Damage to liver function

All types of radiotherapy and chemotherapy can damage the liver function. The hepatic cells can become inflamed, although the mechanism is not the same as in viral hepatitis. Radiation can cause swelling and detachment of the vascular endothelial cells and deposition of fibrin in the vascular lumen, resulting in stenosis, obstruction and portal hypertension, especially in the venous system. Disturbance of blood circulation in the liver prevents normal nourishment of the tissue and has the secondary effect of causing liver atrophy, necrosis, and destruction of the hepatic lobules.

Some anti-cancer drugs may induce hepatic cell necrosis and inflammation, and in the long run lead to fatty degeneration, granuloma formation, eosinophil infiltration, and fibrosis. Methotrexate, chlorambucil and 6-mercaptopurine can cause toxic hepatitis and cholestasis. Cytarabine and nitrosourea may induce a temporary increase in transaminase. In addition, long-term use of methotrexate can result in liver fibrosis and eventually cirrhosis, particularly after long-term administration of small doses or intravenous or hepatic arterial injection of a relatively large dose, which may extend the half-life of the drug in the peripheral blood. All these pathological changes will damage the liver function.

Etiology and pathology

Pathogenic Toxins, Heat and Dryness damage the Liver and impair its function of ensuring the smooth flow of Qi. Disharmony between the upward and downward movement of Qi leads to Liver Qi stagnation with symptoms such as distension in the hypochondrium and pain in the area of the liver. Enduring stagnation of Liver Qi will impair the Spleen's transportation and transformation function and cause Spleen and Stomach Deficiency and internal generation of Damp-Heat with symptoms such as abdominal distension, diarrhea and fatigue. Liver Qi stagnation also may lead to the impairment of blood circulation, resulting in Blood stasis manifesting as a dark purple tongue body, sometimes with stasis marks, and a soot-black or somber facial complexion.

Clinical manifestations

In most cases, onset is acute and the course of the condition relatively short. Recovery generally takes place soon after suspension of drug administration, although recovery from radiation hepatitis is slower. Jaundice may occur in some patients, accompanied by nausea,
abdominal distension, diarrhea, fatigue, and pain in the liver area. The tongue body is purple with stasis marks or dark red; the pulse is wiry or wiry and thready. In a minority of cases, severe symptoms involving the digestive tract occur, including ascites and hemorrhage, which can progress to hepatic coma (hepatic encephalopathy) and finally death due to liver failure. Laboratory examinations show abnormality of liver functions, such as transitory elevation of serum transaminase and an increase in alkaline phosphatase (ALP) and gamma-glutamyl transpeptidase (GGT) levels.

**General treatment methods**

Since the Liver stores the Blood and governs the smooth flow of Qi, the treatment of liver diseases should be aimed at treating the Blood, especially in cases of damage to the liver function caused by radiotherapy or chemotherapy. The main treatment principles are emolliating the Liver, nourishing the Blood and regulating Qi, supported by clearing Heat and relieving Toxicity.

**Commonly used materia medica include**

- Dang Gui (Radix Angelicae Sinensis)
- Dan Shen (Radix Salviae Miltiorrhizae)
- Bai Shao (Radix Paeoniae Lactiflorae)
- Huang Jing (Rhizoma Polygonati)
- Sheng Di Huang (Radix Rehmanniae Glutinosae)
- Huang Qi (Radix Astragali seu Hedysari)
- Gan Cao (Radix Glycyrrhizae)
- Pu Gong Ying (Herba Taraxaci cum Radice)
- Huang Qin (Radix Scutellariae Baicalensis)
- Ji Nei Jin (Endothelium Corneum Gigeriae Galli)
- Chai Hu (Radix Bupleuri)
- Wu Wei Zi (Fructus Schisandrae)
- Bai Hua She She Cao (Herba Hedyotidis Diffusae)

**Commonly used acupuncture points include**

- BL-18 Ganshu
- BL-19 Danshu
- BL-20 Pishu
- BL-21 Weishu
- KI-3 Taixi
- LR-3 Taichong
- LR-14 Qimen
- LR-2 Xingjian
- PC-6 Neiguan
- SP-6 Sanyinjiao
- GB-34 Yanglingquan
- GB-39 Xuanzhong
- GV-14 Dazhui

**Pattern identification and treatment principles**

**QI STAGNATION**

**Main symptoms and signs**

Pan in the area of the liver, and distension and discomfort in the hypochondrium. The tongue is normal and the pulse is wiry. If Qi stagnation transforms into Heat, the tongue body is red with a yellow coating.

