



## Treatment of Acute Lymphoblastic Leukemia with Multiple Relapses in a 3-Years-Old Child with 8 Years Follow-up According to Iranian Effective Medicine

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### Abstract

Leukemia is the most common malignant neoplasm during the childhood and constitutes about 31% of malignancies in under-15-year-old children.

We report a 3-year-old boy with acute lymphoblastic leukemia and a history of cancer complications and 9 months treatment process. After 2 months of unsuccessful treatment in a hospital in Bojnurd city, the patient was referred to Dr. Sheikh Hospital of Mashhad to undergo chemotherapy and different and frequent diagnostic methods. Due to lack of response to treatment, repeated relapses and lack of adequate financial resources and inability to pay the costs of repeated chemotherapy and radiotherapies he patient returned to Bojnurd after 9 months. With complaint of severe side effects and complications of drug treatments, the patient referred to Bojnurd traditional medicine center for treatment in September 2008. During the examination, the patient appeared pale with weak pulse, cold and swollen body. The patient was very weak and barely able to speak. After entering the traditional medicine clinic, the patient was controlled for his health and nutrition. In this case, the pharmaceutical measures were according to his temperament and disease status including the medicinal herbs and combined drugs. Manual actions were used for patient including full cupping therapy of back every night until the end of the therapy, Hijama (bloodletting) and massage therapy. The recovery appeared in the whole body from the fourth week. Since the patient's physical force and general status became much better, the routine tests were recommended of which hemoglobin and hematocrit test results were significantly better. After 8 months, all of the tests were normal and there was no relapse in clinical and laboratory tests until 2016.

Given the patient's recovery process with an approach to his physical power, mental status, cancer control, and significant recovery of acute lymphoblastic leukemia and complications caused by cancer and chemotherapy, it seems that the combination of modern and traditional medicine can pave the way for most of the common diseases, and thus it is essential to conduct widespread assessments of different diseases based on teachings of Iranian Effective Medicine.

**Keywords:** Acute Lymphoblastic Leukemia, Traditional Medicine, Modern Medicine, Leech Therapy

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## Introduction

Leukemia is a systemic disease with unknown etiology in which natural mechanism is constantly hampered for building the blood elements. Leukemia refers to colonial malignant growth of hematopoietic cells as it comes from a malignant progenitor cell so that the abnormal white blood cells are seen in peripheral blood and cell hyperplasia in bone marrow [1,2]. Acute leukemia is the most common cancer in children and constitutes almost 30% of pediatric malignancies [3]. Acute lymphoblastic leukemia (ALL) is a heterogeneous leukemia group which is lymphoid in terms of cell, and acute in terms of behavior [4]. ALL accounts for about 75% of pediatric leukemia. The important risk factors are involved in classifying the patients into two groups of low and high risk. These risk factors include the patient's number of white blood cells and age at diagnosis, cytogenetic findings, immunophenotyping, and primary response to treatment [5]. Treatment based on the risk factors reduces the drug toxicity in patients with low risk, and on the other hand, the application of severe treatment in high-risk patients improves survival in this group of patients [2]. Since more than 80% of children with acute lymphoblastic leukemia are fully treated, and the relapse rarely occurs after recovery, there is a need for long-term follow-up to assess the complications of treatment. The prognosis of treatment is the most important factor in this regard. Cytotoxic drugs, which are used for chemotherapy, play important roles in treatment of these patients. Nowadays, it can be expected that most of the children with ALL will have a long-term survival of more than 80% after five years [6,7]. The drug resistance is one of the problems in patients with cancer, so that these patients are resistant to different drugs with different mechanisms of action [8]. In other words, leukemia is almost treatable with current chemotherapy methods, but the relapse occurs in a group of patients, and some of them also show resistance to this treatment. The results of studies on improved treatment methods suggest using the compounds, which specifically affects the disrupted signaling pathways in cancer cells,

in order to reduce the side effects of chemotherapy drugs. Nowadays, it has been proved that there are numerous valuable compounds in medicinal plants and these compounds can treat the precancerous and even cancerous lesions in some cancers, alter the immune system function, and create the hormonal balance. These compounds also help to detoxify the intestines and liver. As an antioxidant, they stimulate the production of enzymes which eliminate toxic property of different compounds and maintain the cell and core structures [9-12]. Therefore, the identification and proper use of medicinal herbs along with other traditional medical treatments can treat cancer in some cases. In other words, all treatments of ALL have relative treatment effects each with specific complications. In the present study, we report a new method of ALL treatment combining traditional Iranian medicine with modern medicine.

