The Healthcare Medicine Institute presents

Cirrhosis Treatments

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Cirrhosis Treatments

Biomedicine

Definition

Cirrhosis of the liver is a disease characterized by increases in connective tissue and pathological changes in the gross and microscopic makeup of the liver. Cirrhosis of the liver tends to be a slow and progressive illness wherein healthy liver tissue is replaced with scar tissue. During the onset of the disease, the liver may enlarge (hepatomegaly). Long-term liver size may be larger or smaller and there may be abnormal enlargement of the spleen (splenomegaly).

Cirrhosis is a condition in which the liver slowly deteriorates and is unable to function normally due to chronic or long lasting injury. Scar tissue replaces healthy liver tissue and partially blocks the flow of blood through the liver.[1] The liver can regenerate most of its own cells when they become damaged. However, if injury to the liver is too severe or long lasting, regeneration is incomplete, and the liver creates scar tissue. Scarring of the liver, also called fibrosis, may lead to cirrhosis.[2]

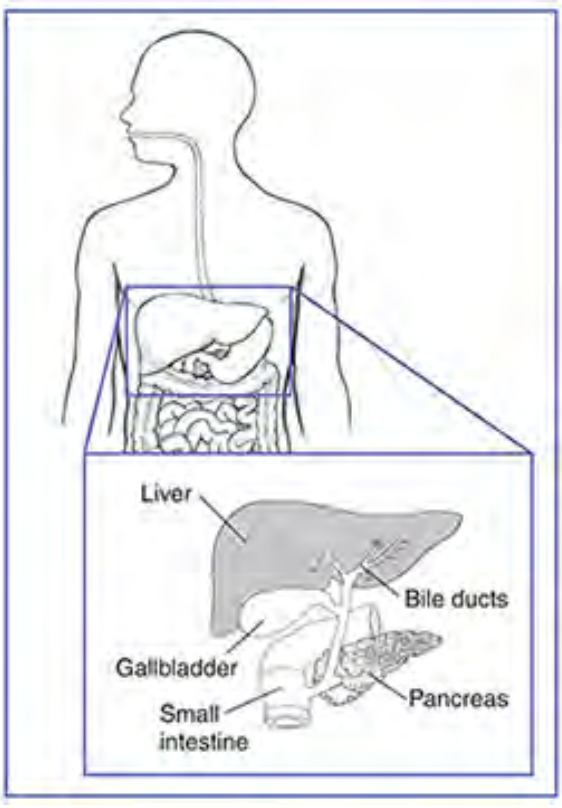
Liver Function

The liver plays an important role in metabolism—the way cells change food into energy after food is digested and absorbed into the blood. The liver has many functions, including

1. National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health (NIH)
2. National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health (NIH)

- taking up, storing, and processing nutrients from food—including fat, sugar, and protein—and delivering them to the rest of the body when needed
- making new proteins, such as clotting factors and immune factors
- producing bile, which helps the body absorb fats, cholesterol, and fat-soluble vitamins
- removing waste products the kidneys cannot remove, such as fats, cholesterol, toxins, and medications

The buildup of scar tissue that causes cirrhosis is usually a slow and gradual process. In the early stages of cirrhosis, the liver continues to function. However, as cirrhosis gets worse and scar tissue replaces more healthy tissue, the liver will begin to fail. Chronic liver failure, which is also called end-stage liver disease, progresses over months, years, or even decades. With end-stage liver disease, the liver can no longer perform important functions or effectively replace damaged cells.[3]



3. National Institute of Diabetes and Digestive and Kidney Diseases, National Institutes of Health (NIH)

Common Signs and Symptoms

- fatigue
- abdominal pain (especially upper right abdominal pain)
- abdominal distention
- jaundice
- ascites (abdominal fluid accumulation)
- nausea
- constipation
- diarrhea
- weight loss
- low appetite
- spider-like blood vessels on the skin (spider angiomas)
- bruising and bleeding easily
- edema of the legs
- itching and dry skin
- dark or bloody stool
- foul breath
- epistaxis
- bleeding gums
- fever

If there is hepatic encephalopathy, there may be hallucinations, drowsiness, or slurred speech. Cirrhosis of the liver may be caused by chronic liver infections including hepatitis B and C. The following includes typical disorders that cause cirrhosis:

Common Causes of Cirrhosis

- hepatitis
- excess alcohol intake
- malnutrition
- fatty liver disease
- primary biliary cirrhosis (bile duct deterioration)
- parasitic infections
- adverse reactions to medications or other drugs
- primary sclerosing cholangitis (scarring and hardening of the bile ducts)
- alpha1-antitrypsin deficiency (liver enzyme deficiency)
- galactosemia
- hemochromatosis (an excess of iron buildup disorder)

Statistics

Cirrhosis is a condition in which the liver slowly deteriorates and is unable to function normally due to chronic injury.

- Cirrhosis is the 12th leading cause of death in the United States, accounting for nearly 32,000 deaths each year.
- More men die of cirrhosis than women.[4]

4. Murphy SL, Xu J, Kochanek KD. Deaths: final data for 2010. Centers for Disease Control and Prevention website. www.cdc.gov/nchs/data/nvsr/nvsr61/nvsr61_04.pdfExternal Link Disclaimer (PDF, 3,103 KB)*. Updated May 8, 2013. Accessed February 6, 2014.

Chinese Medicine Theory

In Traditional Chinese Medicine (TCM), cirrhosis of the liver presents with several differential diagnostics including:

- Damp-heat
- Liver qi stagnation
- Blood stasis
- Dirty Water Accumulation
- Heat in the Blood
- Blood deficiency
- Spleen and stomach qi deficiency
- Spleen and kidney yang deficiency
- Liver and kidney yin deficiency

Chinese Medicine Etiology

Cirrhosis of the liver often starts as an excess condition that creates long-term deficiencies. For example, viral hepatitis or excess alcohol intake may lead to damp-heat in the liver and spleen. This causes qi and blood stasis plus dirty water accumulation, which congeals into palpable masses. In addition, damp-heat and its sequelae damages the liver and kidney yin and also the spleen and kidney yang. As a result, there is a combination of excess and deficiency syndromes.

General Guidelines

Gallstones (cholelith) and jaundice often accompany cirrhosis. Indications for liver cirrhosis generally include:

- pain in the liver and stomach region
- abdominal bloating
- bruises

- irritability
- bitter taste in the mouth
- poor appetite

Abdominal Distention
Abdominal distention associated with cirrhosis of the liver is often due to the inability of the spleen and stomach to transform and transport food and fluids. This is often due to liver qi stagnation or damp-heat, cold dampness, and blood stasis due to spleen and stomach qi deficiency.

Tongue and Pulse
The tongue and pulse often share the following qualities, although chronic cases with severe deficiency usually present differently:

Tongue
Dark red, thick white or yellow coating

Pulse
Full, wiry

Treatment Strategy

A general principle of qi and blood stasis with excess dampness applies to cirrhosis. The treatment strategy is therefore to:

- **Regulate qi and blood**
- **Dissolve qi, blood, and phlegm nodules**

Based on these principles, variations of the herbal formula Xue Fu Zhu Yu Tang modified with Si Ni San will be presented for several types of presentations. Given the prevalence of cirrhosis due to infections and alcohol intake, modifications for resolving damp-heat are presented. Long-term illness leads to deficiency and therefore tonifying modifications are

also presented. We'll take a closer look at these formulas in the herbal medicine section.

Gallstones

Chronic blockage of bile ducts by gallstones may causes cirrhosis of the liver. Conversely, cirrhosis of the liver may prevent the free flow of bile to and from the gallbladder. As a result, the bile hardens into gallstones. In TCM, many of the herbal formulas and acupuncture treatments for cirrhosis also focus on the treatment of gallstones. Inherently, this results from the liver and gallbladder being paired Zang-Fu organs and commonalities in differential diagnostics: excess dampness combined with qi and blood stasis.

Common Cirrhosis Combination Patterns

Qi and Blood Stasis

Scar tissue formation in the liver is consistent with qi and blood stasis. As a result, many of the herbal formulas and treatment strategies assume qi and blood stasis as a diagnostic principle across a wide variety of cirrhosis presentations.

Indications

- sharp, focal hypochondriac pain
- abdominal distention and fullness
- facial dilation of capillaries (facial capillarectasia)
- purple lips
- grey skin or darkening of the complexion
- palpable masses

Tongue: purple

Pulse: thready, wiry, or choppy

Treatment Principles: Invigorate qi and blood, remove stasis

In the herbal medicine section, we will closely examine several patterns that combine with qi and blood stasis for patients with cirrhosis:

- Qi and Blood Stasis with Heat in the Blood
- Qi and Blood Stasis with Damp-Heat
- Qi and Blood Stasis and Spleen Qi Deficiency with Dampness
- Qi and Blood Stasis with Food Stagnation

Qi Stagnation with Dirty Water Accumulation

Ascites is the accumulation of fluid in the peritoneal cavity (lining of the abdomen and abdominal organs), causing abdominal swelling. Ascites is common in diseases involving liver damage, including cirrhosis. Ascites is due to high pressure in the blood vessels of the liver (portal hypertension) and low levels of albumin. Symptoms vary from completely asymptomatic to more severe indications due to increased fluid build-up.

Indications

- ascites
- abdominal pain and bloating, especially after eating
- shortness of breath
- difficulty with urination and defecation
- scanty urination
- difficulty resting in a horizontal position due to water oppression

Tongue: thick or sticky coating

Pulse: wiry, full (forceful)

Treatment Principles: drain dampness or purge to dispel dirty water

Damp-Heat with Liver and Kidney Yin Deficiency

Jaundice is a key indicator of damp-heat.

Indications

- yellow complexion, jaundice
- facial dilation of capillaries (capillarectasia)
- bleeding of the nose or gums
- bloated abdominal region
- edema
- concentrated yellow urine

Tongue: deep red, cracks, purple spots, yellow or grey coating

Pulse: thready, wiry, slippery (rolling), or rapid

Treatment Principles: Nourish yin, drain dampness, clear heat

Liver Qi Stagnation with Spleen Deficiency

Indications

- low appetite
- fatigue
- irritability
- dark or lusterless complexion
- pain of the hypochondrium
- abdominal pain or distention
- loose stools
- dizziness
- dysmenorrhea
- depression
- infertility

- food retention

Tongue: thin white, teethmarks

Pulse: thready, wiry

Treatment Principles: Regulate the liver qi, benefit spleen and stomach qi

Spleen and Kidney Yang Deficiency

Indications

- low appetite
- bloated abdomen
- excessive fluid in the hypochondrium or epigastric regions
- edema
- loose stool or diarrhea before dawn
- cold limbs
- aversion to cold
- pale complexion
- lumbago

Tongue: pale, teethmarks, white coating

Pulse: deep, thready, no root

Treatment Principles: warm the kidney yang, strengthen spleen yang

Damp-Warm

Prevention

Preventing cirrhosis is the best option. Many cases of cirrhosis develop from patients with damp-warm hepatitis and other damp-warm related infections. The following reviews the treatment of damp-warm conditions.

Theory

Damp-Warm is a condition presenting with chronic fever. Because the fever is related to dampness, it has the character of gradually leaving over time. Dampness tends to linger and, as a result, the fever recedes slowly. The shape of the fever over time is such that it is low in the morning and higher in the afternoon. It slowly recedes in the evening. This stairstep pattern of gradually rising and falling over the period of a day is a classic presentation of a damp-warm fever. Damp-warm fevers are associated with the season of long-summer, according to five element theory.

Damp-warm symptoms

- stairstep fever
- fatigue
- heaviness
- nausea
- diarrhea
- vomiting
- abdominal fullness
- dark, turbid urine
- yellow discoloration of the skin
- sore throat
- chest oppression

Pulse: rapid, slippery
Tongue: red, thick, yellow and greasy coat

Conditions

Biomedically defined conditions associated with damp-warm are stomach 'flu', typhoid, hepatitis, cholecystitis (gallbladder inflammation), jaundice, acute gastroenteritis, stomatitis, pyelonephritis.

Herbs For Damp-Warm

The herbal formula Gan Lu Xiao Du Dan (Sweet Dew Special Pill to Eliminate Toxins) is effective for the treatment of damp-warm conditions.

Ingredients

Bo He	(Mentha Haplocalycis)	6 - 9 g
Huang Qin	(Scutellaria)	12 - 15 g
Lian Qiao	(Forsythia)	12 - 15 g
She Gan	(Belamcanda rhizome)	9 - 12 g
Hua Shi	(Talcum)	18 - 21 g
Mu Tong	(Caulis Akebiae)	9 - 12 g
Yin Chen Hao	(Artemisiae Scopariae)	24 - 30 g
Chuan Bei Mu	(Fritillariae Cirrhosae)	6 - 9 g
Huo Xiang	(Agastaches)	9 - 12 g
Bai Dou Kou	(Amomi Rotundus)	10 - 12 g
Shi Chang Pu	(Acori Tatarinowii)	4 - 6 g

This combination of herbs clears heat, dampness, and toxins. Gan Lu Xiao Du Dan helps to resolve damp-warm conditions before progressing to later stages wherein qi and blood stasis develop thereby preventing cirrhosis.

