debilitation and marrow vacuity with static blood concretions and conglomerations pattern

Main symptoms
Vacuous form and weak body, lack of strength, emaciation, irregular low-grade fever, afternoon fever, fever in the hands and feet, reduced appetite, torpid intake, abdominal fullness and distension, scrofula of the neck and nape, swelling of the liver and spleen, sallow white facial complexion, possibly mouth and tongue sores, a red tongue with a scanty coating, and a rapid and fine (xi) pulse.

Treatment principles
Boost the essence and replenish the marrow, transform stasis and disperse conglomerations.

Formulas
Gui Di Bie Jia Tang (Testudinis, Rehmannia & Amyda Decoction)
Shu Di Huang (Radix Rehmanniae Glutinosae Conquitae) 12g
He Shou Wu (Radix Polygoni Multiflori) 9g
Nu Zhen Zi (Fructus Ligustri Lucidi) 9g
Gui Ban (Plastrum Testudinis) 9g
Bie Jia (Carapax Amydae Sinensis) 9g
E Zhu (Rhizoma Curcumae Zedoariae) 9g
San Leng (Rhizoma Sparganii) 9g
Huang Qi (Radix Astragali) 30g
Dan Shen (Radix Salviae Miltiorrhizae) 30g
Shui Zhi (Hirudo seu Whitmaniae) 3g
Xia Ku Cao (Spica Prunellae Vulgaris) 20g
Fan Bai Cao (Herba Potentilla Discolor) 30g
Shen Qu (Massa Fermentata) 12g
Gan Cao (Radix Glycyrrhizae Uralensis) 9g

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19 Herba Potentilla Discolor (Fan Bai Cao) is sweet, bitter and neutral in nature and has the function to clear heat and resolve toxins, dissipate bindings and disperse swellings, and stop bleeding; together with Xia Ku Cao, it inhibits the disease evil and resolves the scrofulous phlegm kernels, thereby reducing the swelling of the lymph nodes. Recommended dosage is 9 to 15 grams.
Formula explanation
Shu Di Huang, He Shou Wu, Nu Zhen Zi, Gui Ban, and Bie Jia nourish blood, enrich yin, boost the essence, and replenish the marrow. E Zhu, San Leng, Dan Shen, and Shui Zhi quicken blood and break stasis. Xia Ku Cao and Fan Bai Cao scatter nodulation and disperse swelling. They are assisted in this function by the hardness-softening medicinals Gui Ban and Bie Jia. Fan Bai Cao also cools the blood and stops bleeding secondary to frenetic movement of hot blood. Huang Qi fortifies the Spleen and boosts qi; furthermore, it stops bleeding secondary to qi vacuity. Shen Qu disperses accumulations in the middle burner. Gan Cao aids Huang Qi in boosting qi and supplementing the Spleen and also harmonises all the ingredients in this prescription.

Modifications
! For accompanying infections with high fevers, add Da Qing Ye (Folium Daqingye), Lian Qiao (Fructus Forsythiae Suspensae) and Jin Yin Hua (Flos Lonicerae Japonicae).
! For an elevated platelet count, add Tu Bie Chong (Eupolyphagae seu Opistoplatiae) and Di Long (Lumbricus).
! For decreased platelets, add Sheng Pu Huang (Pollen Typhae), Xian He Cao (Herba Agrimoniae Pilosae) and Qian Cao Gen (Radix Rubiae Cordifoliae).

**Man Xing Sui Xing Bai Xue Bing Fang** (Chronic Marrow Leukemia Formula)
Huang Qi (Radix Astragali) 24g
Dang Gui (Radicis Caput Angelica Sinensis) 6g
Mu Dan Pi (Cortex Moutan Radicis) 6g
Su Mu (Lignum Sappan) 6g
Dang Shen (Radix Codonopsis Pilosulae) 15g
Gui Ban (Plastrum Testudinis) 15g
Bie Jia (Carapax Amydæ Sinensis) 15g
Shi Jue Ming (Concha Haliotidis) 15g
Di Gu Pi (Cortex Lycii Chinensis Radicis) 9g
Gan Di Huang (dried Radix Rehmanniae Glutinosae) 12g
E Jiao (Gelatinum Asini) 12g
Qiu Shi (Hominis Urinae Depositum Praeparatum) 30g

Formula explanation
Gan Di Huang, E Jiao, Gui Ban, Bie Jia and Qiu Shi all enrich yin and engender essence. Huang Qi and Dang Shen fortify the Spleen and boost the qi. Dang Gui, Gan Di Huang, and E Jiao nourish the blood. Dang Gui also quickens the blood and assists Su Mu and Dan Pi in transforming stasis. The combination of Gui Ban and Bie Jia softens the hard and scatters nodulation. Mu Dan Pi in combination with Di Gu Pi clears vacuity heat. Shi Jue Ming levels the Liver and clears heat from the Liver channel.