## Case Presentation

### *Medical history and examination according to modern medicine*

The patient was a 3-year-old boy with ALL and a history of almost nine months of this disease along with side effects of cancer and its treatment. The patient was living in Mohammadabad village of Manch and Samalqan city. The patient referred to family physician in Mohammadabad village with frequent and prolonged cold and fever during December 2007 and January 2008, and underwent several outpatient treatments on symptoms of colds. Due to lack of response to treatment the patient was referred to pediatrician at Imam Reza Hospital of Bojnurd. The patient was hospitalized for 16 days and then referred to Dr. Sheikh Hospital of Mashhad in February 2008 with diagnosed ALL and the lack of response to treatment and fever above 40 degrees, generalized edema and skin rashes. In this hospital, the patient underwent full medical examination, and the diagnosis of ALL was confirmed based on the clinical and laboratory evidence. Based on the patient's record in the hospital, the patient had fever and abdominal

pain in admission. The patient had maculopapular rashes. The patient underwent bone marrow aspiration and complete blood cell count. His white blood cells were 1800 c/ml with maximum lymphoid cells. The sharp decline of all three normal elements was seen in the bone marrow. There were medium-sized blasts with large cores and dark and dense chromatin, and basophilic cytoplasm without granules. According to abdominal sonography, the patient had a larger-than-normal liver 3 cm below the ribs without space-consuming bulk and with normal echo. Furthermore, the spleen was normal and there were no free liquid, bulky and adenopathy masses. The blast cells were seen in the Cerebro-Spinal Fluid (CSF) sampling. Due to the repeated relapse and remission, the patient underwent chemotherapy and different and repeated diagnostic procedures in March 2008 to September 2008. He returned to Bojnurd after 9 months due to the repeated relapse and lack of financial resources and inability to pay the costs of repeated chemotherapy and radiotherapy. The patient referred to Haj-Taleb Medical Center of Traditional and Modern medicine in September 2008 for treatment by the guidance of an acquaintance after diagnosis of ALL with involvement of central neural system and a history of more than a year of chemotherapy and multiple cranio-spinal radiotherapy and complaint of severe complications and side effects of drug treatments. According to examination, the patient appeared pale, and had

weak pulse and cold and swollen body. The patient was very weak and barely able to speak and had weak physical force. Table 1 shows the clinical findings, laboratory indices, prognostic factors at admission in Center of Traditional and Modern Medicine in September 2008 and the annual follow-ups up to September 2016.

#### *Medical History and Examinations according to Iranian Traditional Medicine*

The patient had no knowledge of traditional medicine therapies and did not follow the eating practices and health protection principles, included in traditional medicine, in everyday life. The patient suffered from disorganized temperament for two reasons: 1) Suffering from leukemia, and 2) Due to frequent chemotherapies and radiotherapies during the past 9 months, he had clinical complications in addition to severe bad temper and accumulation of corrupted humors in body. The patient had very low physical force, appeared pale, with weak pulse, cold and swollen body in examination and also with severe anemia with fever. The nutrition and six essential principles (six essential principles of health in Iranian traditional medicine including the air, movement and rest, sleep and waking, retention and vomiting, food and beverage, and psychological symptoms) were not observed and since the patient had low financial situation, he could not have favorable nutritional conditions.

**Table 1:** Clinical Finding, Laboratory Indices, Prognostic Factors in Patient with Acute Lymphoblastic Leukemia at Admission in Center of Traditional Medicine Clinic in September 2008 and the Annual Follow-up to September 2016