**HERBAL MEDICINE**

**Treatment principle**

Soothe the Liver and relieve Depression, emolliate the Liver and nourish the Blood.

**Prescription**

**CHAI HU SHU GAN SAN HE SI WU TANG JIA JIAN**

Bupleurum Powder for Dredging the Liver Combined With Four Agents Decoction, with modifications

- Chai Hu (Radix Bupleuri) 6g
- Yu Jin (Radix Curcumae) 10g
- Jiang Huang (Rhizoma Curcumae Longae) 10g
- Gan Cao (Radix Glycyrrhizae) 6g
- Huang Q in (Radix Scutellariae Baicalensis) 10g
- Xiang Fu (Rhizoma Cyperti Rotundi) 10g
- Dang Gui (Radix Angelicae Sinensis) 10g
- Bai Shao (Radix Paeoniae Lactiflorae) 15g
- Sheng Di Huang (Radix Rehmanniae Glutinosae) 15g
- Chuan Xiong (Rhizoma Cymatium) 6g
- Yan Hu Suo (Rhizoma Corydalis Yanhusuo) 10g
- Chuan Lian Zi (Fructus Meliae Toosendan) 10g
Explanation

- Chai Hu (Radix Bupleuri) dredges the Liver and relieves Depression.
- Huang Qin (Radix Scutellariae Baicalensis) clears Heat.
- Xiang Fu (Rhizoma Cyperi Rotundi), Yu Jin (Radix Curcumae) and Jiang Huang (Rhizoma Curcumae Longae) move Qi and invigorate the Blood.
- Dang Gui (Radix Angelicae Sinensis), Bai Shao (Radix Paeoniae Lactiflorae), Gan Cao (Radix Glycyrrhizae), and Sheng Di Huang (Radix Rehmanniae Glutinosae) emolliate the Liver and nourish the Blood.
- Chuan Xiong (Rhizoma Ligustici Chuanxiong), Yan Hu Suo (Rhizoma Corydalis Yanhusuo) and Chuan Lian Zi (Fructus Meliae Toosendan) invigorate the Blood and alleviate pain.

Modification

For Qi stagnation transforming into Heat, add Mu Dan Pi (Cortex Moutan Radicis) 10g and Zhi Zi (Fructus Gardeniae Jasminoidis) 10g.

ACUPUNCTURE

Treatment principle
Soothe the Liver and relieve Depression, emolliate the Liver and nourish the Blood, regulate Qi and alleviate pain.

Points: BL-18 Ganshu, LR-3 Taichong, PC-6 Neiguan, LR-14 Qimen, CV-17 Danzhong, and CV-6 Qihai.

Technique: Use filiform needles and apply the even method. Retain the needles for 20-30 minutes.

Explanation

- Combining BL-18 Ganshu and LR-14 Qimen, the back-shu and front-mu points related to the Liver; with LR-3 Taichong, the yuan (source) point of the Liver channel, soothes the Liver, relieves Depression and nourishes the Blood.
- PC-6 Neiguan loosens the chest and regulates Qi.
- CV-17 Danzhong and CV-6 Qihai regulate the functional activities of Qi in the Upper, Middle and Lower Burners to invigorate the Blood and regulate Qi.

SPLEEN DEFICIENCY

Main symptoms and signs
Lack of strength, abdominal distension, diarrhea, and poor appetite. The tongue body is dark or pale red with a greasy coating; the pulse is wiry and thready or deep and thready.

HERBAL MEDICINE

Treatment principle
Fortify the Spleen and augment Qi, harmonize the Stomach and nourish the Blood.