**Xia Yu Xue Tang** (Static Blood Precipitation Decoction)
In case of signs of marked blood stasis or if the disease has been protracted and does not respond to treatment, one can add the following formula: Xia Yu Xue Tang:
Da Huang (Rhizoma Rhei) 12g
Tao Ren (Semen Persicae) 5g
Zhe Chong (Eupolyphagae seu Opistoplatiae) 5 pieces
These three ingredients are ground into powder and made into 4 pills with honey. One pill is then boiled in 200ml of rice-wine [or brandy]. Take 50ml of that wine at one time.
Formula explanation
Da Huang, Tao Ren, and Zhe Chong all quicken blood and transform stasis. Da Huang also cools the blood, stops bleeding, and frees the bowels. Tao Ren also moistens the intestine and frees the bowels, and Zhe Chong is the most powerful of all to quicken blood and break stasis.

2. Qi and blood consumption and detriment with accumulation of exuberant evil toxins pattern

Main symptoms
Bright white facial complexion, shortness of breath, dizziness, palpitations, spontaneous blood ejection into skin and membranes, progressive emaciation of the entire body, spontaneous sweating, joint aches, continuously increasing swelling of the lymph nodes, spleen, and liver, oral cavity ulcerations, fever, a red tongue with a yellow coating, and a bowstring, fine and rapid pulse. This corresponds to a late stage phase or even blast crisis phase of chronic leukemia.

Treatment principles
Clear heat and resolve toxins, boost the qi to engender the blood.

Formulas

Qing Re Yi Qi Tang (Clear Heat & Boost Qi Decoction)
Ban Lan Gen (Radix Isatidis seu Baphicacanthi) 30g
Fan Bai Cao (Herba Potentilla Dicolor) 30g
Qi Ye Yi Zhi Hua (Rhizoma Paris) 10g
Xia Ku Cao (Spica Prunellae Vulgaris) 20g
Huang Qi (Radix Astragali) 30g
Huang Jing (Rhizoma Polygonati) 9g
Dan Shen (Radix Salviae Miltiorrhizae) 30g
Qian Cao Gen (Radix Rubiae Cordifoliae) 9g
Ji Xue Teng (Radix et Caulis Jixueteng) 20g
Gan Cao (Radix Glycyrrhizae Uralensis) 9g

Formula explanation
Ban Lan Gen, Fan Bai Cao, and Qi Ye Yi Zhi Hua clear heat and resolve toxins. Fan Bai Cao and Xia Ku Cao scatter nodulation and disperse swelling. Huang Qi and Huang Jing fortify the Spleen and boost qi. Huang Jing also enriches yin and hence protects against damage of yin. Ji Xue Teng and Qian Cao Gen quicken blood and transform stasis. Qian Cao Gen, besides quickening the blood, also cools the blood and stops bleeding. It is assisted in this function by Fan Bai Cao. Huang Qi stops bleeding due to non-containment by the Spleen. Gan Cao fortifies the middle, helps to resolve toxins, and harmonises all the medicinals in this prescription.

Modifications
! For vexation and agitation, add Gou Teng (Ramulus Uncariae Cum Uncis), Chan Tui (Periostracum Cicadae) and Di Long (Lumbricus).
! For vigorous and non-abating fever accompanied by spirit clouding and delirious speech, add An Gong Niu Huang Wan (Peaceful Palace Bovine Bezoar Pills).
Herba Euphorbiae Humifusae (Di Jin Cao) is acrid and neutral in nature. It has the function to clear heat, resolve toxins, quicken blood, stop bleeding, disinhibit dampness, and free breast milk. Recommended dosage is 3 to 6 grams.

Herba Senecionis Integrifolii (Gou She Cao) is bitter, cold, slightly toxic in nature. It has the function to clear heat, disinhibit water, and kill worms (chong). Recommended dosage is 9 to 15 grams.