Indices	2008	2009	2010	2011	2012	2013	2014	2015	2016
Clinical Finding									
Splenomegaly	+	-	-	-	-	-	-	-	-
Hepatomegaly	+	-	-	-	-	-	-	-	-
Adenopathy	-	-	-	-	-	-	-	-	-
Mediastinal mass	-	-	-	-	-	-	-	-	-
Central nervous system involvement	+	-	-	-	-	-	-	-	-
Laboratory Indices									
WBC	1800	7700	*	*	7080	6130	6940	*	7500
PLT	91000	262000	*	*	400000	263000	266000	*	243000
Hg gr/dl	8.8	11.9	*	*	13.7	12.9	13	*	14.1
LDH u/l	2707	558	*	*	*	*	*	*	267
Bad Prognostic Factors in Incidence Relapse and Death									
WBC $\geq$ 50000	-	-	-	-	-	-	-	-	-
Hg $\geq$ 10 gr/dl	-	+	+	+	+	+	+	+	+
PLT $<$ 100000	+	-	-	-	-	-	-	-	-
LDH $\geq$ 800 u/l	+	-	-	-	-	-	-	-	-
Less than one year old, or more than 10 years old	-	-	-	-	-	-	-	-	+
Gender Male	+	+	+	+	+	+	+	+	+
Hepatomegaly	+	-	-	-	-	-	-	-	-



Arthropathy	+	-	-	-	-	-	-	-	-
Adenopathy	-	-	-	-	-	-	-	-	-
Splenomegaly	-	-	-	-	-	-	-	-	-
Central nervous system involvement	+	-	-	-	-	-	-	-	-
Repeated chemotherapy and radiotherapy	+	-	-	-	-	-	-	-	-
Repeated relapses	+	-	-	-	-	-	-	-	-

## Treatment

Patient treatment was conducted with the following objectives:

- a- Body cleansing of corrupted humors caused by bad temper due to cancer and chemotherapy
- b- Simple temperament reform
- c- Strengthening and rehabilitating the physical force
- d- Strengthening the patient's immune system
- e- Plant therapy with the aim of treating cancer and strengthening the immune system
- f- The types and dosage of drug and methods should be varied during the treatment according to patient's low age as he was only 3 years old.

### *Measures to Protect Health and Nutrition*

The patient's parents were advised to pay attention to child eating practices both in terms of temperament and active food ingredient. They were taught about the six essential principals of health and emphasized on using nutritious foods and removing all market products which had additives, eating a lot of vegetables and fruits in terms of temperament, and avoiding the cold and sour foods such as pickled vegetables, buttermilk, yogurt, and ice water because these foods increase melancholy and hinder recovery; and also not consuming the high-fat and salty foods. The patient was advised to drink grape juice at breakfast several times per week.

### *Pharmaceutical measures*

a) The Black Bile humor and melancholy cleaning (melancholy humor mature) was first prescribed and it was a combination of (Lavender + Valerian + Camomile + Thyme). This cleaning medicine, due to strong active ingredient, reduced inflammation and pain, provided comfort, strengthened physical power,

and most importantly, as a strong anti-cancer and antioxidant according to herbal medicine sources and it was prescribed in boiled for 3 glasses per day.

b) After a few days, an appropriate laxative was prescribed for patient including a cup of fasting boiled rose and *Securigera Varia*.

c) Despite the cleaning and reforming medicine, Ajwain was specifically used for detoxifying and cleansing. Affecting the digestive system, this plant improves the gastro-intestinal function and is used as detoxifier even in drug addiction treatment without any side effects. In this patient, this plant could also reduce side effects of chemotherapy. Two very important points should be mentioned about using Ajwain, first, it is a very good drug in increasing the appetite, and, it is a powerful drug for digestive system. Ajwain significantly increased the patient's appetite, and thus he ate nutritious foods, and hence his physical force increased. Ajwain had been repeatedly used in personal experiences for detoxifying, strengthening the digestion and appetite. This herb was prescribed in teaspoonful powder after meals.

d) Honey with four famous nuts (Sweet Almond, Hazelnut, Walnut and Pistachio) was prescribed daily and was given to him according to his appetite. Honey with four nuts has high nutritional value because of their active ingredients which strengthen the patient's physical power in addition to supplying the body vitamins, proteins, glucose, fat, and other micronutrients. One of the most important therapeutic properties of honey for the body is to help it to better absorb the drug or food which is eaten with honey. It seems that this fact is the main reason for containing honey as an integral part in most of the combined drugs in traditional medicine including Avicenna's prescriptions in

his book "the Canon of Medicine". On the other hand, the nutritional value of honey is very high both in terms of modern and traditional medicine.

e) Grape juice has been recommended for strengthening the physical force in traditional medicine. Grape juice has very high caloric level; hence, its consumption is very useful for people with general weakness. Moreover, those who are weak due to prolonged illness or surgery or people who are very thin can consume grape juice to improve their weaknesses. The most important property of grape juice is its energetic nature. Due to the existence of essential antioxidants in grape juice, this nutrient is used in treatment of numerous diseases. Therefore, the grape juice was added to patient's breakfast three times a week.