Herbs For Cirrhosis Treatment

Given the prevalence of qi and blood stasis in cirrhosis, Xue Fu Zhu Yu Tang modified with Si Ni San is an effective combination when treating cirrhosis and gallstones. We'll start with a general review of the formulas and then review cirrhosis related modifications. The following reviews:

A. Classic formula overview

1. Si Ni San
2. Xue Fu Zhu Yu Tang

B. Modifications based on differential diagnostics for cirrhosis

1. Blood Stasis with Heat in the Blood
2. Qi and Blood Stasis with Damp-Heat
3. Qi and Blood Stasis and Spleen Qi Deficiency with Dampness

C. Formula Modifications used in specific cirrhosis case histories

1. Chronic hepatitis, cirrhosis, spider angiomas, poor appetite, fatigue
2. Chronic hepatitis, intermittent jaundice, cirrhosis, ascites, and spider angiomas

Si Ni San

Ingredients

Chai Hu	Radix Bupleuri	3 – 6 g
Zhi Shi	Fructus Immaturus Citrii Aurantii	3 – 12 g
Bai Shao	Paeoniae Radix Alba	3 – 15 g

All of the above herbs regulate qi. Chai Hu regulates the liver qi and helps the qi move upward and horizontally in the body. Zhi Shi breaks qi stagnation and helps qi circulate downward. Bai Shao stabilizes the liver yang, nourishes yin and blood, and harmonizes the ying and wei.

Gan Cao	Radix Glycyrrhizae Uralensis	3 g

Gan Cao harmonizes the other herb actions in this formula. It has a sweet taste, which affects acute syndromes.

Xue Fu Zhu Yu Tang

Ingredients

Chi Shao	Radix Paeoniae Rubrae	2 – 12 g
Dang Gui	Radix Angelicae Sinensis	3 – 12 g
Chuan Xiong	Radix Ligustici Chuanxiong	3 – 9 g

All of the herbs above promote blood circulation. Chi Shao cools heat in the blood. Dang Gui nourishes the blood. Chuan Xiong moves the Qi in the blood and tends to flow to the body's surface and upper body.

Hong Hua	Flos Carthami Tinctorii	3 – 9 g
Tao Ren	Semen Persicae	3 – 12 g

Hong Hua and Tao Ren both break congealed blood. Hong Hua's initial effect is faster and stronger than that of Tao Ren. Tao Ren's effect is sustained for a longer period of time and it is also able to moisten dryness. In general, herbs with a fast effective action tend to diminish in strength more quickly in the bloodstream than herbs with a slower initial effective action. Conversely, herbs with a more lasting effect in the bloodstream tend to have a slower initial effective action. This is the case with Tao Ren and Hong Hua. Another quality of paired herbs with these tendencies is that the more physically dense herb tends to have a more lasting effect and the physically lighter, less dense herb tends to have a faster effective action.

(Chuan) Niu Xi	Radix Achyranthis Bidentatae	3 – 12 g

Niu Xi promotes blood circulation to the legs, strengthens the Liver and Kidney, and expels wind-damp bi pain.

Sheng Di Huang Radix Rehmanniae Glutinosae 3 – 15 g

Sheng Di Huang cools blood heat, nourishes the blood, and moderates the function of the stronger blood-regulating herbs in this formula.

Chai Hu	Radix Bupleuri	3 – 6 g
Zhi Ke	Fructus Citri Aurantii	3 – 12 g
Jie Geng	Radix Platycodi Grandiflori	3 – 15 g

All of the above herbs regulate Qi. Chai Hu regulates Liver Qi and promotes Qi flow upwards and horizontally in the body. Zhi Ke opens the chest and moves the Qi. Jie Geng regulates lung qi, opens the Lungs and guides the herbs to the upper body.

Zhi Gan Cao Radix Glycyrrhizae Uralensis 3 g

Zhi Gan Cao is honey-fried Gan Cao. It harmonizes the herbs in Xue Fu Zhu Yu Tang. For a more cooling effect, use Sheng Gan Cao.

Hong Hua

Xue Fu Zhu Yu Tang Construction

Tao Hong Si Wu Tang, first noted in the Yi Zong Jin Jian in 1742 by Wu Qian, is the base formula of Xue Fu Zhu Yu Tang and is comprised of:

- Tao Ren
- Hong Hua
- Dang Gui
- Shu Di Huang
- Bai Shao
- Chuan Xiong

Tong Hong Si Wu Tang nourishes the blood, regulates blood circulation and eliminates blood stasis. In Xue Fu Zhu Yu Tang, Sheng Di Huang replaces Shu Di Huang to clear heat. Chai Hu and Zhi Ke balance the upward and downward movement of qi. This combination of herbs leads the formula's actions to the chest.

Zhi Ke is used and not Zhi Shi. They are both bitter oranges, however, Zhi Shi is immature and Zhi Ke is ripe. Both Zhi Shi and Zhi Ke breakdown Qi but Zhi Ke is ripe and is therefore more mild. As a result, Zhi Ke has less of a function to break the Qi. On the other hand, Zhi Ke's more mild nature makes it more effective in gently walking the Qi. This mild nature has a slight tonifying effect whereas Zhi Shi is more strictly for breaking Qi stagnation. Zhi Ke has a stronger nature in raising the middle jiao Qi by walking the Qi to remove stagnation. As a result, Zhi Ke is more effective for abdominal pain related to Spleen Qi deficiency and Zhi Shi is more effective for treating costal pain due to Qi stagnation.

Zhi Shi and Zhi Ke enter the liver, spleen and stomach channels. They are spicy, bitter and cold. They break Qi due to food stagnation in the stomach and intestines, treat damp-heat in the middle jiao and benefit Spleen Qi when combined with tonifying herbs. These herbs are used for the treatment of prolapsed organs including: uterus, stomach, large intestine, rectum, spleen, kidney. They are effective in the treatment of food

stagnation due to overeating, digestive dysfunctions, costal pain and abdominal pain.

Jie Geng and Niu Xi are added to move congestion. Jie Geng has an upward moving function and a descending function. Jie Geng stimulates the descending function of the Lung while at the same time it guides herbs to the Lung and upper body. Jie Geng channels the herbs to the Lungs to heal the Lungs thereby allowing the normal function of the Lungs to help descend Qi. In this way, Jie Geng promotes upward movement of herbs and also helps the downward movement of Qi.

Niu Xi eliminates blood stasis and directs blood downwards. Zhi Gan Cao harmonizes the formula.

Sheng Di Huang

Chi Shao

Liver and Gallbladder Modifications

The following are formula modifications of Xue Fu Zhu Yu Tang and Si Ni San for cirrhosis of the liver or gallstones determined by the following differential diagnostic patterns:

1. *Blood Stasis with Heat in the Blood*
2. *Qi and Blood Stasis with Damp-Heat*
3. *Qi and Blood Stasis and Spleen Qi Deficiency with Dampness*

Following this presentation of differential diagnostic combination patterns, a look at specific case studies elucidates treatment strategies for treating cirrhosis of the liver and gallstones.

1. Blood Stasis with Heat in the Blood

This formula modification is for the buildup of masses due to qi and blood stasis in the liver. This formula is also appropriate for the treatment of gallstones. Note the strong blood invigorating herbs in this formula. This formula is contraindicated during pregnancy as are similar formulas containing strong blood invigorating herbs.

Chi Shao	Radix Paeoniae Rubrae	2 – 12 g
Dang Gui	Radix Angelicae Sinensis	3 – 12 g
Chuan Xiong	Radix Ligustici Chuanxiong	3 – 9 g

All the herbs above promote blood circulation. The herbs can be differentiated as follows: Chi Shao cools heat in the blood. Dang Gui nourishes the blood. Chuan Xiong moves the qi in the blood and tends to flow to the body's surface and upper body. This means that Chuan Xiong has a rapid onset of therapeutic actions and benefits the upper jiao (burner).

Hong Hua	Flos Carthami Tinctorii	3 – 9 g
Tao Ren	Semen Persicae	3 – 12 g

Hong Hua and Tao Ren both break up congealed blood. Hong Hua's onset of action is faster and stronger. Tao Ren's action is sustained for a longer period of time and it is able to moisten dryness.

Niu Xi	Radix Achyranthis Bidentatae	3 – 12 g

Niu Xi promotes blood circulation to the legs. It strengthens the liver and kidneys. It also expels wind-dampness to alleviate bi (joint) pain.

Mu Dan Pi	Cortex Moutan Radicis	9 – 15 g
Di Gu Pi	Cortex Lycii Radicis	12 g
Bai Wei	Radix Cynanchi Baiwei	15 g

All of the above herbs cool heat in the blood. Mu Dan Pi promotes blood circulation. Di Gu Pi clears steaming bone syndrome and Bai Wei eliminates heat.

Sheng Di Huang	Radix Rehmanniae Glutinosae	3 – 15 g

Sheng Di Huang cools blood heat, nourishes the blood, and moderates the function of the stronger blood-regulating herbs. It is difficult to digest.

Bai Shao	Paeoniae Radix Alba	12 g
Chai Hu	Radix Bupleuri	3 – 6 g
Zhi Ke	Fructus Citri Aurantii	3 – 12 g
Jie Geng	Radix Platycodi Grandiflori	3 – 15 g

All the above herbs regulate qi. Chai Hu regulates liver qi and promotes its flow upward through the body. Bai Shao stables the liver yang and nourishes the liver yin. Zhi Ke opens the chest and moves the qi. Jie Geng

regulates lung qi and opens the lungs. It also guides the other herbs to the upper body.

Jin Qian Cao	Lysimachiae Herba	15 – 30 g
Xiang Fu	Rhizome Cayperi Rotunda	9 – 12 g

Jin Qian Cao and Xiang Fu help discharge gallstones. Jin Qian Cao promotes urination and clears damp-heat. Xiang Fu promotes blood circulation and stops pain.

E Zhu	Rhizoma Curcumae Ezhu	9 – 15 g
San Leng	Rhizoma Sparganii Stoloniferi	9 – 15 g

E Zhu and San Leng both break up masses caused by congealed blood due to stasis. E Zhu's action is stable and sustained longer. San Leng has a faster onset of effective actions and breaks up qi stagnation affecting blood.

Zhi Gan Cao	Radix Glycyrrhizae Uralensis	3 g

Zhi Gan Cao harmonizes the other herbs in the formula. Zhi Gan Cao is the honey-fried preparation of the herb.

2. Qi and Blood Stasis with Damp-Heat

This modification treats cirrhosis with jaundice or concomitant chronic hepatitis. The addition of Yi Chen Hao, Huang Qin, Hu Zhang, and Ku Shen make this formula appropriate for many presentations of damp-heat related cirrhosis.

Chi Shao	Radix Paeoniae Rubrae	2 – 12 g

Dang Gui	Radix Angelicae Sinensis	3 – 12 g
Chuan Xiong	Radix Ligustici Chuanxiong	3 – 9 g

All of the above herbs promote blood circulation. The herbs can be differentiated as follows: Chi Shao cools heat in the blood. Dang Gui nourishes the blood. Chuan Xiong moves the qi in the blood and tends to flow to the body's surface and upper body.

Hong Hua	Flos Carthami Tinctorii	3 – 9 g
Tao Ren	Semen Persicae	3 – 12 g

Hong Hua and Tao Ren both break up congealed blood. Hong Hua's action is faster and stronger. Tao Ren's action is more sustained for a longer period of time; it is able to moisten dryness.

Niu Xi	Radix Achyranthis Bidentatae	3 – 12 g

Niu Xi promotes blood circulation to the legs. It strengthens the liver and kidneys. It also expels wind-dampness to alleviate bi pain.

Chai Hu	Radix Bupleuri	3 – 6 g
Zhi Ke	Fructus Citri Aurantii	3 – 12 g
Jie Geng	Radix Platycodi Grandiflori	3 – 15 g

All the above herbs regulate qi. Chai Hu regulates liver qi and promotes its flow upward through the body. Zhi Ke opens the chest and moves the qi. Jie Geng regulates lung qi and opens the lungs. It also guides the other herbs to the upper body.

Yin Chen Hao	Herba Artemisiae yinchenhao	12 – 15 g
Huang Qin	Radix Scutellariae Baicalensis	12 – 30 g
Hu Zhang	Polygoni Cuspidati, Radix et Rhizoma	12 – 30 g
Ku Shen	Radix Sophorae flavescentis	12 g

Yin Chen Hao, Huang Qin, Hu Zhang, and Ku Shen clear damp-heat. Yin Chen Hao eliminates the yellow eyes of jaundice. Huang Qin clears damp-heat in the upper and middle jiao (burners). Hu Zhang promotes blood circulation and treats jaundice. Ku Shen clears hepatitis related pathogens.

Gan Cao	Radix Glycyrrhizae Uralensis	3 g

Gan Cao has a sweet taste and character. It harmonizes the action of the other ingredients in the formula.

3. Qi and Blood Stasis and Spleen Qi Deficiency with Dampness

Here we see the introduction of tonifying herbs to address qi deficiency and dampness common in cirrhosis patients.

Dang Gui	Radix Angelicae Sinensis	3 – 12 g
Chuan Xiong	Radix Ligustici Chuanxiong	3 – 9 g

Dang Gui and Chuan Xiong promote blood circulation. The herbs can be differentiated as follows: Dang Gui nourishes the blood. Chuan Xiong moves the qi in the blood and flows to the body's surface and upper body.

Hong Hua	Flos Carthami Tinctorii	3 – 9 g
Tao Ren	Semen Persicae	3 – 12 g

Hong Hua and Tao Ren both break up congealed blood. Hong Hua's action is faster and stronger. Tao Ren's action is sustained for a longer period of time and it is able to moisten dryness.

