Leukaemia

Leukaemia is a malignant disease of the haematopoietic tissues. It is characterised by general abnormal hyperplasia and accumulation of a type of precursor leukocyte in the bone marrow and other haematopoietic tissue. These abnormal hyperplastic cells infiltrate and destroy other tissues. There is a change both in the quality and quantity of cells in peripheral circulation (leukocytosis or leukopenia; presence of precursor cells). Clinical manifestations consist of anaemia, febrile episodes, haemorrhagic infections, and various degrees of hepatosplenomegaly and lymphaden hypertrophy.

Leukaemia is one of the common malignancies and is classified into acute and chronic types. The occurrence of leukaemia ranks 7th among all diagnosed malignancies in China. It is encountered more frequently in the coastal region than inland, generally more prevalent in the young and healthy and more common in males than females.

The aetiology of this particular clinical entity is unknown though many experienced investigators have attributed it to viral infection, ionising irradiation, exposure to chemicals and drugs, congenital immunological defect, metabolic disorders and immunological dysfunction.

Leukaemia manifests itself patho-morphologically mainly as leukocytic hyperplasia; manifested by infiltration of the haematopoietic and other body tissues, haemorrhage, general tissue malnutrition and necrosis, recurrent infections; a significant increase of red marrow in the bone marrow cavity and narrowing of the bony trabecular In advanced cases, the bone marrow cavity assumes a pus-like greyish red or yellowish green tint, secondary to leukocytic infiltration. Bone marrow count reveals a general stagnant differentiation, and dysfunction and fibrotic changes also occasionally appear. Early stage of the disease is accompanied by a general leukocytic infiltration of the lymph nodes which in the late stage are replaced by evidence of swelling and the disappearance of normal structures, which have become almost completely occupied by infiltrating hyperplastic cells. All organs and tissues, particularly of the nervous system, liver, spleen, kidney, heart, GI tract and skin, display various degrees of leukocytic infiltration.

Classification

1. By Course of Disease and Maturity of Leukocytes:

1.1 Acute

Abrupt onset, usually fully mature in less than six months; bone marrow and peripheral blood consists mainly of precursor and immature cells; number of stem cells is greater than 10% of the total count
1.2 Subacute

Course of disease 6 to 12 months, myelogram and blood count reveal mainly immature cells. Stem cell count 2-10%.

1.3 Chronic

Gradual onset of the disease, and course of disease usually take more than a year. Marrow and peripheral blood count consist of both mature and immature cells; immature cells comprise more than 10% of cells.

1.4 Others

Rare types, such as plasma cell leukaemia and megakaryocytic leukaemia.

2. By Types of Hyperplastic Leukocytes

(1) Granulocytic leukaemia; (2) Lymphocytic; (3) Monocytic leukaemia.

3. By Peripheral Total Leukocyte Count and immature Cell count

3.1 Leukaemiac Leukaemia

Total leukocyte count over 15000/mm³, immature cells over 10%.

3.2 Sub-leukaemic Leukaemia

Total leukocyte count less than 15000/mm³ with presence of immature cells.

3.3 None-leukaemic Leukaemia

Total leukocytic count slightly higher, normal or low; presence of immature cells.

**Acute Leukaemia**

1. Clinical Manifestations

1.1 Onset

Most cases have a rapid onset, only a few have a gradual onset Cases with rapid onset usually manifest high grade fever, progressive anaemia, hemorrhagic tendency and general malaise as prevailing symptoms. Those with gradual onset begin with prolonged periods or generalised fatigue, loss or appetite, shortness of breath after exertion or vague body aches. When symptoms become apparent they run a course similar to those with rapid onset.

1.2 Symptoms and Physical Signs

1.2.1 Fever and Sweating: Temperature ranges from 37.5-40°C or higher, fever can be persistent remittent, intermittent or irregular characteristics; occasional colds
without chills; patient sometimes displays no overt signs of distress despite continuing high fever, cold sweating and night sweating. Fever can be attributed to the presence of leukaemia toxic metabolites and infections.