Prescription

BU ZHONG YI QI TANG HE SI JUN ZI TANG JIA JIAN
Decoction for Supplementing the Middle Burner and Augmenting Qi Combined With Four Gentlemen Decoction, with modifications

Huang Qi (Radix Astragali seu Hedysari) 30g
Bai Zhu (Rhizoma Atractylodis Macrocephalae) 15g
Chen Pi (Pericarpium Citri Reticulatae) 6g
Chai Hu (Radix Bupleuri) 6g
Dang Shen (Radix Codonopisits Pilosulae) 15g
Gan Cao (Radix Glycyrrhizae) 6g
Dang Gui (Radix Angelicae Sinensis) 10g
Fu Ling (Sclerotium Poriae Cocos) 15g
Sha Ren (Fructus Amomi) 6g, added 10 minutes before the end of the decoction process
Chao Ji Nê Jin (Endothelium Corneum Gigeriae Galli, stir-fried) 10g
Shen Qu (Massa Fermentata) 30g
Shan Yao (Rhizoma Dioscoreae Oppositae) 30g

Explanation

- Si Jun Zi Tang (Four Gentlemen Decoction [Bai Zhu (Rhizoma Atractylodis Macrocephalae), Gan Cao (Radix Glycyrrhizae), Fu Ling (Sclerotium Poriae Cocos), and Dang Shen (Radix Codonopisits Pilosulae)]), Huang Qi (Radix Astragali seu Hedysari) and Shan Yao (Rhizoma
Dioscoreae Oppositae) fortify the Spleen and augment Qi.
- Chai Hu (Radix Bupleuri) uplifts Yang Qi.
- Dang Gui (Radix Angelicae Sinensis), Sha Ren (Fructus Amomi), C hao Ji N ai Jin‡ (Endothelium Corneum Gigeriae Galli, stir-fried), and Shen Qu (Massa Fermentata) harmonize the Blood and nourish the Stomach.
- Chen Pi (Pericarpium Citri Reticulatae) regulates Qi and harmonizes the Stomach.

**Modification**
For severe diarrhea, add W ei Ge Gen (Radix Puerariae, roasted in fresh cinders) 30g, M u X iang* (Radix Aucklandiae Lappae) 6g and Huang Lian (Rhizoma Coptidis) 3g.

**ACUPUNCTURE AND MOXIBUSTION**

**Treatment principle**
Fortify the Spleen, augment Qi, harmonize the Stomach, supplement the Middle Jiao, and nourish the Blood.

**Points:** BL-20 Pishu, BL-21 Weishu, ST-36 Zusanli, CV-12 Zhongwan, ST-25 Tianshu, and LR-13 Zhangmen.

**Technique:** Use filiform needles and apply the reinforcing method. Retain the needles for 20-30 minutes. Select two or three points each time to apply moxibustion if required.

**Explanation**
- Combining BL-20 Pishu, BL-21 Weishu, LR-13 Zhangmen and CV-12 Zhongwan, the back-shu and front-mu points related to the Spleen and Stomach, fortifies the Spleen and boosts the Stomach, supplements Qi and nourishes the Blood.
- ST-25 Tianshu, the front-mu point of the Large Intestine channel, regulates Qi, disperses distension and stops diarrhea.
- ST-36 Zusanli is a key point for strengthening the body; it supplements the Middle Jiao and augments Qi.

**BLOOD STASIS**
Main symptoms and signs: stabbing pain in the liver area, a soot-black facial complexion, purple lips, hepatomegaly, and dry and scaling skin. The tongue body is dark red with stasis marks; the pulse is wiry or rough.

**Treatment principle**
Dredge the Liver and regulate Qi, invigorate the Blood and disperse Blood stasis.

**HERBAL MEDICINE**

**Prescription**
XIAO YAO SAN HE GE XIA ZHU YU TANG JIA JIAN
Free Wanderer Powder Combined With Decoction for Expelling from Blood Stasis from Below the Diaphragm, with modifications