Chai Hu	Radix Bupleuri	3 – 6 g

Zhi Ke	Fructus Citri Aurantii	3 – 12 g
Jie Geng	Radix Platycodi Grandiflori	3 – 15 g

All of the above herbs regulate qi. Chai Hu regulates liver qi and promotes its flow upward through the body. Zhi Ke opens the chest and moves the qi. Jie Geng regulates lung qi and opens the Lungs. It also guides the herbs to the upper body.

Dang Shen	Radix Codonopsitis Pilosulae	15 g
Bai Zhu	Atractylodis Macrocephalae Rhizoma	12 g
Fu Ling	Sclerotium Poriae cocoa	30 g
Chao Gan Cao	Fried Radix Glycyrrhizae Uralensis	3 g

The above herbs are also Su Jun Zi Tang's ingredients. Dang Shen strengthens the spleen qi. Bai Zhu warms and dries dampness in the middle jiao. Fu Ling drains dampness. Chao Gan Cao is fried Gan Cao. It warms and penetrates the spleen. It also harmonizes the other ingredients in this formula.

Bai Bian Dou	Semen Dolichoris Lablab	15 g
Yi Yi Ren	Semen Coicis Lachryma-Jobi	15 g

Bai Bian Dou and Yi Yi Ren drain (leach) dampness from the middle jiao. Bai Bian Dou astringes the spleen. Yi Yi Ren is stronger at draining the dampness.

Shan Yao	Radix Dioscoreae Oppositae	15 g
Lian Zi	Semen Nelumbinis Nuciferae	12 g

Shan Yao and Lian Zi have a relatively neutral temperature and they astringe the spleen qi. Shan Yao goes into deeper layers. Lian Zi calms the heart.

Sha Ren	Fructus Amomie	9 g
Pei Lan	Herba Eupatorii Fortunei	12 g

Sha Ren and Pei Lan are aromatic. They transform dampness and dry dampness in the spleen. Sha Ren has a stronger smell and is heavier, which allows it to dry dampness in the deeper layers. Pei Lan has a lighter smell and it flows to the upper body and body's surface.

Jie Geng Radix Platycodi Grandiflori 12 g

Jie Geng opens the lung-metal qi to regulate the spleen qi. It also flows to the upper body.

Chai Hu

Case Studies

Cirrhosis with Hepatitis B

A male, age 33, was diagnosed with chronic hepatitis B and cirrhosis of the liver. Total duration of illness to date: five years. His ALT (liver enzyme) was 140 and he had pain in his liver. His liver had enlarged 2 cm under his rib. He had a poor appetite, belching, and a bloated abdomen. He had red and purple spider angiomas on his chest and neck, which indicated his blood circulation was impaired from the cirrhosis of the liver. His tongue was purple and his pulse was wiry and full.

- Inflamed or injured liver cells leach elevated quantities of substances, including liver enzymes, from within cells to the bloodstream. Normally, these substances are contained within cells. The leakage into the bloodstream from cells results in elevated levels of liver enzymes in blood tests. Typically, this includes the enzymes Alanine transaminase (ALT) and Aspartate transaminase (AST).
- Hepatomegaly, swelling of the liver beyond its normal size, is caused by many conditions including primary biliary cirrhosis and hepatitis A, B, and C. Hepatomegaly may also result from alcohol abuse, cancer, leukemia, steatosis of the liver (fatty liver), Reye syndrome, congestive heart failure, and glycogen storage related diseases.
- Normal ALT levels are approximately 10 – 40 units per liter (U/L) for males and 7 – 56 U/L for females.
- 90% of infants exposed to hepatitis B virus (HBsAg) develop chronic hepatitis B infections
- Up to 50% of children between the ages of 1 – 5 years develop chronic hepatitis B infections
- 5 - 10% of infected adults develop chronic hepatitis B infections
- A blood test is used for a definitive diagnosis of hepatitis B

Diagnosis
Qi and blood stasis in the liver, food stagnation

Treatment Strategy
Promote and regulate qi and blood circulation in liver

Base Formula
Xue Fu Zhu Yu Tang modified with Bao He Wan
This modification of Xue Fu Zhu Yu Tang addresses food stagnation and its effects on digestion.

Chi Shao	Radix Paeoniae Rubrae	12 g
Chuan Xiong	Radix Ligustici Chuanxiong	9 g

Chi Shao and Chuan Xiong promote blood circulation. The herbs can be differentiated as follows: Chi Shao cools heat in the blood. Chuan Xiong moves the qi in the blood and tends to flow to the body's surface and upper body.

Hong Hua	Flos Carthami Tinctorii	9 g
Tao Ren	Semen Persicae	12 g

Hong Hua and Tao Ren both break up congealed blood. Hong Hua's action is faster and stronger. Tao Ren's action is sustained for a longer period of time and it is able to moisten dryness. This paired set of herbs is a classic combination. As in many classic paired herbs, one has a faster onset of effective action and the other sustains the the therapeutic effect for a longer period of time. This combination results in fast and long-lasting therapeutic results.

Yan Hu Suo	Rhizome Corydalis Yanhusuo	12 g

Yan Hu Suo promotes blood circulation. It also stops pain.

Niu Xi	Radix Achyranthis Bidentatae	12 g

Niu Xi promotes blood circulation to the legs. It strengthens the liver and kidneys. It also expels wind-dampness to alleviate bi (joint) pain.

Mu Dan Pi	Cortex Moutan Radicis	15 g

Mu Dan Pi cools blood heat. It also promotes blood circulation.

Chai Hu	Radix Bupleuri	6 g
Zhi Ke	Fructus Citri Aurantii	12 g
Jie Geng	Radix Platycodi Grandiflori	15 g

All of the above herbs regulate qi. Chai Hu regulates liver qi and promotes its flow upward through the body. Zhi Ke opens the chest and moves the qi. Jie Geng regulates lung qi and opens the Lungs. It also guides the herbs to the upper body.

San Leng	Rhizoma Sparganii Stoloniferi	12 g
E Zhu	Rhizoma Curcumae Ezhu	12 g

San Leng and E Zhu break up qi and blood masses. San Leng flows faster and to the surface level. E Zhu remains in the bloodstream longer and flows to deeper layers. This is another illustration of a classic set of paired herbs. One acts quickly and the other sustains its effective action for a longer period of time.

Shen Qu	Massa Fermenatata	30 g
Lai Fu Zi	Semen Raphani Sativi	30 g

Shen Qu and Lai Fu Zi break up food stagnation. Shen Qu penetrates into the food stagnation. Lai Fu Zi breaks and descends the qi. These herbs are important ingredients in Bao He Wan (Preserve Harmony Pill), an important formula for treating food stagnation, dampness, an heat. This combination

helps relieve diarrhea, constipation, belching, nausea, abdominal bloating, acid regurgitation, and vomiting due to food stagnation.

Gan Cao Radix Glycyrrhizae Uralensis 3 g

Gan Cao has a sweet taste and character. It harmonizes the actions of the other ingredients in this formula.

Results of Treatment

After he took 10 bags of this herbal decoction for 10 days, his appetite and energy levels improved by 80%. The spider veins shrank 50%. His tongue also appeared much less purple.

He continued taking this formula for thee months. His liver became soft and shrank back into his ribcage. Spider angiomas disappeared completely and his ALT was 50. He continued taking this formula in the dose of one bag for three days for 5 years.

Cirrhosis of the Liver with Edema

A female, age 64, had chronic hepatitis C and cirrhosis of the liver for years. Her main complaints were pain in her liver region and an enlarged liver, which pushed into her stomach causing pain. She also complained of a poor appetite, mild ascites (the accumulation of fluid in the peritoneal cavity, causing abdominal swelling), and edema in her lower legs and ankles. She had spider angiomas (dilated capillaries on the skin) on her hands and neck. Her eyes were occasionally yellow (jaundice). Her tongue was purple with a yellow coating. Her pulse was wiry, slippery, and full.

- Yellowing of the eyes (scleral icterus, conjunctival icterus) indicates jaundice and is common in cases of hepatitis. The conjunctiva is a mucous membrane covering the front of the eyes and lines the inside of the eyelids. The conjunctiva, high in stromal vessels, turns yellow due to excess bilirubin pigment in the bloodstream. The sclera is the white outer layer of the eyeball and the yellowing, by contrast, is most visible upon initial inspection in this area. The entire eye changes color but the contrast over the white areas is most visible.
- Total bilirubin normals levels range from 0.0 – 1.4 mg/dL. Direct bilirubin normal levels range from 0.0 – 0.3 mg/dL. Indirect bilirubin normal levels range from 0.2 – 1.2 mg/dL. Bilirubin levels reflect the balance between production and excretion.
- Bilirubin, an orange-yellow substance found in bile, is a waste product produced when the liver breaks down hemoglobin. Bile is secreted by the liver and aids digestion. Normally, bilirubin is excreted in bile through the intestines and a small amount is excreted through urine.

Diagnosis

Qi and blood stasis, damp-heat stagnation in the liver

Treatment Strategy

Promote and regulate qi and blood circulation, clear damp-heat in the liver

Base Formula
Xue Fu Zhu Yu Tang modified with Bao He Wan
This modification treats blood stasis, food stagnation, and damp-heat.

Chi Shao	Radix Paeoniae Rubrae	12 g
Chuan Xiong	Radix Ligustici Chuanxiong	9 g

Chi Shao and Chuan Xiong promote blood circulation. The herbs can be differentiated as follows: Chi Shao cools heat in the blood. Chuan Xiong moves the qi in the blood and tends to flow to the body's surface and upper body. The pairing of the these herbs also indicates the balance between the warming nature of Chuan Xiong with the cooling nature of Chi Shao.

Hong Hua	Flos Carthami Tinctorii	9 g
Tao Ren	Semen Persicae	12 g

Hong Hua and Tao Ren both break up congealed blood. Hong Hua's action is faster and stronger. Tao Ren's action is sustained for a longer period of time and it is able to moisten dryness.

Yan Hu Suo	Rhizome Corydalis Yanhusuo	12 g

Yan Hu Suo promotes blood circulation. It also stops pain.

Niu Xi	Radix Achyranthis Bidentatae	12 g

Niu Xi promotes blood circulation to the legs. It strengthens the liver and kidneys. It also expels wind-dampness to alleviate bi pain.

Mu Dan Pi	Cortex Moutan Radicis	15 g

Mu Dan Pi cools blood heat. It also promotes blood circulation.

Chai Hu	Radix Bupleuri	6 g

Zhi Ke	Fructus Citri Aurantii	12 g
Jie Geng	Radix Platycodi Grandiflori	15 g

All of the above herbs regulate qi. Chai Hu regulates liver qi and promotes its flow upward through the body. Zhi Ke opens the chest and moves the qi. Jie Geng regulates lung qi and opens the Lungs. It also guides the other herbs to the upper body.

San Leng	Rhizoma Sparganii Stoloniferi	12 g
E Zhu	Rhizoma Curcumae Ezhu	12 g

San Leng and E Zhu break up qi and blood masses. San Leng flows faster and to the surface level. The is the faster onset of therapeutic effective actions. E Zhu remains in the bloodstream longer and flows to deeper layers. E Zhu, therefore, has longer lasting therapeutic actions.

Bie Jia	Carapax Amydae Sinensis	60 g

Bie Jia dissolves nodules and promotes blood circulation. It also lubricates yin.

Shen Qu	Massa Fermenatata	30 g
Lai Fu Zi	Semen Raphani Sativi	30 g

Shen Qu and Lai Fu Zi break up food stagnation. Shen Qu penetrates into the food stagnation. Lai Fu Zi breaks and descends the qi.

Yin Chen Hao	Herba Artemisiae yinchenhao	15 g
Zhi Zi	Fructus Gardeniae Jasminoidis	12 g
Ku Shen	Radix Sophorae Flavescentis	9 g
Hu Zhang	Polygoni Cuspidati Radix et Rhizoma	12 g

All of the above herbs clear damp-heat in the liver. Yin Chen Hao eliminates jaundice. Zhi Zi clears San Jiao (triple burner) damp-heat and calms the heart. Ku Shen and Hu Zhang treat hepatitis viral infections. Ku

Shen also clears heat toxins in the skin. Hu Zhang promotes blood circulation.

Fu Ling	Sclerotium Poriae Cocos	15 g
Zhu Ling	Sclerotium Polypori Umbellati	15 g

Fu Ling and Zhu Ling promote urination. Fu Ling has neutral character and drains dampness from the Middle Jiao. Zhu Ling acts to promote urination more strongly.

Gan Cao	Radix Glycyrrhizae Uralensis	3 g

Gan Cao has a sweet taste and character. It harmonizes actions of the other ingredients in this formula.

Results of Treatment

She took one bag of the above formula for two days and then continued taking it for three months. Her spider veins shrank by approximately 90%, and hepatomegaly reduced in size approximately 80%. She no longer had yellow eyes or edema. She then continued taking this formula modified with Shen Ling Bai Zhu San for one year. After one year, she completely recovered from the cirrhosis of the liver.

Gallstones

A female, age 50, had mud-type stones in her gallbladder, nausea, and pain in her gallbladder. The pain radiated to her right back and was worse with stress. She also had insomnia. Her tongue was dark red, and her pulse was wiry and small.