1.2.2 Haemorrhage: One of the most common symptoms; can be observed in any part of the body, particularly in the subcutaneous, nasal, oral and gingival tissues; intracranial haemorrhage causes an increase in intracranial pressure that can be fatal; retinal haemorrhage results in disturbance of visual perception; inner ear haemorrhage leads to dis-turbance of vestibular function dizziness, nausea, tinnitus and difficulty in hearing respiratory, digestive and urinary tract haemorrhages result in symptoms corresponding to the related organs and subcutaneous haemorrhage is manifested as ecchymosis, petechiae or large cyanotic areas. Major causes of the tendency to haemorrhage a decrease in number of platelets, fibrinolysis, diffuse intraluminal dotting, an increase in heparin-like anti coagulating substances and capillary rupture; secondary to leukaemia-induced leukocytic thrombosis.

1.2.3 Anaemia: occurs early in the course of the disease, exacerbates as course of the disease progresses. Manifests itself with pallor, dizziness, palpitation, and shortness of breath on physical exertion and oedema of the lower extremities. This is consequent to abnormal hyperplasia of leukocytes, which depress and disrupt the normal erythropoietin process, shortening the life span of the erythrocytes.

1.2.4 Hepatosplenomegaly: Roughly one half of the cases present hepatosplenomegaly, common in acute leukaemia and not significant in cases that run a rapid course.

1.2.5 Lymphadenhypertrophy. Generalised hypertrophy of lymph nodes evident in cases of acute leukaemia. Superficial lymph nodes commonly involved are the cervical, maxillary, axillary and inguinal. Diaphragmatic lymph node hypertrophy is generally found only in the young. Compression of organ can result from internal lymphadenhypertrophy.

1.2.6 Neurological Symptoms: Leukocytic infiltration of cerebral hemisphere is manifest by symptoms similar to those of brain tumour. Infiltration of meninges leads to meningitis-like symptoms. Occasionally some cases display other neurological symptoms such as visual and auditory hallucinations and neurotic symptoms.

1.2.7 Bone and Joint Pain: A significant increase in the number of leukaemia cells in the bone marrow, which compress and destroy the bone structure and infiltrate the periostium. Pains in the bones range from vague, sudden to excruciating. Crushing pain of the sternum is very common. Pathological fracture occurs occasionally. Infiltration of the joints can lead to arthritic symptoms.

1.2.8 Skin and Mucosal Damage: Infiltration of the skin by leukaemia cells results in ecchymosis and petechiae; diffused maculopopulae excoriating dermatitis;
nodes and lumps and general pustuloderma; nasal, oral, labial and upper respiratory tract mucosae displaying various degrees of ulceration and erosion. These skin signs are prevalent in all types of leukaemia and are particularly common in acute monocytic leukoma, which is additionally characterised by gingival oedema, and labial mucosal erosion which overlie the epidermal crust.

1.2.9 Others: Leukaemia cells also invade the respiratory, urogenital and digestive nets, orbits, retinae, lacrimal glands, muscles, mammary glands, ribs and pelvis leading to corresponding pathologies in these organs and tissues. Chlorosarcoma, a type of granular sarcoma, also invades the bony structures and organs of the body. The greenish tinge of the chlorosarcoma is due to its high content of marrow peroxidase. In vitro chlorosarcoma display the gradual fading of such coloration but the tinge returns when the chlorosarcoma is immersed in hydrogen peroxide.

2. Laboratory Examinations

2.1 CBC

There is usually an increase in total leukocyte count in half of the cases. Number of cells ranges from 300 to 500/mm³ to 300,000 to 500,000/mm³ with an average of 30,000/mm³. Precursor leukocytes can be observed when the amount of the total peripheral WBC count increase but are not evident if the total counts of low Haemoglobin, RBC, platelet and reticulocyte have decreased.

2.2 Myelogram

The most important diagnostic tool in leukaemia. When premature RBC and megalorgranulocytes show a significant decrease and granular and precursor cells show a significant increase of 6% to as high as 90%, it can be of value as a diagnostic tool.

2.3 Cellular Chemical and Vital Staining

Useful when differentiating types of leukaemia; the most commonly sum used is Peroxidase in which the granular cell series are indicated as positive, monocytic series as less positive or negative, and lymphocytic series as negative.

2.4 Lymph Node Biopsy

Lymphocytic leukaemia can be ruled out if the smear shows a predominance of Peroxidase positive leukaemia cells.