Herba Solani Lyrati (Bai Mao Teng) is sweet and cold in nature. It has the function of clearing heat, resolving toxins, disinhibiting urination, and expelling wind.

For markedly decreased platelets with severe bleeding, add Xian He Cao (Herba Agrimoniae Pilosae), E Jiao (Gelatinum Asini), Di Jin Cao (Herba Euphorbiae Humifusae), and San Qi (Radix Pseudoginseng).

Qing Gan Hua Yu Fang (Liver-Clearing and Stasis-Transforming Formula)
Qing Hao (Herba Artemisiae Apiaceae) 12g
Zhi Zi (Fructus Gardeniae Jasminoidis) 12g
Di Gu Pi (Cortex Lycii Chinensis Radicis) 15g
Chi Shao (Radix Paeoniae Rubrae) 15g
Mu Dan Pi (Cortex Moutan Radicis) 15g
Gou She Cao (Herba Senecionis Integrifolii) 15g
E Zhu (Rhizoma Curcumae Zedoariae) 15g
San Leng (Rhizoma Sparganii) 15g
Bai Mao Teng (Herba Solani Lyrati) 15g
Dan Shen (Radix Salviae Miltiorrhizae) 15g
Yi Mu Cao (Herba Leonuri Heterophylli) 30g
Bai Hua She She Cao (Herba Oldenlandiae Diffusae) 30g

Formula explanation
Qing Hao, Gou She Cao, Bai Mao Teng, Bai Hua She She Cao and Zhi Zi clear heat and resolve toxins. Qing Hao also outthrusts vacuity heat and Bai Hua She She Cao also dries dampness and clears damp heat. Mu Dan Pi and Di Gu Pi clear vacuity heat. Mu Dan Pi, Chi Shao, San Leng, E Zhu, Dan Shen, and Yi Mu Cao quicken blood and transform stasis. San Leng and E Zhu are especially harsh blood breaking medicinals that are indicated in splenomegaly. The combination of Chi Shao and Mu Dan Pi clears heat specifically from the Liver. Hence this formula is indicated in patients with a particularly bowstring (xian) pulse and rib-side distension and pain.

Conclusion
Hematology is a specialty in Chinese medicine that was developed relatively recently. As pointed out in the introduction, the first comprehensive textbook on hematological diseases was published only last year. This is not to say, however, that Chinese medicine has not been treating these diseases for the past 2000 years. As I have demonstrated above, the ancient Chinese medical literature is rich with insights into disease mechanisms, references to symptom constellations, and treatment principles and strategies applicable to modern diseases. Leukemia is a modern Western disease. Still, its disease causes and mechanisms and its treatment strategies are clearly outlined in the Chinese medical literature dating anywhere from the Han to the Qing dynasty.

Contemporary Chinese medicine bases its theory and practice on ancient classics, most notably the Nei Jing, Nan Jing (Classic of Difficulties), Shang Han Lun, Jing Gui Yao Lue, Shen Nong Ben Cao and

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20. *Herba Euphorbiae Humifusae (Di Jin Cao)* is acrid and neutral in nature. It has the function to clear heat, resolve toxins, quicken blood, stop bleeding, disinhibit dampness, and free breast milk. Recommended dosage is 3 to 6 grams.

21. *Herba Senecionis Integrifolii (Gou She Cao)* is bitter, cold, slightly toxic in nature. It has the function to clear heat, disinhibit water, and kill worms (chong). Recommended dosage is 9 to 15 grams.

22. *Herba Solani Lyrati (Bai Mao Teng)* is sweet and cold in nature. It has the function of clearing heat, resolving toxins, disinhibiting urination, and expelling wind.
Wen Re Lun. Books such as Bob Flaws' Statements of Facts, a collection of some of the most fundamental statements from our medicine's classics, clearly elucidate the theoretical and clinical richness found in the correct interpretation of such basic Chinese medical facts. Temptation is often large, especially for Western-minded Chinese practitioners, to incorporate pharmaceutical research and biomedical facts into the Chinese medical reasoning. However, this often confuses the clear treatment strategies our medical ancestors have provided us with and thereby may make Chinese medicine less effective\textsuperscript{23}. As practitioners of Chinese medicine, we must analyse our patients through a Chinese medical lens - a lens that incorporates the four techniques of examination and was employed in 19th century China; this means that we should discriminate a Chinese medical pattern without relying on x-rays, biomedical lab reports, and MRI's. The Western and Chinese medical systems rely on different paradigms of health. Analysis and treatment strategies need to derive from one and the same system if the desired effects are to be satisfactory.