A gallstone is also referred to as a cholelith. It is a formed within the gallbladder from bile components. The medical term for stone formation in the gallbladder is cholelithiasis.

Gallstones may be classified into many types including:

- Cholesterol stones
- Pigment stones
- Calcium carbonate stones
- Phosphate stones
- Calcium stearate stones
- Protein stones
- Cystine stones
- Mixed stones

Qiao et al. document several types and characteristics of gallstones:

> Cholesterol stones appeared brownish yellow, amber, grey, celadon or black and were spherical or polyhedron in shape. They were of different sizes, soft, and the surfaces were smooth and glossy or rough. The profile was yellow, brownish yellow or white with a radial or radial armillary layered arrangement and/or a darker nucleus, with no distinct layer. Pigment stones were amorphous, brittle, granules that were black, charcoal grey or grayish brown in color, with no layer in the profile. Calcium carbonate stones were black coralline-like, green mud-like or black amorphous granules, hard or brittle in texture, and had no layer in the profile. Phosphate stones were smooth surfaced and brittle with a black coal cinder-like color. Calcium stearate stones were brittle and irregular granules, brick red or grey in color, and with a brick-red profile with no layer. Protein stones were hard in texture, green in color, with clay or mud

shapes, and no layer in the profile. Cystine stones, a new type of gallbladder stone discovered in our previous studies, were tiny, amber particles less than 1 mm in size. Mixed stones were those stones with two or more than two kinds of material components and the content of each component was similar.[5]

Diagnosis
Qi and blood stagnation gallstones

Treatment Strategy
Promote and regulate qi and blood circulation and expel stones from the gallbladder

Base Formula
Xue Fu Zhu Yu Tang modified with Si Ni San

Chi Shao	Radix Paeoniae Rubrae	12 g
Dang Gui	Radix Angelicae Sinensis	9 g
Chuan Xiong	Radix Ligustici Chuanxiong	9 g

All the herbs above promote blood circulation. The herbs can be differentiated as follows: Chi Shao cools heat in the blood. Dang Gui nourishes the blood. Chuan Xiong moves the qi in the blood and tends to flow to the body's surface and upper body.

Hong Hua	Flos Carthami Tinctorii	9 g
Tao Ren	Semen Persicae	12 g

Hong Hua and Tao Ren both break up congealed blood. Hong Hua's action is faster and stronger. Tao Ren's action is sustained for a longer period of time and it is able to moisten dryness.

5. Qiao T, Ma RH, Luo XB, Yang LQ, Luo ZL, Zheng PM. The systematic classification of gallstones. Plos one. 2013 Oct 4;8(10):e74887.

Yan Hu Suo	Rhizome Corydalis Yanhusuo	12 g

Yan Hu Suo promotes blood circulation. It also stops pain.

Niu Xi	Radix Achyranthis Bidentatae	12 g

Niu Xi promotes blood circulation to the legs. It strengthens the liver and kidneys. It also expels wind-dampness to alleviate bi pain.

Mu Dan Pi	Cortex Moutan Radicis	15 g

Mu Dan Pi cools blood heat. It also promotes blood circulation.

Chai Hu	Radix Bupleuri	6 g
Zhi Ke	Fructus Citri Aurantii	12 g
Jie Geng	Radix Platycodi Grandiflori	15 g

All the above herbs regulate qi. Chai Hu regulates liver qi and promotes its flow upward through the body. Zhi Ke opens the chest and moves the qi. Jie Geng regulates lung qi and opens the Lungs. It also guides the other herbs to the upper body.

Jin Qian Cao	Lysimachiae Herba	30 g
Xiang Fu	Rhizome Cayperi Rotunda	12 g

Jin Qian Cao and Xiang Fu help to discharge gallstones. Jing Qian Cao promotes urination and clears damp-heat. Xiang Fu promotes blood circulation and stops pain.

San Leng	Rhizoma Sparganii Stoloniferi	12 g
E Zhu	Rhizoma Curcumae Ezhu	12 g

San Leng and E Zhu break up qi and blood masses. San Leng flows faster and to the surface level. E Zhu remains in the bloodstream longer and flows to deeper layers.

Shen Qu	Massa Fermenatata	30 g
Lai Fu Zi	Semen Raphani Sativi	30 g

Shen Qu and Lai Fu Zi break up food stagnation. Shen Qu penetrates into the food stagnation. Lai Fu Zi breaks and descends the qi.

Gan Cao	Radix Glycyrrhizae Uralensis	3 g

Gan Cao has a sweet taste and character. It harmonizes the actions of the other ingredients in this formula.

Results of Treatment
She took two bags for two days and experienced pain in her gallbladder. She continued taking two more bags for two days and ultrasound indicated that her mud-type stones were gone.

Chuan Xiong

Acupuncture & Herbs Research 1

The Healthcare Medicine Institute (HealthCMi) provides a free news and research service. The following is taken from research was published on the Healthcare Medicine Institute's news website portal on March 3, 2012. It demonstrates that a combination of acupuncture and herbs is helpful to patients with hepatic fibrosis:

Research demonstrates that acupuncture combined with oral curcumin intake provides significant protection against hepatic fibrosis. Curcumin is the chief curcuminoid in Jiang Huang (Rhizoma Curcumae Longae, turmeric). Curcumin is bright yellow, hence the name ginger yellow (Jiang Huang). Bataller et al. note, "Liver fibrosis is the excessive accumulation of extracellular matrix proteins including collagen that occurs in most types of chronic liver diseases. Advanced liver fibrosis results in cirrhosis, liver failure, and portal hypertension and often requires liver transplantation."[6]

Bataller et al. add, "Liver fibrosis results from chronic damage to the liver in conjunction with the accumulation of ECM proteins, which is a characteristic of most types of chronic liver diseases.[7] The main causes of liver fibrosis in industrialized countries include chronic HCV infection, alcohol abuse, and nonalcoholic steatohepatitis (NASH). The accumulation of ECM proteins distorts the hepatic architecture by forming a fibrous scar, and the subsequent development of nodules of regenerating hepatocytes defines cirrhosis. Cirrhosis produces hepatocellular dysfunction and increased intrahepatic resistance to blood flow, which result in hepatic insufficiency and portal hypertension, respectively."[8]

Researchers examined the efficacy of curcumin and acupuncture both separately and combined for their ability to prevent liver fibrosis. The researchers discovered a synergistic effect when curcumin and acupuncture are combined. In the study, histological and pathological findings for hepatic disturbances and fibrosis were measured.

6. Bataller R, Brenner DA. Liver fibrosis. The Journal of clinical investigation. 2005 Feb 1;115(2):209-18.
7. Friedman SL. Liver fibrosis - from bench to bedside. J. Hepatol. 2003;38(Suppl. 1):S38–S53.
8. Gines P, Cardenas A, Arroyo V, Rodes J. Management of cirrhosis and ascites. N. Engl. J. Med. 2004;350:1646–1654.

The controlled randomized clinical trial was performed on laboratory rats. There were several study groups: control, model, sham acupuncture, true acupuncture, curcumin, and the combination group. Acupuncture was applied to LV3 (Taichong, Great Rushing), LV14 (Qimen, Cycle Gate), BL18 (Ganshu, Liver Shu) and ST36 (Zusanli, Leg Three Miles).

The control group received sham acupuncture, the use of non-acupuncture points. The sham acupuncture points were located 0.5 cm to the left of each true acupoint that was used in the acupuncture group. No significant changes were measured for the sham group while the true acupuncture group showed significant hepatoprotective findings. The acupuncture and control groups received acupuncture treatment three times per week for three weeks followed by two times per week for an additional three weeks.

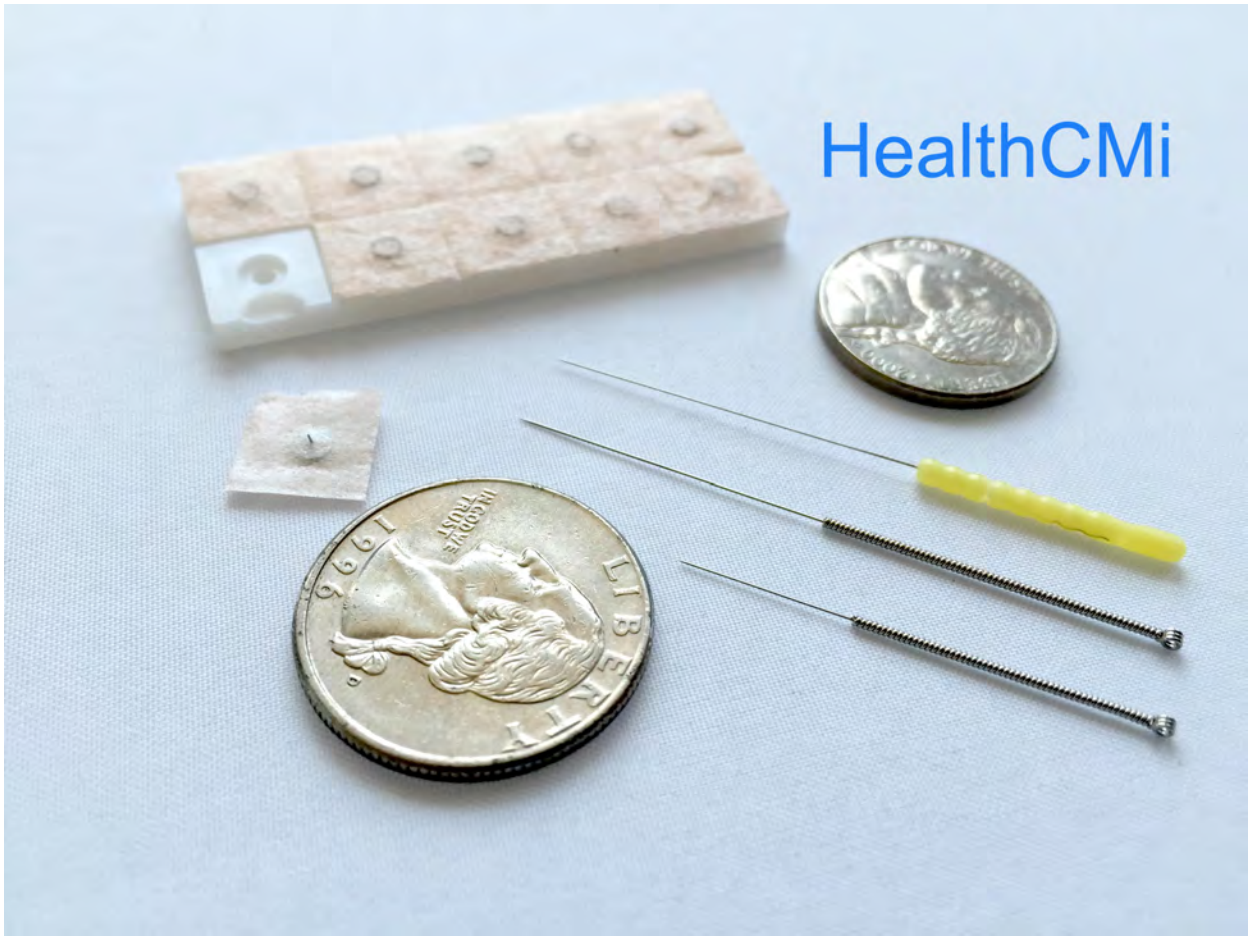
Curcumin is a principle polyphenol in turmeric (Jiang Huang), a member of the ginger family of herbs used for invigorating the blood in Traditional Chinese medicine. Oral intake of curcumin was combined simultaneously with acupuncture in the combined therapy group.

The researchers concluded that, “Acupuncture combined with curcumin potently protected the liver from… injury and fibrogenesis.”[9] This was confirmed with laboratory measurements of serum aspartate aminotransferase, alanine aminotransferase, alkaline phosphatase, hyaluronic acid, laminin and procollagen-3. Other histological findings and measurements of alpha smooth muscle actin, extracellular matrix, fibronection and alpha-1 collagen confirm the synergistic hepatoprotective effects of acupuncture combined with curcumin.

The acupuncture group showed significant amelioration from liver injury upon examination of hepatocyte arrangement, necrosis, and hepatic pseudo-lobular formation. MMP-9 protein expression levels of

9. Acupunct Med doi:10.1136/acupmed-2011-010116. Acupuncture combined with curcumin attenuates carbon tetrachloride-induced hepatic fibrosis in rats. Feng Zhang, Jin Ma, Yin Lu, Guang-Xia Ni, Chun-Yan Ni, Xue-Jiao Zhang, Xiao-Ping Zhang, De-Song Kong, Ai-Yun Wang, Wen-Xing Chen, Shi-Zhong Zheng.

hematopoietic stem cells (HSC) were “upregulated remarkably in the acupuncture group” compared with the sham group. MMP-9 (matrix metallopeptidase) is an enzyme that breaks down extracellular matrix and is involved in tissue remodeling. Also, the acupuncture group showed additional significant changes related to the alleviation of liver fibrosis including changes in collagen, fibronectin proteins, TIMP-1 (a tissue inhibitor of metalloproteinases), serum hyaluronic acid and laminin, and several other endogenous secretions.



Acupuncture & Herbs Research 2

The Healthcare Medicine Institute (HealthCMi) provides a free news and research service. The following is taken from research was published on the Healthcare Medicine Institute's news website portal on April 25, 2016:

Researchers conclude that acupuncture and herbs normalize liver and kidney function for patients with liver cirrhosis and ascites.