2.5 Others

Plasma albumin levels lowered; an increase in an alpha and b beta globulin level; increased uric acid level in blood; increased urinary excretion of uric acid; plasma iron usually higher than normal. In acute monocytic and acute granulocytic leukaemia,
there is a significant increase of serum and urinary lyzosomal activity.

3. Diagnosis

Patients presenting an abrupt onset of disease accompanied by fever, haemorrhage, ANA leukaemia, lymphadenhypertrophy or hepatosplenomegaly, decrease in platelet count and either an increase or decrease in total WBC, count should be suspected of having leukaemia. Bone marrow biopsy should be performed immediately to confirm the diagnosis. Differentiation of various kinds of acute leukaemia is difficult and should be based on changes in bone marrow count and clinical findings.

4. Differential Diagnoses

4.1 Aplastic Anaemia

Minimal haemorrhagic tendency; hepatosplenomegaly and lymphadenhypertrophy are less common; febrile and infectious episodes are of a lesser degree and can be differentiated by bone marrow biopsy. One must bear in mind that early stages of some types of leukaemia manifest themselves similarly as those of aplastic anaemia; such cases should be kept under dose observation for a substantial period.

4.2 Infectious Mononudeosis

Symptoms of this particular disease entity include irregular febrile episodes; headache; generalised malaise; laryngopharyngitis; diffused lymphadenhypertrophy; derma papulae and maculopapulae; increase of lymphocytic cells; peripheral blood examination as well as myelogram will show abnormal lymphocytic cells but a minimum of precursor cells; 80% to 90% of the cases yield a positive result to heterophilic agglutination test. This is probably a subacute infectious disease caused by Eb virus and normally can be cured.

4.3 Reactions Similar to Leukaemia

Clinically, this is the most common oncological infection; other causes may be chemical intoxication, severe haemorrhage, acute haemolysis and shock, trauma and other stimulations which all result in a transient abnormal leukocytic response in the haematopoietic system. Peripheral blood examination will show the presence of precursor cells as well as leukocytosis. Reactions similar to leukaemia can also be differentiated into granular, lymphocytic, monocytic and basophilic types. Neutrophylic type is commonly seen in progenic infections; lymphocytic type in whooping coughts; monocytic type is commonly associated with tuberculoses while basophilic type is common among parasitic infections and tumours. Reactions similar to leukaemia have a relatively short course, and remits when the underlying pathology is placed under control. There is no anaemia or decrease in platelets and the typical clinical picture of leukaemia is not present Cellular morphology displays toxic
granules and vacuoles a secondary change due to severe toxication. Myelogram examination generally reveals an intact structure except for a certain degree of hyperplasia and a shift to the left.

4.4 Agranulocytosis

Secondary agranulocytosis cases are due mostly to exposure to drugs or drug allergy, acute infection or ionising irradiation. Clinical manifestations are colds and chills; high grade fever; headache laryngopharyngeal discomfort; oral, pharyngeal and rectal mucosal ulcerations; a drastic decrease in the number of total WBC and a decrease in granulocyte count. Patients usually recover after the underlying disease is under control.

4.5 Malignant Histiocytosis

A hyperplastic disease of the histiocytes, originally known as malignant reticulocytosis. Clinical characteristics are rapid onset, fever, exhaustion and progressive hepatosplenomegaly, lymphadenohypertrophy and pancytopenia. Bone marrow smear shows a large quantity of abnormal histiocytes and a minimal amount of giant multinuclear histiocytes. Another characteristic is phagocytosis of large amounts of granular RBC's. This disease has a very short course, and most patients die within 4 to 6 months of onset.

5. Treatment

Leukaemia is a disease of constitutional dimensions and as such, its treatment should be comprehensive, eliminate and inhibit the hyperplastic leukaemia cells, and at the same time protect the integrity of normal tissues. The crucial point when treating this disease is a comprehensive therapeutic approach, which can deal properly with the delicate relationship between dispelling pathogenic factors, while restoring normal functions of the body.

5.1 Chemotherapy

Commonly employed agents are: methotrexate, vincristine, vinblastine, mercaptopurine, 6-thioguanine, cyclophosphamide, methyl-GAG, cytarabine, daunorubicine, adriamycine, L-asparaginase doxorubicine, prednisone, 6-MP, cephalotoxin homoharringtonine and carmustine.