- Chai Hu (Radix Bupleuri) 6g
- Dang Gui (Radix Angelicae Sinensis) 10g
- Chi Shao (Radix Paeoniae Rubra) 10g
- Bai Shao (Radix Paeoniae Lactifloraes) 10g
- Dan Shen (Radix Salviae Miltiorrhizae) 30g
- Gan Cao (Radix Glycyrrhizae) 6g
- Chuan Xiong (Rhizoma Ligustici Chuanxiong) 6g
- Mu Dan Pi (Cortex Moutan Radicis) 10g
- Hong Hua (Flos Carthami Tinctorii) 6g, infused separately
- Xiang Fu (Rhizoma Cyperi Rotundii) 10g
- Qing Pi (Pericarpium Citri Reticulatae Viride) 6g
- Chen Pi (Pericarpium Citri Reticulatae) 6g
- Yu Jin (Radix Curcumae) 10g
- E Zhu (Rhizoma Curcumae) 6g
- San Qi Fen (Pulvis Radicis Notoginseng) 6g, infused in the prepared decoction
- Yan Hu Suo (Rhizoma Corydalis Yanhusuo) 10g
- Bie Jia* (Carapax Amydae Sinensis) 15g, decocted for 30 minutes before adding the other ingredients

**Explanation**
- Xiao Yao San (Free Wanderer Powder) dredges the Liver and regulates Qi. Ge X ia Zhu Yu Tang (Decoction for Expelling Blood Stasis from Below the Diaphragm) invigorates the Blood and disperses Blood stasis. When Qi and Blood
circulate smoothly and are in harmony, the symptoms will recede.

- Chai Hu (Radix Bupleuri), Xiang Fu (Rhizoma Cyperi Rotundi), Qing Pi (Pericarpium Citri Reticulatae Viride), Chen Pi (Pericarpium Citri Reticulatae), and Yu Jin (Radix Curcumae) dredge the Liver and regulate Qi.
- Chi Shao (Radix Paeoniae Rubra), Bai Shao (Radix Paeoniae Lactiflorae), Dang Gui (Radix Angelicae Sinensis), Dan Shen (Radix Salviae Miltorrhizae), C h u a n X i o n g (Rhizoma Ligustici Chuanxiong), Mu Dan Pi (Cortex Moutan Radicis), Hong Hua (Flos Carthami Tinctorii), E Zhu (Rhizoma Curcumae), and San Qi Fen (Pulvis Radicis Notoginseng) invigorate the Blood and dissipate Blood stasis.
- Yan Hu Suo (Rhizoma Corydalis Yanhusuo) regulates Qi and alleviates pain.
- Bie Jia* (Carapax Amydae Sinensis) softens hardness and dissipates lumps.
- Gan Cao (Radix Glycyrrhizae) regulates and harmonizes the properties of the other ingredients.

Note: Bie Jia* (Carapax Amydae Sinensis) may be replaced by Jiang Can‡ (Bombyx Batryticatus) 10g or Gou Teng (Ramulus Uncariae cum Uncis) 15g.

ACUPUNCTURE AND CUPPING THERAPY

Treatment principle
Dredge the Liver and regulate Qi, invigorate the Blood and disperse Blood stasis.

Points: BL-18 Ganshu, BL-17 Geshu, LR-14 Qimen, SP-6 Sanyinjiao, LR-3 Taichong, and CV-17 Danzhong.

Technique: Use filiform needles and apply the even method. Retain the needles for 20-30 minutes. Apply cupping therapy over needles at the back-shu points for 5-8 minutes.

Explanation
- BL-18 Ganshu, LR-14 Qimen and LR-3 Taichong soothe the Liver and regulate Qi.
- BL-17 Geshu and SP-6 Sanyinjiao invigorate the Blood and transform Blood stasis.
- CV-17 Danzhong regulates Qi to assist the movement of Blood.

DAMP-HEAT

Main symptoms and signs
Jaundice, accompanied by a bright yellow facial complexion, abdominal distension and yellow urine. The tongue body is red with a yellow coating; the pulse is wiry.

Treatment principle
Clear Heat, benefit the movement of Dampness and abate jaundice.