Independent clinical investigations concur that acupuncture and herbs are effective for the treatment of cirrhosis with ascites. One investigation used an integrated treatment protocol consisting of acupuncture, infrared radiation, dietetics, and herbal medicine to achieve positive patient outcomes for patients with end-stage cirrhosis with ascites. The research indicates that integration of Traditional Chinese Medicine (TCM) protocols into the hospital setting benefits end-stage cirrhosis patients.

Acupuncture and herbal medicine are effective for the treatment of end-stage liver cirrhosis and ascites. Researchers from Nanyang City First People's Hospital (Henan Province, China) tested a TCM protocol using acupuncture, far infrared, herbal intravenous injections, herbal soba noodle soup, and an oral herbal decoction. The combination therapy effectively reduced or eliminated ascites, improved urine volume and appetite, and normalized liver and kidney function.

A total of 95% of patients in the clinical trial achieved optimal positive patient outcomes meeting the following parameters: ascites completely resolved, normal appetite, normal urine color and volume, normal liver and kidney function. The remaining 5% demonstrated: significant reductions in ascites, appetite improvements, reductions of nausea and vomiting, improved urine volume and color, improvements in liver and kidney function. The researchers note that the TCM protocol reduced liver fibrosis and glomerulosclerosis while simultaneously promoting the regeneration of liver cells.

The acupuncture and herbal treatment protocol is as follows. Acupuncture was applied to the following acupoints:

- Yinlingquan, SP9 (Yin Mound Spring)
- Sanyinjiao, SP6 (Three Yin Intersection)
- Taixi, KD3 (Supreme Stream)
- Taichong, LV3 (Great Rushing)
- Guanyuan, CV4 (Gate of Origin)

A TDP heat lamp (far infrared) was focused on the CV4 acupoint and deqi was stimulated with a manual tonification technique. For the remaining acupuncture points, mild reinforcing and reducing manual acupuncture techniques were applied. Acupuncture was applied once per day, needles were manually stimulated every ten minutes, and total needle retention time was thirty minutes per acupuncture session.

A specialized Hong Hua (safflower) preparation was made for the purposes of intravenous fluid injection. The IV consisted of 40 ml of Hong Hua extract and 250 ml of 5% glucose. The IV was administered to patients once per day. Total treatment time for acupuncture and the Hong Hua IV injection was one month.

An herbal decoction was administered once per day for a total of one month. The herbal soba noodle soup was administered once per day for a total of three days. The decoction was prepared from herbs including:

- Qing Hao (wormwood) Herba Artemisiae Apiaceae
- Tong Cao (rice paper pith, tetrapanax) Medulla tetrapanacis Papyriferi
- Dan Shen (salvia root) Radix salviae Miltiorrhizae
- Wang Bu Liu Xing (vaccaria seeds) Semen vaccariae Segetalis
- Hou Po (magnolia bark) Cortex magnoliae Officinalis
- Si Gua Luo (loofah, luffa)

- Sheng Di Huang (Chinese Foxglove Root) Radix rehmanniae Glutinosae
- Shi Hu (dendrobium stem) Herba Dendrobii
- Che Qian Zi (plantain seed) Semen plantaginis
- Dang Gui (Chinese angelica root) Radix angelicae Sinensis
- Bai Zhu (white atractylodes rhizome) Rhizoma Atractylodis Macrocephalae
- Yu Jin (turmeric tuber) Tuber Curcumae
- Da Fu Pi (betel husk) Pericarpium arecae Catechu
- Lian Qiao (forsythia fruit) Fructus forsythiae Suspensae
- Di Long (earthworm) Lumbricus
- Chen Xiang (Chinese eaglewood) Lignum Aquilariae Resinatum

The herbal soba noodle soup consisted of equal portions of the following herbs that were baked and ground into a powder. For each serving, 10 g of herbal powder was mixed with 60 g of soba noodle flour to produce the noodles. The noodles were boiled in water and patients consumed both the water and noodles, once per day, for a total of three days. The herbs for the noodle recipe were

- Gan Sui (Kansui Root) Radix Euphorbiae Kansui
- Hong Da Ji (Euphorbia) Radix Euphorbiae seu Knoxiae
- Yuan Hua (Genkwa Flower), Flos Daphnis Genkwae
- Qian Niu Zi (Morning Glory Seeds) Semen Pharbiditis

The research was conducted at Nanyang City First People's Hospital. The results indicate that the acupuncture plus herbal medicine protocol is an effective treatment for end-stage liver cirrhosis with ascites. The results were published in the Zhejiang Journal of Traditional Chinese Medicine. Kang et al. had similar findings concluding that acupuncture and herbs are effective for the treatment of liver cirrhosis and hepatosplenomegaly. In addition, Du et al. conducted independent research and concluded that

acupuncture with moxibustion is effective for the treatment of cirrhosis with ascites.

Research article references:
Chen GX. (2010). Acupuncture combined with medication in treating end-stage liver cirrhosis (with ascites) of liver & spleen blood stasis, 43 cases. Zhejiang Journal of Traditional Chinese Medicine. 45 (7).

Kang K & Chai CN.. (2011). Traditional Chinese medicine and acupuncture on Gan Da Xin acupoint in treating liver Cirrhosis and hepatosplenomegaly. Medical Innovation of China. 8 (18).

Du XD. (2015). Clinical Observation of 135 Cases of Cirrhosis Ascites Treated with Acupuncture and Medicine. Medical Information. 28 (34).

Sheng Di Huang

Diet and Nutrition

The following information on diet and nutrition is provided by the NIH. We will also examine an overview of Traditional Chinese Medicine (TCM) dietetics.

Eating, Diet, and Nutrition

A healthy diet is important in all stages of cirrhosis because malnutrition is common in people with this disease. Malnutrition is a condition that occurs when the body does not get enough nutrients. Cirrhosis may lead to malnutrition because it can cause

- people to eat less because of symptoms such as loss of appetite
- changes in metabolism
- reduced absorption of vitamins and minerals

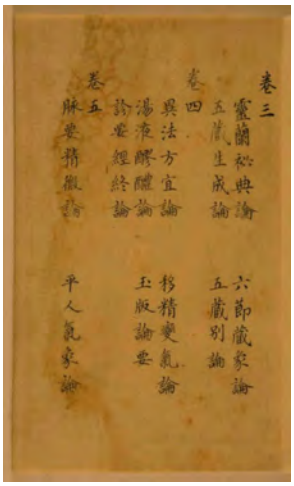
Health care providers can recommend a meal plan that is well balanced and provides enough calories and protein. If ascites develops, a health care provider or dietitian may recommend a sodium-restricted diet. To improve nutrition, the health care provider may prescribe a liquid supplement. A person may take the liquid by mouth or through a nasogastric tube—a tiny tube inserted through the nose and throat that reaches into the stomach.

A person with cirrhosis should not eat raw shellfish, which can contain a bacterium that causes serious infection. Cirrhosis affects the immune system, making people with cirrhosis more likely than healthy people to develop an infection after eating shellfish that contain this bacterium.

A health care provider may recommend calcium and vitamin D supplements to help prevent osteoporosis.

TCM Dietetics

Now, we'll take a look at traditional Chinese medicine dietetics as it relates to the liver. At the Healthcare Medicine Institute, we offer many courses on Chinese medicine dietetics. Let's take a brief look at some of the traditional approaches to healthy eating that affect the liver and benefit patients with cirrhosis:



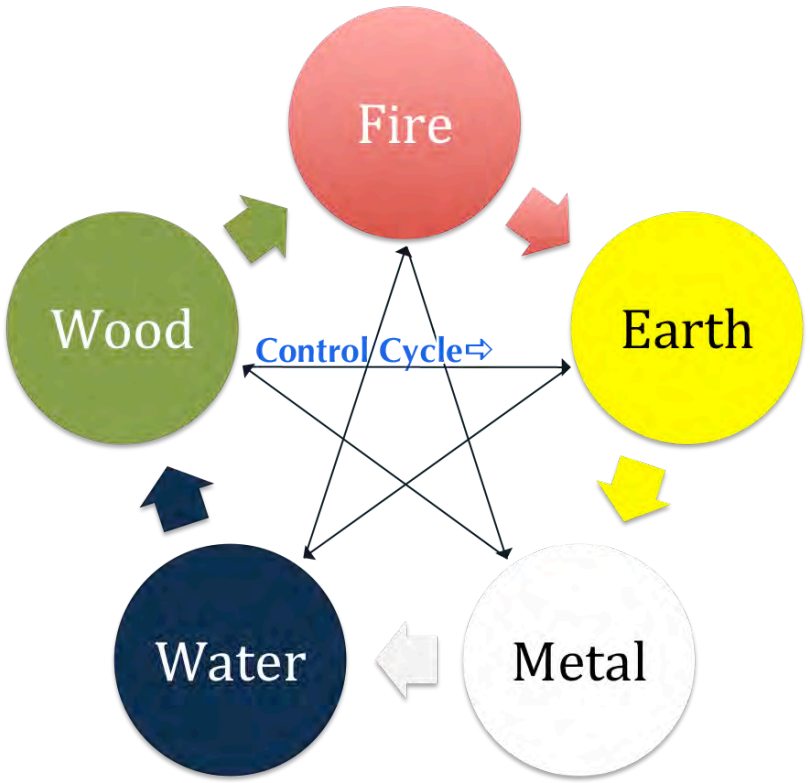
Huangdi Neijing Suwen

Huangdi Neijing

According to the *Huangdi Neijing (The Yellow Emperor's Inner Classic)*, five element theory specifies that several flavors are contraindicated for specific differential diagnoses per the control cycle. If the liver is deficient, avoid spicy foods. If the lungs are weak, avoid bitter foods. If the spleen and stomach are weak, avoid sour foods. If the heart is sick, avoid salty foods. If the kidneys are deficient, avoid sweet foods. Following these guidelines prevents each of the five elements from overacting upon another and their associated internal organs.

Example

In the control cycle, water controls fire. Fire is the element associated with the heart and water is the element associated with the flavor of saltiness. When the heart is ill, salty foods no longer control the heart but instead pathologically overact upon the heart.



Element	Associated Organs	Flavor	Color
Wood	liver, gallbladder	sour	green
Fire	heart, small intestine	bitter	red
Earth	stomach, spleen	sweet	yellow
Metal	lung, large intestine	pungent	white
Water	urination bladder, kidneys	salty	black

Another *Huangdi Neijing* principle is that five element theory applies to the colors of food. Green foods benefit the liver and relate to liver cleansing. Red foods benefit the heart, yellow foods benefit the spleen and stomach, white foods benefit the lungs and black foods benefit the kidneys.

Chinese medicine dietetic principles also stipulate that there are five spicy vegetables essential to supplemental nourishment. Chives benefit the heart, bean leaves benefit the spleen, garlic benefits the lungs, onions benefit the kidneys and spinach benefits the liver. In patients with Cirrhosis, recommendations for use of spinach must be balanced with the patients' needs to regulate blood thinning medications. Spinach is high in vitamin K, which may cause blood clotting issues for patients taking the blood thinner warfarin (Coumadin®).

The five livestocks for beneficial nourishment are chicken for benefitting the liver, sheep and goat for benefitting the heart, beef for benefitting the spleen, horse for benefitting the lungs and pork for benefitting the kidneys. The five grains of major nourishment are rice for benefitting the lungs, wheat for the liver, sorghum for the heart, millet for the spleen and black beans for the kidneys.

Li Yu Chi Xiao Dou Tang

Li Yu Chi Xiao Dou Tang is a soup that promotes urination and treats dirty water stagnation. Indications include edema, chronic nephritis, leg qi disorder, obesity, water retention due to PMS and liver cirrhosis with ascites. Two important ingredients are carp and adzuki beans.

Carp (Li Yu)
Carp enters the lung and kidney channels and promotes urination. According to Chinese medicine theory, carp is a strong variety of fresh water fish much like shark is considered a strong saltwater fish. Carp appear to have a mustache, have golden-shiny scales, survive outside of water longer than many fish, jump high above the water at high speeds and

can grow to approximately 140 lbs. and 56 inches in length. Carp are representative of the dragon. Bighead carp has a stronger medicinal function than other varieties, however, silver carp is often more widely available while continuing to provide similar medicinal benefits.

Adzuki Beans (Chi Xiao Dou)
Adzuki beans are sweet, sour, neutral and enter the heart and small intestine channels. Chi Xiao Dou promotes urination to drain dampness.

Recipe
Boil Bai Mao Gen, Sang Bai Pi and Huang Qi to make an herbal soup. Remove the herbs and cook Chi Xiao Dou (adzuki beans) in the herbal soup. Sauté carp in oil with Sheng Jiang (ginger), Da Suan (garlic) and a little Chen Pi (dried citrus peel) until both sides are brown. Add the fish to the soup and serve. Eat the beans and fish with the soup. For children, some prefer to put the fish in a cloth bag to avoid issues with bones.

Mi Jiang (juice on top of the rice)

Mi Jiang is the made by boiling rice with extra water and skimming the thick rice juice from the top for consumption. This is not congee but is the thick liquid that forms on the top when cooking rice.

Dehydration is a common concern that often presents with diarrhea, vomiting, and other digestion disorders. Mi Jiang is used to treat and prevent dehydration. Rice milk available in markets is not usually pure Mi Jiang. Packaged rice milk products typically include added ingredients and additional processing. Mi Jiang is easy to absorb and may be especially helpful for patients unable to eat due to spleen, stomach, and liver related conditions.