Chemotherapy is divided into 4 stages: remission induction, strengthening, CNS prophylaxis and maintenance of remission. In the sudden onset of acute leukaemia, the number of leukocytes can be as high as $10^{12}$. The purpose of chemotherapy is to reduce this number to lower than $10^8$ to achieve complete remission (CR). Different chemotherapy procedures have been devised for treating leukemias in different classifications.

5.1.1 Chemotherapy Procedure for Acute Leukaemia:
Remission induction: VP procedure vincristine, once a week 2mg IV on the first
day; oral prednisone, 20mg, three times a day for the first seven days. Seven days per
cycle. Continue administration until complete remission is reached. Follow up with
reinforcement treatment for 2 or 3 weeks. This procedure is usually curative inn less
severe cases. If this procedure proves ineffective, the following procedures can be
considered.

VMP Procedure: Same as VP procedure with the addition of methotrexate,
2.5mg/kg per day, two or three times daily, on the second to sixth day of the cycle.

VAP Procedure: Same as VP procedure with the addition of cytarabine, 1 to
3mg/kg per day. IV infusion or IM TV drip to be completed within 12 hours. Seven
days per cycle.

VAMP Procedure: VAP procedure plus 6-mercaptopurine orally, 2.5mg/kg per
day, two or three times per day, on the second to the sixth day.

If complete remission cannot be achieved at this stage, they are cases, which will
be difficult to treat, and VADP or VP + ASP procedures should be employed.

VADP Procedure: VAP procedure plus daunorubicine 0.8-1.0mg/kg per day, IV injection or IV drip on the third to the fifth day of the cycle.

VP + ASP Procedure: VP procedure plus L-asparaginase 100-200U/kg per day
IV on the seventh to the tenth day. Should be preceded by a skin test

Reinforcing Treatment: After a complete remission, the same procedure should
be administered immediately for another three cycles, or L-asparaginase 10,000U/m²
per day IV infusion can be used for two weeks. Normally, the remission induction and
reinforcement treatment cycles are for a period of six to eight weeks.

Prophylaxis and Treatment of Meningeal Leukaemia: Meningeal leukaemia may
occur in as many as fifty per cent of the cases. The incidence can be reduced to 4.4%
by combining intrathecal drug administration and cranial and spinal prophylactic
irradiation. Mercaptopurine, 12mg/m² intrathecally twice a week for a total of five to
six weeks. Dexamethasone, 4mg/m² given intrathecally immediately before the
administration of mercaptopurine. 20-30mg/m² of Cytarabine can be substituted for
mercaptopurine.

Prophylactic cranial and spinal irradiation dosage is 24 Gy in 17 days.

Remission Maintenance: The most effective combined regimen for maintenance
of remission is the highest dosage of 6-mercaptopurine, plus the amount of
methotrexate the patient can tolerate. This procedure, together with the procedure,
which has been successful in remission induction, should be given cyclically as
induction therapy.
5.1.2 Combined Chemotherapy Procedure for Acute Non-lymphocytic Leukaemia (including acute lymphocytic, acute monocytic and erythroleukaemia): To date therapeutic agents for this particular disease have been low in specificity and high in toxicity and the therapeutic effect not as significant as for acute lymphocytic leukaemia Commonly employed procedure are

Remission Induction:

HOAP Procedure: Homoharringtonine, 2-6mg, IV, from the second through the seventh day; vincristine, 2mg., IV, on the first day; cytarabine, 1-3mg/kg per day, once every 12 hours from the second thru the sixth day; prednisone, 30-40mg per day orally in three or four doses, from the second thru the sixth day.

COAP Procedure: Same as HOAP with cyclophosphamide substituted for homoharringtoninc 2.5-5.0mg/kg per day from the second thru the sixth day.

AD Procedure: cytarabine: 1-2mg/kg per day. IV drip completed in 12 hours, from the first thru seventh day: daunorubicine, 0.8-1 mg/kg/dose, IV, on the first day or 0.2-0.4/kg/dose on the first thru the third day; seven days per cycle. Procedure administered for two cycles with interim rest periods of from 10 to 14 days.

ADM Procedure: AD procedure plus cytarabine for five days and 6-thioguanine orally, 2mg/kg/day, twice daily on the second thru the fifth day.