HERBAL MEDICINE

Prescription
YIN CHEN HAO TANG JIA JIAN
Oriental Wormwood Decoction, with modifications
Yin Chen Hao (Herba Artemisiae Scopariae) 30g
Zhi Zi (Fructus Gardeniae Jasminoidis) 10g
Yu Jin (Radix Curcumae) 10g
Jiang Huang (Rhizoma Curcumae Longae) 10g
Jin Qian Cao (Herba Lysimachiae) 30g
Chi Shao (Radix Paeoniae Rubra) 10g
Da Huang (Radix et Rhizoma Rhei) 10g
G an Cao (Radix Glycyrrhizae) 6g
Che Qian Zi (Semen Plantaginis) 10g, wrapped
Mu Dan Pi (Cortex Moutan Radicis) 10g
Da Fu Pi (Pericarpium Arecae Catechu) 10g

Explanation
- Yin Chen Hao (Herba Artemisiae Scopariae), Zhi Zi (Fructus Gardeniae Jasminoidis) and Jin Qian Cao (Herba Lysimachiae) clear Heat, benefit the movement of Dampness and abate jaundice.
- Yu Jin (Radix Curcumae) and Jiang Huang (Rhizoma Curcumae Longae) invigorate the Blood and disperse Blood stasis.
- Chi Shao (Radix Paeoniae Rubra) and Mu Dan Pi (Cortex Moutan Radicis) clear Heat and cool the Blood.
- Che Qian Zi (Semen Plantaginis) and Da Fu Pi (Pericarpium Arecae Catechu) drain Heat and benefit the movement of Dampness.
• Da Huang (Radix et Rhizoma Rhei) clears Heat and drains downward.
• Gan Cao (Radix Glycyrrhizae) regulates and harmonizes the properties of the other ingredients.

Modification
For pain in the liver area, add Yan Hu Suo (Rhizoma Corydalis Yanhusuo) 10g and Chuan Lian Zi (Fructus Meliae Toosendan) 10g.

ACUPUNCTURE
Treatment principle
Clear Heat, benefit the movement of Dampness and abate jaundice.

Points: BL-19 Danshu, BL-20 Pishu, SP-9 Yinlingquan, GB-34 Yanglingquan, CV-3 Zhongji, BL-18 Ganshu, and GB-40 Qiuuxu.

Technique: Use filiform needles and apply the reducing method. Retain the needles for 20-30 minutes.

Explanation
• BL-18 Ganshu, BL-19 Danshu, GB-34 Yanglingquan, and GB-40 Qiuuxu dredge the Liver and abate jaundice by promoting the flow of bile.
• BL-20 Pishu, SP-9 Yinlingquan and CV-3 Zhongji clear Heat and benefit the movement of Dampness.

ASYMPTOMATIC INCREASE IN TRANSAMINASE LEVELS

Main symptoms and signs: none obvious.

HERBAL MEDICINE

Treatment principle
Emolliate the Liver and nourish the Blood, clear Heat and relieve Toxicity.

Prescription
DANG GUI LIU HUANG TANG JIA JIAN
Chinese Angelica Root Six Yellows Decoction, with modifications

Dang Gui (Radix Angelicae Sinensis) 10g
Sheng Di Huang (Radix Rehmanniae Glutinosae) 15g
Shu Di Huang (Radix Rehmanniae Glutinosae Conquita) 10g
Huang Qin (Radix Scutellariae Baicalensis) 10g
Huang Bai (Cortex Phellodendri) 6g
Huang Qi (Radix Astragali seu Hedysari) 15g
Xiao Hui Xiang (Fructus Foeniculi Vulgaris) 6g
Yu Jin (Radix Curcumae) 10g
Chai Hu (Radix Bupleuri) 6g
Dan Shen (Radix Salviae Miltiorrhizae) 15g
Gan Cao (Radix Glycyrrhizae) 6g
Pu Gong Ying (Herba Taraxaci cum Radice) 30g
Wu Wei Zi (Fructus Schisandraceae) 15g
Bai Hua She She Cao (Herba Hedyotidis Diffusae) 30g