Of course, I am in no way implying that we must shut our ears and eyes to Western medicine. Western medicine has great merits; for example, lab reports can be of important value in tracking treatment results. Furthermore, they can indicate if a patient's condition is deteriorating, possibly despite Chinese medical treatment, and therefore requires a more powerful intervention, such as surgery or some of the more dramatic therapies of modern medicine (chemotherapy and radiation). However, incorporating biomedical treatments in the overall treatment strategy and utilising modern laboratory monitoring to track the progression of the disease is different from treating diseases on the basis of biomedical information. As Chinese medical practitioners, we need to focus on treating Chinese disease categories and their patterns; in the case of leukemia, this means treating vacuity taxation, bleeding condition, or conglomerations and concretions and their associated patterns. We should never attempt to treat the biomedical diseases itself. Even though a medicinal is known to possess certain pharmacologically researched properties which address a modern Western disease pathology, this does not make this particular medicinal the ideal one for treatment if it is not suitable for the presenting pattern\textsuperscript{24}. Basing treatment on pattern discrimination ensures our adherence to what our medicine has a 2000 year old history of employing and what is the standard of care in modern China.

Our medicine's basic concepts are ancient in origin. However, treatment based on these ancient facts and their subsequent developments are applicable to modern diseases. This is because modern diseases are only modern in name and biomedical classification, in nosology, but not in symptomatology, and because Chinese medicine, over the course of its not less than 2000 year long developmental phase, has evolved complex and accurate theoretical foundations to explain and treat, with better and worse results, all diseases.

**Glossary of biomedical terms**

- **Adenopathy**: swelling or morbid enlargement of the lymph nodes.

\textsuperscript{23} For an interesting discussion of a clinical example of this statement, readers are referred to Charles Chace's article *Bitter Realities: Applying Wenbing Principles in Acute Respiratory Tract Infections*. (Journal of Chinese Medicine, #63, June 2000)

\textsuperscript{24} Interested readers are referred to an example Heiner Fruehauf writes about in his article *Chinese Medicine in Crisis*. In an incident he witnessed at the Chengdu College of TCM in 1990, the use of pharmacologically proven contraction-stimulating medicinals had a much poorer effect than a medicinal prescription by a *lao yi sheng* (i.e. old and experienced doctor) in bringing about swift delivery in first-time mothers. (Journal of Chinese Medicine, #61, October 1999, p.11-13).
Agranulocytopenia: an acute condition characterised by pronounced leukopenia with great reduction in the number of polymorphonuclear leukocytes (frequently less than 500 granulocytes per mm$^3$); infected ulcers are likely to develop in the throat, intestinal tract, and other mucous membranes, as well as in the skin.

Basophilia: a condition in which basophilic erythrocytes are found in circulating blood.

Granulocytopenia: less than the normal number of granular leukocytes in the blood.

Granulocytosis: a condition characterized by more than the normal number of granulocytes in the circulating blood or in the tissues.

Lymphadenopathy: Any disease process affecting a lymph node or lymph nodes.

Myelofibrosis: fibrosis of the bone marrow, especially generalized, associated with myeloid metaplasia of the spleen and other organs, leukoerythroblastic anemia, and thrombocytopenia, although the bone marrow often contains many megakaryocytes.

Neoplasm: an abnormal tissue that grows by cellular proliferation more rapidly than normal and continues to grow after the stimuli that initiated the new growth cease.

Polythemia vera: a chronic form of polycythemia of unknown cause; characterized by bone marrow hyperplasia, an increase in blood volume as well as in the number of red cells, redness or cyanosis of the skin, and splenomegaly.

Thrombocytopenia: a condition in which there is an abnormally small number of platelets in the circulating blood.

**Footnotes**

1 The primary source for this article is a paper sent to me by my Chinese hematology teacher, Dr. Sun Wei-zheng of Harbin, China. Unfortunately, no bibliographical data was provided for the source of that paper, and although I have been trying to find out this information, I have, so far, had no luck. Therefore, I offer to provide any interested reader a copy of this article (in Chinese).