Reinforcing treatment: three additional cycles when complete remission has been achieved. For maintenance treatment upon complete remission refer to SPIERS 1977.

TRAP Procedure: oral thioguanine. l00mg/m² per day, on the first thru fifth day, daunorubicine, 40mg/m², IV, on first day; cytarabine, l00mg/m² per day, IV, on the first thru fifth day; oral prednisone, 30mg/m² per day, on the first thru the fifth day.

COAP Procedure same as above.

POMP Procedure: oral 6-mercaptopurine, 300mg/m² per day, first thru fifth day, vincristine, 2mg, IV, on the first day; methotrexate, T.Smg/m² per day. IV or IM on the first thru fifth day, oral prednisone 20mg per day, on the first thru the fifth day.

Sequence of Treatment Cycle: COAP x 2-TRAP x 3 → POMP x 3→ TRAP x 3. Rest for two to three weeks, repeat one additional complete cycle.

Treatment based on TCM Symptoms

In TCM, chemotherapy is considered “attack” “drive” or “aggression”. It inhibits and destroys the leukaemia cells but also concurrently suppresses the normal functions of bone marrow as well as compromising immunological functions. Traditional medicine, based on the principle of FZ has a remedial effect on complications precipitated by chemotherapy. It rectifies the deranged and imbalanced state of the body, thus
comple-menting the chemotherapy and enhancing its therapeutic effect. An integrated, and compre-hensive organic association between traditional and western medicine must be founded on the principle of syndrome differentiation. To standardise syndrome differentiations, a comprehensive classification is necessary. At present, there is no recognised standard. This book contains various systems of classification now in practice throughout the country. The author has classified them into four major groups. During the course of chemotherapy as well as during the rest period between treatment cycles, the principles of syndrome differentiation should be observed and applied according to symptoms as manifested at each stage.

5.2.1 Pathogenic Heat in Nutrient System:

Symptoms: High fever and sweating, dry mouth and headache, drowsiness, irritability and restlessness, fatigue, nasal and oral mucosae subcutaneous bleeding, scant urine with red tint, constipation. Tongue red, coated with yellow thick or slimy sub-stance, pulse rapid and full.

Treatment Principle: Dispel the toxic substance from the (the Nutrient System), strengthen the resistance and remove the heat from blood.

Yin Purifying Decoction, Rhinoceros Horn Decoction and Rehmannia and Hua Ban Decoction:

- Cortex Moutan 10g
- Radix Rehmannia 30g
- Cornus Rhinocrocotis Asiatics 1g
  or Cornu Bubali 3g
  finely ground in water
- Radix Arnebiae or Radix Lithospermii 15g
- Flos Lonicerae 10g
- Folium Isatidis 10g
- Radix Scrophulariae 10g
- Indigo Naturalis 12g
- Gypsum Fibrosum 20g
- Cortex Lycii 12g
- Carapax et Plastrum Testudini 12g
Cara pax Trionycis 15g
Radix Paeoniae Rubra 15g
Herba Agrimoniae 20g
Flos Carthami 9g
Radix Pseudostellariae 15g

Individual dosage to be modified on case to case basis.

5.2.2 Qi Insufficiency and Stasis of the Blood:

Symptoms: Frequent low grade fever, fatigue, heavy chest and shortness of breath; vague skeletal ache; pain in the liver, hepatosplenomegaly or lymph node hypertrophy; yellowish feces; petechiae; occasional hematuria and melena. Tongue dark purple or with ecchymosis.

Treatment Principle: Activate the circulation by removing stasis, strengthen the resistance and reinforce the Qi. Prescription:

Radix Ginseng or Radix Panacis Quinquefonii 6g
Radix Salviae Miltiorrhizae 24g
Radix Paeoniae Rubra 12g
Radix Angelicas Sinensis 12g
Rhizoma Chuanxiong 9g
Semen Persicae 9g
Caulis Spatholobi 20g
Radx Astragali 15g
Poria 15g
Rhizoma Atractylodis Macrocephalae 10g
Radix Glycyrrhizae 3g
Herba Agrimoniae 20g
Radix Pseudostellariae 15g
Dosage to be modified on case to case basis.

Lappaconitine 4mg, IM, twice a day, or 8mg IV drip once a day for analgesic and tranquilizing effect. It is also effective inhibiting hyperplastic activities of the leukemic cells.