Explanation
• Dang Gui (Radix Angelicae Sinensis), Sheng Di Huang (Radix Rehmanniae Glutinosae) and Shu Di Huang (Radix Rehmanniae Glutinosae Conquita) emolliate the Liver and nourish the Blood.
• Yu Jin (Radix Curcumae) and Chai Hu (Radix Bupleuri) dredge the Liver and regulate Qi.
• Huang Qin (Radix Scutellariae Baicalensis), Huang Bai (Cortex Phellodendri), Pu Gong Ying (Herba Taraxaci cum Radice), and Bai Hua She She Cao (Herba Hedyotidis Diffusae) clear Heat and relieve Toxicity.
• Dan Shen (Radix Salviae Miltiorrhizae) invigorates the Blood.
• Wu Wei Zi (Fructus Schisandraceae) and Huang Qi (Radix Astragali seu Hedysari) augment Qi and constrain Yin.
• Xiao Hui Xiang (Fructus Foeniculi Vulgaris) moves Qi and dissipates Cold.
• Gan Cao (Radix Glycyrrhizae) regulates and harmonizes the properties of the other ingredients.
**Experimental studies**

**EFFECT ON LIVER FUNCTION**

Modern pharmacological studies indicate that a number of Chinese materia medica are very effective in protecting the liver function by inhibiting an increase in transaminases and preventing a decrease in hepatic glycogen.

- **Gan Cao** (Radix Glycyrrhizae) inhibits alanine transaminase (ALT) and aspartate transaminase (AST).34
- **Long Dan Cao** (Radix Gentianae Scabrae) prevents a decrease in hepatic glycogen.35
- **Bai Zhu** (Rhizoma Atractylodis Macrocephalae) prevents a decrease in hepatic glycogen and inhibits an increase in transaminases and lactic dehydrogenase (LDH).36
- **Sheng Di Huang** (Radix Rehmanniae Glutinosae) prevents a decrease in hepatic glycogen.37
- **Dang Gui** (Radix Angelicae Sinensis) prevents a decrease in hepatic glycogen and protects adenosine triphosphate (ATP) enzymes.38
- **Lian Qiao** (Fructus Forsythiae Suspensae) reduces ALT and enhances recovery of hepatic glycogen.39
- **Ling Zhi** (Ganoderma) reduces ALT.40
- **Bai Jiang Cao** (Herba Patriniae cum Radice) increases secretion of bile.41
- **Yin Chen Hao** (Herba Artemisiae Scopariae) reduces ALT, AST and serum bilirubin.42
- **Fu Ling** (Sclerotium Poriae Cocos) reduces ALT.43
- **Hou Po** (Cortex Magnoliae Officinalis) reduces ALT.44
- **Chai Hu** (Radix Bupleuri) increases secretion of bile and reduces ALT.45
- **Huang Qi** (Radix Astragali seu Hedysari) reduces ALT.46
- **Pu Gong Ying** (Herba Taraxaci cum Radice) reduces ALT.47
- **Bo He** (Herba Menthae Haplocalycis) reduces ALT.48
- **Nü Zhen Zi** (Fructus Ligustri Lucidi) prevents a decrease in hepatic glycogen.49
- In addition, the deoxyschizandrin and gomisin A, B and C contained in **Wu Wei Zi** (Fructus Schisandraceae) limited the increase in ALT induced by liver damage during in vitro trials.50

**EFFECT ON GALLBLADDER FUNCTION**

Certain Chinese materia medica are also effective in normalizing the function of the gallbladder.

- **San Ke Zhen** (Radix Berberidis) reduces tension in the gallbladder, limits the number of contractions and increases the volume of bile flow.51
- **Da Huang** (Radix et Rhizoma Rhei) increases the volume of bile flow, strengthens contractility of the gallbladder and raises the amount of bile acid.52
- **Long Dan Cao** (Radix Gentianae Scabrae) increases the volume of bile flow and improves micturition.35
- **Jin Qian Cao** (Herba Lysimachiae) increases the volume of bile flow, enhances the secretion of bile and prevents cholelithiasis.53
- **Ban Bian Lian** (Herba Lobeliae Chinensis cum Radice) increases the volume of bile flow.54
- **Hu Zhang** (Radix et Rhizoma Polygoni Cuspidati) enhances the secretion of bile and reduces tension in the gallbladder.55
- **Jin Yin Hua** (Flos Lonicerae) enhances the secretion of bile.56
- **Huang Qin** (Radix Scutellariae Baicalensis) enhances the secretion of bile.57