#### *Manual Measures*

**Cupping Therapy:** Cupping with a very low pressure was done around the backbone with a little time about 5 minutes every night. According to our experience in these patients, the more the number of cupping is increased in longer term, the more it will be useful, and thus cupping therapy per night for about 5 to 6 months was advised for this child.

**Hijama (Bloodletting or Wet Cupping):** In this case, a total of 3 times of bloodletting between both shoulders and three times of liver bloodletting was performed within a month. After bloodletting, which was conducted between both shoulder and liver, the anemia and weakness of physical force were treated and recovery was quickly achieved.

**Massage:** Body massage with sesame oil per night was recommended to strengthen the body strength and increase the blood flow and strengthen the immune system.

#### **Treatment Results**

Since patient was not in good general condition at the beginning of treatment, his treatment was controlled daily, and thus the signs of recovery along with strengthened general condition and his appetite appeared at the first 48 hours, and then the signs of recovery appeared and the pale

face was reduced in second week; the body swelling reduced and the patient's appetite was much better and he began to play in the third week. From the fourth week, a sign of recovery appeared in the whole body. According to examination the patient's physical force and general conditions was good, also, the routine tests showed improvement in hemoglobin and hematocrit levels and after 8 months all tests became normal and there were no signs of disease in clinical and laboratory tests. Treatment of disease started since 2008 and the tests repeated each year up to 2016. The patient is now in good health without any sign of disease and relapse.

#### **Discussion**

Acute lymphoblastic leukemia is one of the most common cancers in children and it is occasionally seen in adults. Despite the lower prevalence of children leukemia in Iran than Western countries, the ALL is the most common children malignancy in Iran [3]. Blood cancer cells are called blasts. The blast proliferation rate is high in all acute leukemia including ALL, so these blasts enter into the blood flow from bone marrow and cause problems for patient in a short time. Blast cells grow and reproduce in the bone marrow. This reduces the opportunity for stem cells to produce healthy blood cells, and thus the white and red blood cells and healthy platelets will be reduced. The reduction of each one has symptoms, so that due to the reduced production of white blood cells, the patient will quickly and easily become infected. Leukemia patients often have fever, night sweat, weakness, and fatigue before definitive diagnosis. Therefore, the physicians recommend that if a person has such these symptoms for more than two weeks and is not recovered with conventional treatments, there will be a need for further investigation [1-4]. On the other hand, due to the prevalence of this disease in children and the need for more effective and less expensive therapies, it is essential to offer new and complementary therapies. In this regard, for the high cost of treatment and repeated hospitalizations and also serious side effects of

medical treatment and therapies, various methods have been used to treat this disease around the world, and the new therapies are being explored [6-8]; this paper can be assessed in this regard. Iranian Effective Medicine (IEM) as an integration of the traditional and modern Iranian medicine makes use of both medicine trends' effective treatment methods for health maintenance and patient treatment as well as reporting the scientific clinical experiences. Therefore, this article aimed at reporting the clinical experience in treatment of children with acute lymphoblastic leukemia with repeated relapses and 8 years of follow-up based on the IEM. IEM was chosen for this patient as to the prognostic criteria of acute lymphoblastic leukemia in this patient including 1) More than 3 years of age; 2) Not specified Phenotype, uncounted chromosomes, not specified chromosomal dysfunctions in patient's medical records; 3) Central nervous system involvement; and 4) Being male; and also the time to reach long remission; treatment failure along with repeated relapses, and patient's family economic conditions for continuation of chemotherapy and radiotherapy. As noted, the cancer was the first reason for the patient's bad temper and this was due to the dominance of melancholy according to traditional medicine and a majority of researchers' opinions. However, there are different opinions about cancer in traditional medicine, but all of them believe that this disease is difficult to be treated and sometimes incurable; and it is often due to a bad temper and particularly the melancholy bad temper [13]. Since in traditional medicine there was no vast, useful and scientific text about this child disease, therefore, we tried to resolve this problem in IEM by applying the traditional medicines and practices in pediatrics and study, research and experience as far as possible. In this child, cancer created a complex bad temper and the prevailed melancholy was obvious throughout his body. The chemotherapy and radiotherapy had caused sever bad temper and accumulation of corrupted mucus due to their side effects. These made the patient's physical strength very low. Therefore, all consequences

of discontinued modern treatments were first explained by consultation with patient's family for the patient's family was not willing to continue modern medicine therapies. They claimed that despite paying the high costs and undergoing various treatments of modern medicine, the patient's general status has become even worse. It was explained for the patient's family that despite high hopes for the treatment there would be no guarantee as if the traditional medicine becomes effective for their patient. Nonetheless, the therapy was started according to the family consent.