5.2.3 Yin Deficiency of the Liver and Kidney:

Symptoms: Low or moderate fever, spontaneous sweating, night sweat, dizziness, visual disturbance, dry throat; sensation of heat in the chest, on palms and soles, pallor, palpitation and shortness of breath; distress in the loins and bade and weakness of the legs; insomnia, irritability and restlessness. Tongue deep red or purplish, with thin and yellow coating; pulse rapid and thready.

Treatment Principle: Nourish the Yin and replenish the kidney by cooling the blood and removing pathogens.

Prescription:

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<td>Radix Ophiopogonis</td>
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5.2.4 Deficiency of both Qi and Blood:

Symptoms: Pallor, lips and nails pale with no luster, dizziness and tinnitus; palpitation and shortness of breath; edema of upper extremities or general edema; dry skin and hair, loss of hair, spontaneous sweating, night sweat, low grade fever, dry mouth, cold extremities, hemorrhagic tendencies, loss of appetite. Tongue pale and with scanty coating. In the later stages of leukemia patients hemorrhage have and anemia as well.

Treatment Principle: Replenish the Qi and blood, strengthen the resistance and remove pathogens.

Prescription:

Radix Ginseng 10g
Radix Astragali 25g
Rhizoma Atractylodis Macrocephalae 15g
Poria 12g
Fructus Schisandrae 6g
Radix Codonopsis 15g
Radix Angelicae Sinensis 10g
Radix Polygoni Multiflori 15g
Placenta Hominis 20g
Herba Epimedii 12g
Rhizoma Polygonati 12g
Fructus Ligustri Lucidi 12g
Semen Ziziphi Spinosae 9g
Fructus Lycii 10g
5.3 Treating Complications with TCM

When treating complications with western medicine, additional therapeutic measures based on TCM principles can significantly enhance its effect. There are times when traditional Chinese medicine proves to be effective when western medicine has failed.

5.3.1 Prescription for Treating Chemotherapy Induced Leukocytopenia and Decrease in Platelets:

- Radix Atragali 25g
- Human Pacenta Placenta Hominis 15g
- Caulis Spatholobi 20g
- Rhizoma Gynostemma Pentaphylli 15g
- Rhizoma Atractylodis Macrocephalae 12g
- Radix Ginseng 6g
- Fructus Lycii 12g
- Radix Polygoni Multiflori 12g
- Radix Codonopsis 15g
- Folium Pyrrosiae 12g
- Fructus Ligustri Lucidi 15g
- Poria 12g
- Semen Cuscutae 15g
- Radix Rehmanniae Praeparatae 15g
- Fructus Psoraleae 10g

Dosage to be modified on case to case basis.

5.3.2 Disseminated Intravenous Coagulopathy (DIC):
Activate the Circulation and Eliminate the Stasis: indicated in cases with stasis symptoms.

Prescription:

Radix Rehmanniae 20g
Radix Angelicae Sinensis 15g
Semen Persicae 15g
Flos Carthami 15g
Squama Manis 15g
Radix et Rhizoma Rhei 12g
Radix Rubiae 12g
Radix Notoginseng 1.5g
Finely ground and poured on
Radix Salviae Miltiorrhizae 15g
Radix Glycyrrhizae 3g

Dosage to be modified on case to case basis.

Stop the Bleeding by Dispelling Pathogenic Heat from the Blood: indicated for symptoms of Yin deficiency and heat in the blood.

Prescription:

Cornu Bubali 3g
Radix Ophiopogonis 12g
Radix Rehmanniae 15g
Radix paeoniae Rubra 15g
Cortex Moutan 10g
Radix Salviae Miltiorrhizae 15g
Nodus Nelumbims Rhizomatis 30g
Radix Scrophulariae 12g
Dosage can vary based on stage of the disease and clinical findings.

5.3.3 CNS Leukaemia:

- Saigae Tataricae 1g
- Concha Haliotidis 20g
- Rhizoma Gastrodiae 15g
- Caculus Boris 3g
- Bombyx Batryticatus 15g
- Ramulus Uncariae cum Uncis 12g
- Alumen 9g
- Retinervus Citri Fructus 9g
- Succinum 12g
- Dens Draconis 30g
- Rhizoma Coptidis 9g

Decoct and take orally. Effective for lowering intracranial pressure and alleviating symptoms.