**Clinical observation reports**

**SUPPORTING VITAL QI AND DISPELLING BLOOD STASIS**

Zhou et al. reported on application of the principle of supporting Vital Qi (Zheng Qi) and dispelling Blood stasis in treating liver damage due to chemotherapy.58

Group: 30 patients, 22 male and 8 female, aged from 29 to 70 (mean age: 48); there were 8 patients with cancer of the cardia, 6 with stomach cancer, 4 with lung cancer, 4 with breast cancer, 3 with Hodgkin's lymphoma, 2 with esophageal cancer, and one each with cancer of the rectum, osteosarcoma,
and seminoma. Liver damage was evident from the very high level of alanine transaminase (ALT) and the higher-than-normal levels of alkaline phosphatase (ALP) and gamma-glutamyl transpeptidase (GGT).

**Main symptoms:** low spirits, a lusterless facial complexion, fatigued limbs, no pleasure in eating, a pale tongue with purple margins or stasis marks and a thin white coating, and a wiry and thready pulse.

**Empirical prescription ingredients**

Zhi Huang Qi (Radix Astragali seu Hedysari, mix-fried with honey) 20g  
Chao Dang Shen (Radix Codonopsis Pilosulae, stir-fried) 12g  
Chao Bai Zhu (Rhizoma Atractylodis Macrocephalae, stir-fried) 9g  
Fu Ling (Sclerotium Poriae Cocos) 9g  
Shan Yao (Rhizoma Dioscoreae Opossimae) 12g  
Chen Pi (Pericarpium Citri Aurantii, stir-fried) 6g  
Zhi Ji Nei Jin‡ (Endothelium Corneum Gigeriae Galli, mix-fried) 4g  
Yi Jin (Rhizoma Curcumae) 9g  
Hong Hua (Flos Carthami Tinctorii) 6g  
Tu Fu Ling (Rhizoma Smilacis Glabrae) 30g  

**Modifications**

1. For stomach distension, Zhi Huang Qi (Radix Astragali seu Hedysari, mix-fried with honey) was removed and Mu Xiang* (Radix Aucklandiae Lappae) 5g, Chao Zhi Ke (Fructus Citri Aurantii, stir-fried) 6g and Zhi Ji Nai Jìn‡ (Endothelium Corneum Gigeriae Galli, mix-fried) 4g were added.
2. For loose stools, Wei Mu Xiang* (Radix Aucklandiae Lappae, roasted in fresh cinders) 9g and Wei Rou Dou Kou (Semen Myristicae Fragrantis, roasted in fresh cinders) 6g were added.
3. For severe pain in the hypochondrium, Yan Hu Suo (Rhizoma Corydalis Yanhusuo) 9g was added.
4. For jaundice, Yin Chen Hao (Herba Artemisiae Scopariae) 15g, Ze Xie (Rhizoma Alismatis Orientalis) 9g and Che Qian Zi (Semen Plantaginis) 9g, wrapped, were added.

One bag per day was used to prepare a decoction, taken twice a day.

**Results**

- Pronounced improvement (symptoms disappeared and ALT returned to normal after taking the decoction for 2-4 weeks) in 23 cases.
- Some improvement (symptoms disappeared and ALT returned to normal after taking the decoction for 4-8 weeks) in 3 cases.
- No improvement (little or no change in symptoms and ALT after taking the decoction for 8 weeks) in 4 cases.

The average value of ALT before treatment was 153.57 IU/L; this was reduced to 43.7 IU/L after treatment (\(t = 3.63, P < 0.01\)).

**Discussion**

The authors consider that malignant tumors represent a pattern of Vital Qi (Zheng Qi) Deficiency and invasion of pathogenic factors. Chemotherapeutic agents are considered as Toxins in TCM and long-term use causes pathogenic Toxins to accumulate in the Liver resulting in the Liver failing to ensure the smooth flow of Qi, the functional activities of Qi being obstructed, and Blood not flowing freely in the vessels, eventually leading to Blood stasis and Toxins fighting and binding, and subsequently to damage to the Liver. The treatment principle should therefore focus on supporting Vital Qi (Zheng Qi) and dispelling Blood stasis.