Initially, the treatment seemed impossible with unavailability of resources in traditional and modern medicine and the patient's status and underlying diseases, and side effects from consuming chemical drugs. There was no accurate definition of these diseases and their treatment in traditional medicine. When the patient arrived with physiopathology of acute lymphoblastic leukemia and severe side effects of disease and simultaneously receiving the chemotherapy drugs, it was hard to think about managing the situations by the help of traditional medicine methods and drugs. Therefore, it was tried to call on teachings of IEM and with a new look at Iranian traditional and modern medicine. Therefore, the drugs and methods of traditional medicine were used with kind of creativity and new approach which brought no side effects for the patient.

The herbs and combined medicines such as Lavender + Valerian + Camomile + thyme and Rose, *Securigera Varia* and Ajwain along with honey and four famous nuts (Sweet Almond, Hazelnut, Walnut and Pistachio) and grape juice were used in this patient according to his temperament and disease conditions. The application of cleaning and reforming medicine and the types of applied plants in IEM were based on objective evidence of personal clinical experience. Since the time of applying the cleaning and reforming medicine was longer than usual for this patient, only well-known medicinal herbs were applied to avoid wasting time for collecting evidence for scientific confirmation of combined drugs considered in



traditional medicine. Therefore, when a plant such as Lavender is used as cleaning drug, its temperament is clear in addition to its active ingredient. On the other hand, most of the herbal medicine books have explained the possible effects or side effects of this herb. It should be noted that because the drug therapy based on IEM is complex and clinical experience for every patient yields different outcomes, one cannot use the mentioned treatment for a patient with acute lymphoblastic leukemia in a certain model unless the physician is experienced in applying the drugs and especially in treatment of autoimmune diseases [11-13].

Cupping therapy is one of the traditional medicine methods which can be used to help the treatment of numerous diseases, but the way of its application varies at different ages, temperaments, and diseases. Help for treating the patients with cancer is one of the valuable indications of cupping therapy especially in patients who have undergone the chemotherapy and radiotherapy thus have undermined physical forces. In addition to the impact on the acupuncture points as it is acceptable all over the world, the cupping therapy leads to corrupted mucus mature, corrupted mucus disposal, increased physical strength, increased blood flow, etc. in these patients. However, the method, duration and time of cupping therapy are very important, and thus we adjusted them for this child. Hijama (bloodletting) was very important and sensitive and needed carefulness in this patient; hence, the following measures were performed for him. First, the patient had anemia and severe weakness of physical force, so Hijama was done by a few shallow scratches and a little bloodletting for one to two cc. Bloodletting was done by the experienced physician himself and it was never done by non-physicians because it required high carefulness and accuracy in both primary cupping and then scarifying and bloodletting. Full experience of children bloodletting was used for this patient. As our experience, bloodletting with a little blood and shallow blades has very tangible and positive impact on most of the incurable diseases in children; so we used it for this patient.

## Conclusion

Given the patient's recovery process with an approach to physical force, mental status, cancer control, and significant treatment of ALL and the side effects of cancer and chemotherapy, it seems that combining the modern and Iranian traditional medicine paves the ways for most of the common diseases. In other words, the IEM can have effective clinical findings in treating some diseases including some cancers, similar to the way that the use of IEM in treating this patient with resistant-to-treatment ALL led to reduced costs and abandoning chemotherapy drugs. Therefore, the Iranian modern and traditional medicine can be studied and evaluated as a new non-invasive treatment with the largest therapeutic effect in the short term.

## List of Abbreviations

ALL: Acute Lymphoblastic Leukemia

IEM: Iranian Effective Medicine

CM: Centimeter

KG: Kilogram

MG: Milligram

C: Centigrade

CD: Compact Disk

%. Percentage

## Conflict of Interests

The authors have no conflict of interest in publication of this article.

## Contributing Authors

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