5.3.4 Fever and Infection:

- Flos Lonicerae 15g
- Herba Violae 15g
- Radix Isatidis 18g
- Herba Taraxaci 15g
- Radix Coptidis 9g
- Gypsum Fibrosum 30g
- Radix Sanguisorbae 12g
- Purple Snowy Powder 1 pill
Corau Saigae Tataricae 1g
(Poured on or simmered in bath)

Radix Glycyrrhizae 3g
Rhizoma Atractylodis Macrocephalae 12g
Poria 12g

For cases accompanied by Qi Deficiency: Optional herbs and their dosage:

Radix Astragali 15g
Radix Panacis Quinquefolii 6g
Radix Codonopsis 15g
Rhizoma Atractylodis Macrocephalae 12g

For patients with Deficiency of the Blood: Optional medicines and their dosage:

Caulis Spatholobi 20g
Radix Rehmannia Preparata 15g
Fructus Lycii and Radix Angelicae Sinensis 10g

For patients with Deficiency and Coldness of the Spleen and Stomach: Optional medicine and the dosage

Radix Codonopsis 15g
Rhizoma Atractylodis Macrocephalae 12g
Poria 15g
Radix Glycyrrhizae 3g
Fructus Amoni 9g
Fructus Jujubae 6g

5.3.5 Hemorrhage: Referring to hemorrhage of the GI tract, gingival subcutaneous hemorrhage and epistaxis. Can be classified into groups as follows:

Qi Deficiency: Symptoms similar to the syndrome differentiation of Qi I Blood Deficiency and Qi Deficiency with Stasis of Blood. The principle of the treatment is
to reinforce the Qi and Regulate the Blood. Prescription used is Gui pi Decoction with any necessary modifications.

Pathogenic Heat: Symptoms similar to the syndrome differentiation of pathogenic heat in the Ying. The principle of treatment is to remove the heat and cool the blood. Prescription of choice is Rehmannia Root Decoction with any necessary modifications.

Fever Due to Yin Deficiency: Symptoms similar to the syndrome differentiation of Yin deficiency of the liver and kidney. The principle of treatment is to nourish the Yin and replenish the kidney. Prescription used is Six Drugs Decoction with Rehmannia and Yin Nourishing Pill.

5.3.6 Buccal Ulceration: Treated by either local application of Kueiang San (Metropolitan Hospital) composed of Zixue Dan, Indigo Naturalis Borneolum and Neomydn, or Sheng Ji San (Xiyuan Hospital) composed of Xihuang tablet. Indigo Naturalis, Gypsum Fibrosa Realgar Borneolum Radix Gentianae Pollen Typhac Cortex Phellodendri Herba Menthae and Radix Glycyrrhizae.

5.3.7 Oral Fungal Infection: Rinse mouth with decoction made of one of the following Combinations: Herba Solidaginis, Flos Rosae Rugosae, Radix Rosae Cymosae or Cortex Dictamni.

5.3.8 Soft Tissue Infection: External application of Ruyi Jinhuang San or Huadu San mixed with fresh aloe. (Metropolitan Hospital).

5.3.9 Perianal Infection: Clean locally with Liquorice oil then steam and wash the affected area with decoction of Herba Portulacae, Flos Chrysanthemi India and Herba violae plus local application of ointment of egg yolk and Succinum. (Metropolitan Hospital)

5.4 Supportive and Symptomatic Treatment

Includes measures such as transfusion, fluid replacement, preventing infection, supplementary vitamins, glucose, water and electrolytes, proteins, antitussives, mucolytics, tranquilizers, sedatives, diuretics, including moral support, dietary attention and Qigong therapy. Timely and appropriate prevention and treatment of side effects of chemotherapy and complications are very important.

6. Prognosis

The natural course of acute leukaemia, if untreated, is less than one year. In some cases, the period between the first diagnosis and death is only a few days. There are of course also cases with exceptionally long survival periods. Length of the course of the disease is directly related to period of onset before diagnosis, indicating a direct relationship between the course and severity of the disease. For more than a decade, there has been a remarkable increase in the of 5 year survival rate, due mostly to
growing increase in knowledge and development of integrated TCM and western medicine. It is now possible to completely cure some lymphocytic leukemias.