Nuo Mi Shan Yao Ju

This dish is traditionally made with sweet rice and Shan Yao (wild mountain yam). However, another rice may be used as a substitute. Soak Shan Yao and sweet rice in water for 1–2 hours. This makes the cooking process easier. Make a congee from this mixture and add herbs such as Gou Qi Zi, Long Yan Rou, Dang Shen, and others as is relevant to differential diagnostic patterns. This is an excellent choice for the treatment of Spleen Qi deficiency, malnutrition, and loose stool.

Benefit Muscles and Tendons Stew

Beef shank nourishes and strengthens the muscles, tendons, and sinew. Combined with kudzu and the other ingredients, this stew helps prevent bodily injury, treats muscular and tendon aching and weakness, and relieves tendonitis and muscle cramps. This stew is recommended for qi and blood deficient patients with muscle aches and cramps. As a preventative, athletes benefit from the muscle and tendon strengthening therapeutic actions of this stew.

Ingredients
beef shank
beef tendon
kudzu root (Ge Gen)
carrots
goji berries (Gou Qi Zi)
celery

Note: Chinese celery has a stronger medicinal value and flavor than American celery.

Food Monographs

The following are foods that may be a healthy additional to the diet dependent upon differential diagnostics:

Kun Bu (Kelp)

This variety of kelp is beneficial in the treatment of arteriosclerosis, hyperlipidemia, and edema of the legs. Kun Bu enters the stomach, liver and kidney channels. Kun Bu dissolves phlegm, softens hardness and mildly promotes urination. Kun Bu is best used with restraint for those with spleen and stomach cold and deficiency.

Onions and Garlic

Research confirms that many types of onions reduce hyperlipidemia. In a 2010 study of Welsh onions, "A significant lowering effect on cholesterol in the plasma and on total lipids, triacylglycerol, and cholesterol in the liver was observed in rats fed on the green, but not white, Welsh onion."[10] A 2001 study of garlic, onions and amla (Indian gooseberry) concludes that all three have hypolipidemic effects.[11] A 1987 study of cardiovascular disease from Manhattan College concludes that "use of certain formulations of garlic and/or onion is accompanied by favorable effects on risk factors in normal subjects and in patients with atherosclerotic disease."[12]

10 Biosci Biotechnol Biochem. 2010;74(2):402-4. Epub 2010 Feb 7. Welsh onion attenuates hyperlipidemia in rats fed on high-fat high-sucrose diet. Yamamoto Y, Yasuoka A. Graduate School of Human Life Science, Osaka City University, Japan.

11 Indian J Exp Biol. 2001 Aug;39(8):760-6. A comparative study on the beneficial effects of garlic (Allium sativum Linn), amla (Emblica Officinalis Gaertn)and onion (Allium cepa Linn) on the hyperlipidemia induced by butter fat and beef fat in rats. Augusti KT, Arathy SL, Asha R, Ramakrishanan J, Zaira J, Lekha V, Smitha S, Vijayasree VM. Department of Medical Biochemistry, School of Medical Education, M.G. University, Kottayam, India.

12 Preventive Medicine. Volume 16, Issue 5, September 1987, Pages 670–685. Garlic (Allium sativum) and onion (Allium cepa): A review of their relationship to cardiovascular disease. Barry S. Kendler, Ph.D. Department of Biology, Manhattan College, Riverdale, New York 10471 USA. dx.doi.org/10.1016/0091-7435(87)90050-8.

Xie Bai, Chinese long-stamen onion, treats atherosclerosis, lowers both cholesterol and triglycerides, inhibits platelet aggregation and lowers blood pressure.[13,14] Xie Bai regulates qi and treats painful obstruction of the chest, Xiong Bi, due to cold phlegm stagnation. Xie Bai is acrid, bitter, warm and enters the lung, large intestine and stomach channels.

Asparagus

Asparagus is sweet, bitter, cold and enters the lung hand-taiyin and kidney foot-shaoyin channels. Asparagus tonifies yin and promotes urination. Modern research confirms that asparagus has natural diuretic properties.[15] Its ability to nourish lung yin makes asparagus a suitable dietary choice for the alleviation of yin deficiency coughing including coughs caused by tuberculosis.

Asparagus shares similar functions with the botanically related herb Tian Men Dong (Radix Asparagi, asparagus tuber), especially the ability to treat lung yin deficiency. Modern research confirms the Traditional Chinese Medicine indication of using asparagus for the treatment of coughing. Researchers note:

> The methanol extract of Asparagus racemosus root (200 and 400 mg/kg, p.o.) showed significant antitussive activity on sulfur dioxide-induced cough in mice, the cough inhibition (40.0 and 58.5%,

13 Planta medica. ISSN 1439-0221. 1986, vol. 52, no3, pp. 171-175. Effect of Oriental Plant Drugs on Platelet Aggregation; III1. Effect of Chines Drug “Xiebai” on Human Platelet Aggregation. Okuyama T. (1) ; Shibata S. ; Hoson M. ; Kawada T. ; Osada H.; Noguchi T. ; Department of Pharmacognosy and Phytochemistry, Meiji College of Pharmacy, Nozawa 1-35-23, Setagaya-ku, Tokyo, Japan.

14 European Journal of Pharmacology. Volume 599, Issues 1–3, 3 December 2008, Pages 159–165. Endocrine Pharmacology. Novel effects of macrostemonoside A, a compound from Allium macrostemon Bung, on hyperglycemia, hyperlipidemia, and visceral obesity in high-fat diet-fed C57BL/6 mice. Weidong Xie, Yaou Zhang, Naili Wang, Hua Zhou, Lijun Du, Xiaohui Ma, Xiaojun Shi, Guoping Cai.

15 Kumar, MC Satish, A. L. Udupa, K. Sammodavardhana, U. P. Rathnakar, Udapa Shvetha, and G. P. Kodancha. "Acute toxicity and diuretic studies of the roots of Asparagus racemosus willd in rats." West Indies medical journal 59, no. 1 (2010): 3-5.

respectively) being comparable to that of 10–20 mg/kg of codeine phosphate (36.0 and 55.4%, respectively).[16]

The deep green color of asparagus indicates that it benefits the liver. Modern research documents that asparagus has a protective antioxidant effect on the liver.[17] Additional research indicates that asparagus has anticancer properties. [18] Saponins in asparagus "were found to have antitumor activity." Specifically, asparagus saponins "inhibited the growth of human leukemia HL-60 cells in culture and macromolecular synthesis in a dose and time dependent manner."[19] Asparagus is rich in vitamins A, C and iron.

Spinach

Spinach is sweet, cooling, astringent, enters the large intestine hand-yangming and liver foot-jueyin channels and nourishes the blood. Spinach helps to stabilize blood glucose levels in diabetics, treats ulcerations at the corners of the mouth, resolves liver spots and stops bleeding in conditions including epistaxis and ulcerative colitis. Modern research and Chinese medicine theory agree that spinach benefits the eyes and is helpful in the prevention of macular degeneration.

Research indicates that eating fruits and vegetables containing carotenoid pigments helps to prevent macular degeneration. Carotenoids often impart a yellow, orange or red color to foods. Spinach, although green, is high in the carotenoids lutein and zeaxanthin. These two carotenoids are normally

16 Mandal, Subhash C., Ashok Kumar CK, S. Mohana Lakshmi, Sanghamitra Sinha, T. Murugesan, B. P. Saha, and M. Pal. "Antitussive effect of Asparagus racemosus root against sulfur dioxide-induced cough in mice." Fitoterapia 71, no. 6 (2000): 686-689.
17 Kamat, Jayashree P., Krutin K. Boloor, Thomas Devasagayam, and S. R. Venkatachalam. "Antioxidant properties of Asparagus racemosus against damage induced by γ-radiation in rat liver mitochondria." Journal of ethnopharmacology 71, no. 3 (2000): 425-435.
18 Shao, Yu, Chee-Kok Chin, Chi-Tang Ho, Wei Ma, Stephen A. Garrison, and Mou-Tuan Huang. "Anti-tumor activity of the crude saponins obtained from asparagus." Cancer letters 104, no. 1 (1996): 31-36.
19 Shao, Yu, Chee-Kok Chin, Chi-Tang Ho, Wei Ma, Stephen A. Garrison, and Mou-Tuan Huang. "Anti-tumor activity of the crude saponins obtained from asparagus." Cancer letters 104, no. 1 (1996): 31-36.

concentrated in the fovea, a central part of the retina that is the area of maximum visual acuity.

- Researchers conclude, “Diets rich in lutein plus zeaxanthin may protect against intermediate AMD (age-related macular degeneration) in healthy women younger than 75 years.”[20]
- An AMD study notes that “visual function is improved with lutein alone or lutein together with other nutrients.”[21]
- Researchers note, “Recent evidence introduces the possibility that lutein and zeaxanthin may protect against the development of the two common eye diseases of aging, cataract and macular degeneration.”[22]
- Lutein and zeaxanthin are found in leafy green vegetables including spinach and kale. They are also abundant in broccoli, corn and squash.

According to TCM (Traditional Chinese Medicine) five element theory, the deep green color of spinach reflects its ability to tonify blood. In TCM, the wood element is associated with the color green, the eyes and the liver. Foods having a deep green color tend to benefit liver blood and nourish the eyes. Spinach benefits the eyes and retina especially when combined with Gou Qi Zi (lycium berry) or Gou Qi Ye (lycium leaf).[23] Spinach, rich in iron, is an excellent food choice after loss of blood.

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20 Moeller, Suzen M., Niyati Parekh, Lesley Tinker, Cheryl Ritenbaugh, Barbara Blodi, Robert B. Wallace, and Julie A. Mares. "Associations between intermediate age-related macular degeneration and lutein and zeaxanthin in the Carotenoids in Age-related Eye Disease Study (CAREDS): ancillary study of the Women's Health Initiative." Archives of ophthalmology 124, no. 8 (2006): 1151-1162.

21 Richer, Stuart, William Stiles, Laisvyde Statkute, Jose Pulido, James Frankowski, David Rudy, Kevin Pei, Michael Tsipursky, and Jill Nyland. "Double-masked, placebo-controlled, randomized trial of lutein and antioxidant supplementation in the intervention of atrophic age-related macular degeneration: the Veterans LAST study (Lutein Antioxidant Supplementation Trial)." Optometry-Journal of the American Optometric Association 75, no. 4 (2004): 216-229.

22 Mares-Perlman, Julie A., Amy E. Millen, Tara L. Ficek, and Susan E. Hankinson. "The body of evidence to support a protective role for lutein and zeaxanthin in delaying chronic disease. Overview." The Journal of nutrition 132, no. 3 (2002): 518S-524S.

23 Chan, Hiu-Chi, Raymond Chuen-Chung Chang, Angel Koon-Ching Ip, Kin Chiu, Wai-Hung Yuen, Sze-Yong Zee, and Kwok-Fai So. "Neuroprotective effects of Lycium barbarum Lynn on protecting retinal ganglion cells in an ocular hypertension model of glaucoma." Experimental neurology 203, no. 1 (2007): 269-273.

In Chinese medicine, angular cheilitis is associated with stomach foot-yangming and liver foot-jueyin channel dysfunction. Angular cheilitis, inflammatory lesions at the corner of the mouth, may be caused by vitamin B2 (riboflavin), iron and zinc deficiency. Spinach is a rich source of these nutrients and, combined with its cooling properties, is a therapeutic food choice for this condition.

In China, raw spinach and raw salads are rarely consumed. Steamed and wok fried portions often contain a half-pound of spinach. The therapeutic value of spinach is relative to the quantity consumed and the freshness of the spinach.

Spinach is rich in carotenoids (beta-carotene, lutein, and zeaxanthin), flavonoids, vitamin K, iron, magnesium, manganese, calcium, folate, potassium, copper, zinc, niacin and vitamins B6, B2, B1, C and vitamin E.

Due to high levels of vitamin K in spinach, ensure that patients increasing spinach quantities in the diet that also take warfarin have their blood INR monitored. The prothrombin time (PT), prothrombin ratio (PR), and international normalized ratio (INR) are assays of coagulation. They determine the clotting tendency of blood and are relative to vitamin K status, since vitamin K is important in promoting blood clotting. This principle applies to many leafy greens.

Carrot (Red Carrot, Hong Luo Bo)

According to five elements principles, the red-yellow (orange) color combination reflects that carrots enter the Heart and Spleen channels. Carrots are sweet, neutral, tonify the Qi and Blood of the entire body, and benefit the Ying Qi (nutrition Qi). Carrots benefit vision and treat night blindness.

Carrots have a similar shape and function to that of ginseng and are nicknamed “poor people ginseng.” Carrots are rich in beta-carotene (a

vitamin A precursor) and other carotenoids, vitamin C, B vitamins, iron, magnesium, phosphorus, calcium and potassium. Excess consumption of carrots may lead to carotenosis. Although benign and reversible, the skin turns orange for the duration of the illness.

- To tonify qi and blood, slice carrots and make a soup. Drink the soup and eat the carrots. Cooking makes the carrots easier to absorb. For many patients, this may provide a simple and easy to digest solution for an early breakfast or other meal.