2 *Zhong Yi Xue Ye Bing Xue* (Theory of Chinese Medical Hematology), Sun Wei-zheng, ed., National Chinese Medicine Science and Technology Publishing House, Beijing, 2000. Dr. Sun’s book represents the first comprehensive Chinese hematology book available in China. This does not mean, however, that treatment manuals of hematological diseases did not exist previously. The main source upon which most articles and departments base their differentiation and treatment of hematological diseases are the clinical standards put forth by the all-China congresses and symposia held for the individual specialties, including Chinese hematology. It is these congresses and symposia, headed by some of the foremost practitioners of Chinese medicine in China, that define diagnostic criteria and treatment standards which then represent the Chinese medical standards of care all across China.


5 As stated above, this portion of the article is an extract from my book on Chinese hematology. Furthermore, all source material for the Chinese medical treatments in that book come from mainland China. Since B-CLL is rare in China and other Asian countries, the treatment formulas
below are tailored to CML. However, considering the similarity in symptomatology, B-CLL can be differentiated along the same patterns and thus similar medicinal prescriptions, with certain modifications, should prove to be helpful in treatment. Moreover, even though CLL is rare in China, one of the sources used for this work clearly states that chronic leukemia includes CLL. This confirms the above statement and it is safe to assume that the following differentiating patterns and treatments thereof are also indicated for CLL.


7 Incrusted skin, also referred to as encrusted skin (jia cuo) is a technical term in Chinese medicine and stands for dry, rough, scaly, and hardened skin. It is usually observed in emaciated patients with abdominal fullness and inability to eat.

8 For example, the above-referenced hematology book by Dr. Sun (see footnote #2) advocates this formula for the treatment of myelofibrosis.

9 Also known as Liu Wan-su, lived from 1110-1200.

10 Also known as Zhang Zhong-zheng, lived from 1156-1228.

11 Da Huang (Rhizoma Rhei) was already discussed in the Shen Nong Ben Cao Jing (The Divine Farmer's Materia Medica), one of the three foundation books of Chinese medicine. In the section 'Herbs: Inferior Class' it says of Da Huang: "[It] is bitter, cold and toxic. It mainly precipitates blood stasis, blood block, and cold and heat." The Shen Nong Ben Cao does not yet clearly state that this medicinal clears blood heat and stops bleeding. However, the translator's footnote points out that this "is an indispensible medicinal for fire depressed in the blood..." (Shen Nong Ben Cao (The Divine Farmer's Materia Medica), Yang Shou-zhong, trans., Blue Poppy Press, Boulder, CO, 1997, p.69)

12 Also called Zhu Zheng-heng, lived from 1281 to 1358

13 Note that Cang Zhu (Rhizoma Atractyloides) addresses the depression of both phlegm and dampness.

14 The Summary on Sagely Aid's discussion of cold taxation is now regarded as the first detailed reference in the Chinese medical literature to the modern disease of megaloblastic anemia.

15 The Su Wen' statement says: "Damage by cold in the winter necessarily engenders warm diseases in the spring."

16 The "doctor-induced" cause of vacuity mainly refers to vacuity due to the erroneous prescription of medicinals, such as emetics, purgative and other righteous qi draining medicinals.

17 Drawing is a term used in connection with toxins and refers to the treatment of drawing toxins (i.e. external evils) out of the body.

18 A Handbook of Chinese Hematology, p. 156.

19 Fan Bai Cao (Herba Potentilla Discolor) is sweet, bitter and neutral in nature and has the functions of clearing heat and resolving toxins, dissipating bindings and dispersing swellings, and
stopping bleeding; together with Xia Ku Cao (Spica Prunellae Vulgaris), it inhibits the disease evil and resolves the scrofulous phlegm kernels, thereby reducing the swelling of the lymph nodes. Recommended dosage is 9 to 15 grams.

20 Di Jin Cao (Herba Euphorbiae Humifusae) is acrid and neutral in nature. It has the functions of clearing heat, resolving toxins, quickening blood, stopping bleeding, disinhibiting dampness, and freeing breast milk. Recommended dosage is 3 to 6 grams.

21 Gou She Cao (Herba Senecionis Integrifolii) is bitter, cold, slightly toxic in nature. It has the functions of clearing heat, disinhibiting water, and killing worms (chong). Recommended dosage is 9 to 15 grams.

22 Bai Mao Teng (Herba Solani Lyrati) is sweet and cold in nature. It has the function of clearing heat, resolving toxins, disinhibiting urination, and expelling wind.

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