- Carrots reduce cholesterol and triglycerides. A 1997 study published in the American Journal of Clinical Nutrition notes, “Two hundred grams of raw carrot eaten at breakfast each day for 3 weeks significantly reduced serum cholesterol by 11%, increased fecal bile acid and fat excretion by 50%, and modestly increased stool weight by 25%. This suggests an associated change in bacterial flora or metabolism. The changes in serum cholesterol, fecal bile acids, and fat persisted 3 weeks after stopping treatment.”[24]

[24] Robertson J, Brydon WG, Tadesse K, Wenham P, Walls A, Eastwood MA. The effect of raw carrot on serum lipids and colon function. Am J Clin Nutr. 1979 Sep;32(9):1889-92.

Biomedicine Supplemental

This section goes into deeper layers of biomedical detail including NIH guidelines and research.

Causes

The following is from the National Institute of Diabetes and Digestive and Kidney Diseases, a division of the National Institutes of Health (NIH):

> Cirrhosis has various causes. Many people with cirrhosis have more than one cause of liver damage.
>
> The list below shows common causes of cirrhosis in the United States.[25] While chronic hepatitis C and alcohol-related liver disease are the most common causes of cirrhosis, the incidence of cirrhosis caused by nonalcoholic fatty liver disease is rising due to increasing rates of obesity.

Most Common Causes of Cirrhosis

Chronic hepatitis C. Hepatitis C is due to a viral infection that causes inflammation, or swelling, and damage to the liver. The hepatitis C virus spreads through contact with infected blood, such as from a needlestick accident, injection drug use, or receiving a blood transfusion before 1992. Less commonly, hepatitis C can be spread by sexual contact with an infected person or at the time of childbirth from an infected mother to her newborn.

Hepatitis C often becomes chronic, with long-term persistence of the viral infection. Chronic hepatitis C causes damage to the liver that, over years or decades, can lead to cirrhosis. Advanced therapies for chronic hepatitis C now exist, and health care providers should treat

25. Wolf DC. Cirrhosis. Medscape website. http://emedicine.medscape.com/article/185856-overviewExternal Link Disclaimer. Updated August 5, 2013. Accessed February 6, 2014.

people with chronic hepatitis C before they develop severe fibrosis or cirrhosis. Unfortunately, many people first realize they have chronic hepatitis C when they develop symptoms of cirrhosis.

Alcohol-related liver disease. Alcoholism is the second most common cause of cirrhosis in the United States. Most people who consume alcohol do not suffer damage to the liver. However, heavy alcohol use over several years makes a person more likely to develop alcohol-related liver disease. The amount of alcohol it takes to damage the liver varies from person to person. Research suggests that drinking two or fewer drinks a day for women and three or fewer drinks a day for men may not injure the liver.[26] Drinking more than these amounts leads to fat and inflammation in the liver, which over 10 to 12 years can lead to alcoholic cirrhosis.[27]

Nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH). In NAFLD, fat builds up in the liver; however, the fat buildup is not due to alcohol use. When the fat accompanies inflammation and liver cell damage, the condition is called nonalcoholic steatohepatitis, or NASH, with “steato” meaning fat, and “hepatitis” meaning inflammation of the liver. The inflammation and damage can cause fibrosis, which eventually can lead to cirrhosis.

Extra fat in the liver has many causes and is more common in people who

- are overweight or obese.
- have diabetes—a condition characterized by high blood glucose, also called high blood sugar.
- have high blood cholesterol and triglycerides, called hyperlipidemia.

26. O'Shea RS, Dasarathy S, McCullough AJ. Alcoholic liver disease. Hepatology. 2010;51(1):307–328.
27. Gyamfi MA, Wan YJ. Pathogenesis of alcoholic liver disease: the role of nuclear receptors. Experimental Biology and Medicine. 2010;235(5):547–560.

- have high blood pressure.
- have metabolic syndrome—a group of traits and medical conditions linked to being overweight and obese that makes people more likely to develop both cardiovascular disease and type 2 diabetes. Metabolic syndrome is defined as the presence of any three of the following: large waist size, high triglycerides in the blood, abnormal levels of cholesterol in the blood, high blood pressure, and higher than normal blood glucose levels. NASH may represent the liver component of the metabolic syndrome.

NASH now ranks as the third most common cause of cirrhosis in the United States.

Chronic hepatitis B. Hepatitis B, like hepatitis C, is due to a viral infection that causes inflammation and damage to the liver. Chronic infection can lead to damage and inflammation, fibrosis, and cirrhosis. The hepatitis B virus spreads through contact with infected blood, such as by needlestick accident, injection drug use, or receiving a blood transfusion before the mid-1980s. Hepatitis B also spreads through sexual contact with an infected person and from an infected mother to child during childbirth.

In the United States, hepatitis B is somewhat uncommon, affecting less than 1 percent of the population, or fewer than one in 100 people.[28] In many areas of the world, however, hepatitis B is common. In some parts of Africa and in most of Asia and the Pacific Islands, about 5 to 7 percent of the population has chronic hepatitis B. In some parts of Africa, more than 8 percent of the population has

28. Weinbaum CM, Williams I, Mast EE, et al. Recommendations for identification and public health management of persons with chronic hepatitis B virus infection. Morbidity and Mortality Weekly Report Recommendations and Reports. 2008;57(RR–8):1–20.

chronic hepatitis B.[29] For these reasons, hepatitis B is likely the major cause of cirrhosis worldwide. However, in the United States, hepatitis B ranks well behind hepatitis C, alcohol-related liver disease, and NASH.

Less Common Causes of Cirrhosis

Less common causes of cirrhosis include the following:

Autoimmune hepatitis. In this form of hepatitis, the body's immune system attacks liver cells and causes inflammation, damage, and eventually cirrhosis. Normally, the immune system protects people from infection by identifying and destroying bacteria, viruses, and other potentially harmful foreign substances. In autoimmune diseases, the body's immune system attacks the body's own cells and organs. Researchers believe genetics, or inherited genes, may make some people more likely to develop autoimmune diseases. At least 70 percent of those with autoimmune hepatitis are female.[30]

Diseases that damage, destroy, or block the bile ducts. Several diseases can damage, destroy, or block the ducts that carry bile from the liver to the small intestine, causing bile to back up in the liver and leading to cirrhosis. In adults, the most common of these diseases is primary biliary cirrhosis, a chronic disease that causes the small bile ducts in the liver to become inflamed and damaged and ultimately disappear. Primary sclerosing cholangitis is a disease that causes irritation, scarring, and narrowing of the larger bile ducts of the liver.

In infants and children, causes of damage to or disappearance of bile ducts that can lead to cirrhosis include

- Alagille syndrome, a collection of symptoms that indicates a genetic digestive disorder and leads to a loss of bile ducts in infancy.

29. Centers for Disease Control and Prevention. CDC Health Information for International Travel 2014. New York: Oxford University Press; 2014.
30. Makol A, Watt KD, Chowdhary VR. Autoimmune hepatitis: a review of current diagnosis and treatment. Hepatitis Research and Treatment. 2011:2011;1–11.

- biliary atresia, a life-threatening condition that affects newborns in which bile ducts are missing. The cause is unknown. Biliary atresia is the most common reason for liver transplantation in children.[31]

- cystic fibrosis, an inherited disease of the lungs, intestines, pancreas, and bile ducts in which the body does not produce enough fluid and mucus becomes thick and blocks off small bile ducts. This blockage of the bile ducts can lead to cirrhosis.

Long-term blockage of the bile ducts by gallstones can cause cirrhosis. Cirrhosis may also develop if the bile ducts are mistakenly tied off or injured during surgery on the gallbladder or liver.

Inherited diseases that affect the liver. Inherited diseases that interfere with how the liver produces, processes, and stores enzymes, proteins, metals, and other substances can cause cirrhosis. These diseases include alpha-1 antitrypsin deficiency, hemochromatosis, Wilson disease, galactosemia, and glycogen storage diseases.

Rare viral infections of the liver. Hepatitis D, or hepatitis delta, and hepatitis E are two rare viral infections of the liver. Hepatitis D infection occurs only in people who have hepatitis B. People infected with chronic hepatitis B and chronic hepatitis D are more likely to develop cirrhosis than people infected with chronic hepatitis B alone.[32]

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31. Boudi FB. Pediatric liver transplantation. Medscape website. http://emedicine.medscape.com/article/1012910-overviewExternal Link Disclaimer. Updated March 13, 2012. Accessed February 6, 2014.
32. Lok ASF, McMahon BJ. Chronic hepatitis B: update 2009. Hepatology. American Association for the Study of Liver Diseases website. www.aasld.org/practiceguidelines/Documents/Bookmarked%20Practice%20Guidelines/Chronic_Hep_B_Update_2009%208_24_2009.pdfExternal Link Disclaimer (PDF, 562 KB)*. Updated September 2009. Accessed February 6, 2014.

Hepatitis E is a virus found in domestic and wild animals, particularly pigs, and can cause hepatitis in humans. People with weakened immune systems, including people who are liver or kidney transplant recipients or who have acquired immune deficiency syndrome (AIDS), can develop chronic hepatitis E. Chronic hepatitis E can cause scarring of the liver and cirrhosis. Current treatments for chronic hepatitis D and E are experimental and only partially effective.

Other causes. Other causes of cirrhosis may include

- reactions to medications taken over a period of time.
- prolonged exposure to toxic chemicals.
- parasitic infections.
- chronic heart failure with liver congestion, a condition in which blood flow out of the liver is slowed.

Liver congestion can also occur after surgery to correct a congenital heart problem—a heart problem that is present at birth.

Trauma to the liver or other acute, or short term, causes of damage do not cause cirrhosis. Usually, years of chronic injury are required to cause cirrhosis.

Signs, Symptoms, Complications

The following are the NIH guidelines on signs and symptoms.

Many people with cirrhosis have no symptoms in the early stages of the disease. However, as the disease progresses, a person may experience the following symptoms:

- fatigue, or feeling tired
- weakness
- itching
- loss of appetite
- weight loss
- nausea
- bloating of the abdomen from ascites—a buildup of fluid in the abdomen
- edema—swelling due to a buildup of fluid—in the feet, ankles, or legs
- spiderlike blood vessels, called spider angiomas, on the skin
- jaundice, a condition that causes the skin and whites of the eyes to turn yellow

Complications

As the liver fails, complications may develop. In some people, complications may be the first signs of the disease. Complications of cirrhosis may include the following:

Portal hypertension. The portal vein carries blood from the stomach, intestines, spleen, gallbladder, and pancreas to the liver. In cirrhosis, scar tissue partially blocks the normal flow of blood, which increases the pressure in the portal vein. This condition is called portal hypertension. Portal hypertension is a common complication of cirrhosis. This condition may lead to other complications, such as

- fluid buildup leading to edema and ascites
- enlarged blood vessels, called varices, in the esophagus, stomach, or both
- an enlarged spleen, called splenomegaly
- mental confusion due to a buildup of toxins that are ordinarily removed by the liver, a condition called hepatic encephalopathy

Edema and ascites. Liver failure causes fluid buildup that results in edema and ascites. Ascites can lead to spontaneous bacterial peritonitis, a serious infection that requires immediate medical attention.

Varices. Portal hypertension may cause enlarged blood vessels in the esophagus, stomach, or both. These enlarged blood vessels, called esophageal or gastric varices, cause the vessel walls to become thin and blood pressure to increase, making the blood vessels more likely to burst. If they burst, serious bleeding can occur in the esophagus or upper stomach, requiring immediate medical attention.

Splenomegaly. Portal hypertension may cause the spleen to enlarge and retain white blood cells and platelets, reducing the numbers of these cells and platelets in the blood. A low platelet count may be the first evidence that a person has developed cirrhosis.

Hepatic encephalopathy. A failing liver cannot remove toxins from the blood, so they eventually accumulate in the brain. The buildup of

toxins in the brain is called hepatic encephalopathy. This condition can decrease mental function and cause stupor and even coma. Stupor is an unconscious, sleeplike state from which a person can only be aroused briefly by a strong stimulus, such as a sharp pain. Coma is an unconscious, sleeplike state from which a person cannot be aroused. Signs of decreased mental function include

- confusion
- personality changes
- memory loss
- trouble concentrating
- a change in sleep habits

Metabolic bone diseases. Some people with cirrhosis develop a metabolic bone disease, which is a disorder of bone strength usually caused by abnormalities of vitamin D, bone mass, bone structure, or minerals, such as calcium and phosphorous. Osteopenia is a condition in which the bones become less dense, making them weaker. When bone loss becomes more severe, the condition is referred to as osteoporosis. People with these conditions are more likely to develop bone fractures.

Gallstones and bile duct stones. If cirrhosis prevents bile from flowing freely to and from the gallbladder, the bile hardens into gallstones. Symptoms of gallstones include abdominal pain and recurrent bacterial cholangitis—irritated or infected bile ducts. Stones may also form in and block the bile ducts, causing pain, jaundice, and bacterial cholangitis.

Bruising and bleeding. When the liver slows the production of or stops producing the proteins needed for blood clotting, a person will bruise or bleed easily.

Sensitivity to medications. Cirrhosis slows the liver's ability to filter medications from the blood. When this slowdown occurs, medications act longer than expected and build up in the body. For example,

some pain medications may have a stronger effect or produce more side effects in people with cirrhosis than in people with a healthy liver.

Insulin resistance and type 2 diabetes. Cirrhosis causes resistance to insulin. The pancreas tries to keep up with the demand for insulin by producing more; however, extra glucose builds up in the bloodstream, causing type 2 diabetes.

Liver cancer. Liver cancer is common in people with cirrhosis. Liver cancer has a high mortality rate. Current treatments are limited and only fully successful if a health care provider detects the cancer early, before the tumor is too large. For this reason, health care providers should check people with cirrhosis for signs of liver cancer every 6 to 12 months. Health care providers use blood tests, ultrasound, or both to check for signs of liver cancer.

Other complications. Cirrhosis can cause immune system dysfunction, leading to an increased chance of infection. Cirrhosis can also cause kidney and lung failure, known as hepatorenal and hepatopulmonary syndromes.

Biomedical Diagnosis

The following section is the official NIH view on biomedical diagnostics for cirrhosis. This represents modern standards in conventional biomedicine to determine a definitive diagnosis.

How is cirrhosis diagnosed?

A health care provider [MD] usually diagnoses cirrhosis based on the presence of conditions that increase its likelihood, such as heavy alcohol use or obesity, and symptoms. A health care provider may test for cirrhosis based on the presence of these conditions alone because many people do not have symptoms in the early stages of the disease. A health care provider may confirm the diagnosis with

- a medical and family history
- a physical exam
- a blood test
- imaging tests
- a liver biopsy

Medical and family history. Taking a medical and family history is one of the first things a health care provider may do to help diagnose cirrhosis. He or she will ask the patient to provide a medical and family history.

Physical exam. A physical exam may help diagnose cirrhosis. During a physical exam, a health care provider usually

- examines a patient's body
- uses a stethoscope to listen to sounds in the abdomen
- taps on specific areas of the patient's body

The health care provider will perform a physical exam to look for signs of the disease. For example, the liver may feel hard or ascites may cause the abdomen to enlarge.

Blood test. A blood test involves drawing blood at a health care provider's office or a commercial facility and sending the sample to a lab for analysis. Blood tests can show abnormal liver enzyme levels or abnormal numbers of blood cells or platelets.

Blood tests can help find the cause in people with diagnosed cirrhosis. For example, a health care provider may use blood tests to diagnose hepatitis B and C.

Health care providers use three blood tests to measure the severity of cirrhosis:

- bilirubin, which tests the amount of bile pigment in the blood
- creatinine, which tests kidney function
- international normalized ratio, which tests the blood's ability to clot

The results of these blood tests are used to calculate the Model for End-stage Liver Disease (MELD) score. Experts developed the MELD score to predict the 90-day survival rate of people with end-stage liver disease. MELD scores usually range between 6 and 40, with a score of 6 indicating the best likelihood of 90-day survival. The MELD score is used to determine whether a person is eligible for liver transplantation.

Imaging tests. Imaging tests can show signs of advanced cirrhosis, such as irregularities in the liver surface, gastric varices, and splenomegaly. These tests can also detect signs of complications, such as ascites and liver cancer.

- **Ultrasound** uses a device, called a transducer, that bounces safe, painless sound waves off organs to create an image of their structure. A specially trained technician performs the procedure in a health care provider's office, an outpatient center, or a hospital, and a radiologist—a doctor who specializes in medical imaging—interprets the images. A patient does not need anesthesia.

- **Computerized tomography (CT) scans** use a combination of x rays and computer technology to create images. For a CT scan, a technician may give the patient a solution to drink and an injection of a special dye, called contrast medium. CT scans require the patient to lie on a table that slides into a tunnelshaped device where the technician takes the x rays. An x-ray technician performs the procedure in an outpatient center or a hospital, and a radiologist interprets the images. A patient does not need anesthesia.

- **Magnetic resonance imaging (MRI)** machines use radio waves and magnets to produce detailed pictures of the body's internal organs and soft tissues without using x rays. A specially trained technician performs the procedure in an outpatient center or a hospital, and a radiologist interprets the images. A patient does not need anesthesia, though a health care provider may use light sedation for patients with a fear of confined spaces. An MRI may include the injection of contrast medium. With most MRI machines, the patient lies on a table that slides into a tunnel-shaped device that may be open

ended or closed at one end; some machines allow the patient to lie in a more open space.

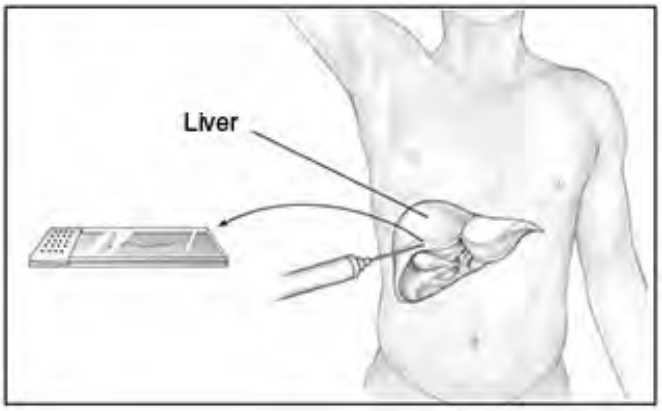
- **Elastography,** also called liver stiffness measurement, uses either ultrasound or MRI to measure the stiffness of the liver. Scar tissue increases the stiffness of the liver. Elastography can show how much scarring is present with some reliability. Elastography is a relatively new test. However, this test promises to be helpful in showing how severe liver scarring is and whether the scarring is getting worse over time.

Liver biopsy. A liver biopsy is a procedure that involves taking a piece of liver tissue for examination with a microscope for signs of damage or disease. The health care provider may ask the patient to stop taking certain medications temporarily before the liver biopsy. The health care provider may ask the patient to fast for 8 hours before the procedure.

During the procedure, the patient lies on a table, right hand resting above the head. The health care provider applies a local anesthetic to the area where he or she will insert the biopsy needle. If needed, a health care provider will also give sedatives and pain medication. The health care provider uses a needle to take a small piece of liver tissue. He or she may use ultrasound, CT scans, or other imaging techniques to guide the needle. After the biopsy, the patient must lie on the right side for up to 2 hours and is monitored an additional 2 to 4 hours before being sent home.

A health care provider performs a liver biopsy at a hospital or an outpatient center. The health care provider sends the liver sample to a pathology lab, where the pathologist—a doctor who specializes in diagnosing diseases—looks at the tissue with a microscope and sends a report to the patient's health care provider.

A liver biopsy can confirm the diagnosis of cirrhosis; however, a person does not always need this test. A health care provider will perform a biopsy if the result might help determine the cause or affect treatment. Sometimes a health care provider finds a cause of liver damage other than cirrhosis during biopsy.



A liver biopsy is a procedure that involves taking a piece of liver tissue for examination with a microscope for signs of damage or disease.

Biomedical Treatment Guidelines

The following gives us a clear image of what patients will expect in a conventional medical setting and is the official NIH recommendation for care:

> Treatment for cirrhosis depends on the cause of the disease and whether complications are present. In the early stages of cirrhosis, the goals of treatment are to slow the progression of tissue scarring in the liver and prevent complications. As cirrhosis progresses, a person may need additional treatments and hospitalization to manage complications. Treatment may include the following:
>
> **Avoiding Alcohol and Illegal Substances**
> People with cirrhosis should not drink any alcohol or take any illegal substances, as both will cause more liver damage.

USA Herbal Medicine Policy

Bias and lack of information concerning the efficaciousness of herbal medicines is prevalent. The following is the formal NIH recommendation on herbs:

> **Preventing Problems with Medications**
> People with cirrhosis should be careful about starting new medications and should consult a health care provider before taking prescription medications, over-the-counter medications, or vitamins. People with cirrhosis should avoid complementary and alternative medications, such as herbs.

Note: The above recommendations to avoid “alternative medications” and “herbs” is from the official guidelines published by the NIH and does not reflect the opinion of staff and authors at the Healthcare Medicine Institute.

NIH Supplementary Treatment Guidelines

Let's take a look at more of the NIH recommendations for treatment:

Cirrhosis slows the liver's ability to filter medications from the blood. When this slowdown occurs, medications act longer than expected and build up in the body. Some medications and vitamins may also affect liver function.

Viral Hepatitis Vaccination and Screening
All people with cirrhosis should consider vaccination against hepatitis A and B. An infection with one of these hepatitis viruses can cause cirrhosis to get worse. Vaccination can easily prevent both infections.

People with cirrhosis should also get a screening blood test for hepatitis C.

Treating Causes of Cirrhosis
Health care providers can treat some causes of cirrhosis, for example, by prescribing antiviral medications for hepatitis B and C. In some instances, these medications cure the viral infection. Health care providers treat autoimmune hepatitis with corticosteroids and other medications that suppress the immune system. Health care providers can treat hemochromatosis and Wilson disease—inherited forms of liver disease caused by the buildup of iron or copper in the liver—if detected early. Health care providers usually treat liver diseases due to blockage or loss of bile ducts with ursodiol (Actigall, Urso). Ursodiol is a nontoxic bile acid that people can take orally. Ursodiol replaces the bile acids that are normally produced by the liver, which are toxic and build up in the liver when the bile ducts are blocked.

Treating Symptoms and Complications of Cirrhosis
Itching and abdominal pain. A health care provider may give medications to treat various symptoms of cirrhosis, such as itching and abdominal pain.

Portal hypertension. A health care provider may prescribe a beta-blocker or nitrate to treat portal hypertension. Beta-blockers lower blood pressure by helping the heart beat slower and with less force, and nitrates relax and widen blood vessels to let more blood flow to the heart and reduce the heart's workload.

Varices. Beta-blockers can lower the pressure in varices and reduce the likelihood of bleeding. Bleeding in the stomach or esophagus requires an immediate upper endoscopy. This procedure involves using an endoscope—a small, flexible tube with a light—to look for varices. The health care provider may use the endoscope to perform a band ligation, a procedure that involves placing a special rubber band around the varices that causes the tissue to die and fall off. A gastroenterologist—a doctor who specializes in digestive diseases—performs the procedure at a hospital or an outpatient center. People who have had varices in the past may need to take medication to prevent future episodes.

Edema and ascites. Health care providers prescribe diuretics—medications that remove fluid from the body—to treat edema and ascites. A health care provider may remove large amounts of ascitic fluid from the abdomen and check for spontaneous bacterial peritonitis. A health care provider may prescribe bacteria-fighting medications called antibiotics to prevent infection. He or she may prescribe oral antibiotics; however, severe infection with ascites requires intravenous (IV) antibiotics.

Hepatic encephalopathy. A health care provider treats hepatic encephalopathy by cleansing the bowel with lactulose, a laxative given orally or as an enema—a liquid put into the rectum. A health care provider may also add antibiotics to the treatment. Hepatic encephalopathy may improve as other complications of cirrhosis are controlled.

Hepatorenal syndrome. Some people with cirrhosis who develop hepatorenal syndrome must undergo regular dialysis treatment, which filters wastes and extra fluid from the body by means other than the kidneys. People may also need medications to improve blood flow through the kidneys.

Osteoporosis. A health care provider may prescribe bisphosphonate medications to improve bone density.

Gallstones and bile duct stones. A health care provider may use surgery to remove gallstones. He or she may use endoscopic retrograde cholangiopancreatography, which uses balloons and basketlike devices, to retrieve the bile duct stones.

Liver cancer. A health care provider may recommend screening tests every 6 to 12 months to check for signs of liver cancer. Screening tests can find cancer before the person has symptoms of the disease. Cancer treatment is usually more effective when the health care provider finds the disease early. Health care providers use blood tests, ultrasound, or both to screen for liver cancer in people with cirrhosis. He or she may treat cancer with a combination of surgery, radiation, and chemotherapy.

When is a liver transplant considered for cirrhosis?

A health care provider may consider a liver transplant when cirrhosis leads to liver failure or treatment for complications is ineffective. Liver transplantation is surgery to remove a diseased or an injured liver and replace it with a healthy whole liver or part of a liver from another person, called a donor.

Points to Remember (NIH)

- Cirrhosis is a condition in which the liver slowly deteriorates and is unable to function normally due to chronic, or long lasting, injury. Scar tissue replaces healthy liver tissue and partially blocks the flow of blood through the liver.
- The most common causes of cirrhosis in the United States are chronic hepatitis C, alcohol-related liver disease, nonalcoholic fatty liver disease (NAFLD) and nonalcoholic steatohepatitis (NASH), and chronic hepatitis B.
- Many people with cirrhosis have no symptoms in the early stages of the disease. However, as the disease progresses, a person may experience the following symptoms:
- fatigue, or feeling tired
- weakness
- itching
- loss of appetite
- weight loss
- nausea
- bloating of the abdomen from ascites—a buildup of fluid in the abdomen
- edema—swelling due to a buildup of fluid—in the feet, ankles, or legs
- spiderlike blood vessels, called spider angiomas, on the skin
- jaundice, a condition that causes the skin and whites of the eyes to turn yellow
- As the liver fails, complications may develop. In some people, complications may be the first signs of the disease.

- A health care provider usually diagnoses cirrhosis based on the presence of conditions that increase its likelihood, such as heavy alcohol use or obesity, and symptoms. A health care provider may confirm the diagnosis with
- a medical and family history
- a physical exam
- a blood test
- imaging tests
- a liver biopsy
- Treatment for cirrhosis depends on the cause of the disease and whether complications are present.
- A health care provider may consider a liver transplant when cirrhosis leads to liver failure or treatment for complications is ineffective.

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