**Explanation of prescription**

- Zhi Huang Qi (Radix Astragali seu Hedysari, mix-fried with honey), Chao Dang Shen (Radix Codonopsis Pilosulae, stir-fried), Chao Bai Zhu (Rhizoma Atractylodis Macrocephalae, stir-fried), Fu Ling (Sclerotium Poriae Cocos), Shan Yao (Rhizoma Dioscoreae Opossimae), and Chen Pi (Pericarpium Citri Reticulatae) augment Qi and fortify the Spleen to support Vital Qi (Zheng Qi).
- Dang Gui (Radix Angelicae Sinensis), Chi Shao (Radix Paeoniae Rubra), Dan Shen (Radix Salviae Miltiorrhizae), Yu Jin (Radix Curcumae), Chuan Xiong (Rhizoma Ligustici Chuanxiong), and Hong Hua (Flos Carthami Tinctorii) invigorate...
the Blood and dispel Blood stasis; once Blood stasis is removed, new Blood can be generated.

- Large doses of Tu Fu Ling (Rhizoma Smilacis Glabrae) relieve Toxicity.

**LIVER DAMAGE**

Ye et al. reported on the clinical observation of Xiao Chai Hu Tang Jia Jian (Minor Bupleurum Decoction, with modifications) in the treatment of liver damage caused by the Lp-TAE (Lipiodol-transcatheter arterial embolization) method of treating liver cancer.59

**Background**

From 1988 to 1998, the authors treated 300 patients with liver damage after treatment for liver cancer by the Lp-TAE method. These patients were diagnosed with primary liver cancer by B ultrasound, CT, MRI and AFP investigations, and indices of hepatic function.

**Groups:** The authors divided the patients randomly into two groups according to the order of admission to hospital:

- 150 patients, 143 male and 7 female, aged from 28 to 73 (mean age: 55), were placed in the TCM treatment group; the diameter of the cancer ranged from 10 cm to 21 cm in this group.
- 150 patients, 145 male and 5 female, aged from 18 to 74 (mean age: 58), were placed in a comparison group; the diameter of the cancer ranged from 10 cm to 19 cm in this group.

**Treatment method for liver cancer (Lp-TAE method)**

The Seldinger technique was adopted, by percutaneous femoral artery catheterization with infusion into the bilateral liver arteries of 3-20ml of ultra-liquid iodized oil, 50-70mg/ m² of doxorubicin, 10-14mg/ m² of mitomycin and embolism of liver arteries by small pieces of gelfoam (cut as 1/6 of a piece of gelating sponge). Patients were treated 3.5 times on average (range one to eight times) with one to six months’ interval between courses.

**Treatment of side-effects**

After the Lp-TAE treatment, patients manifested variously with fever due to extensive necrosis of cancerous liver tissue and absorption of the tumor, pain in the area of the liver, vomiting, and gastrointestinal hemorrhage.

Standard treatment of these symptoms with Western drugs was adopted for patients in both groups as and when symptoms arose:

- For patients with a temperature higher than 38.5°C, 25mg of indomethacin was administered orally one to three times a day, accompanied by intravenous injection of 5-10mg of dexamethasone, once every two or three days, until the fever was relieved.
- Patients with vomiting were given 10-20mg of metoclopramide orally three times a day until the symptoms were relieved.
- Patients with pain were given 30-90mg of Hydrochloride Bucinnazine, once every 4-6 hours, and intravenous injection of 50mg of meperidine hydrochloride, with frequency depending on the severity of the pain.
- To prevent hemorrhage in the digestive tract, all patients were given 10mg of aluminum hydroxide gel, three times a day, and intravenous injection of 0.4g of cimetidine, twice a day.

In addition, the TCM treatment group was given Xiao Chai Hu Tang Jia Jian (Minor Bupleurum Decoction, with modifications).

**Ingredients**

- Dang Shen (Radix Codonopsis Pilosulae) 12g
- Chai Hu (Radix Bupleuri) 12g
- Huang Qin (Radix Scutellariae Baicalensis) 12g
- Fa Ban Xia (Rhizoma Pinelliae Ternatae Preparata) 12g
- Xian He Cao (Herba Agrimoniae Pilosae) 12g
- Yu Jin (Radix Curcumae) 20g
- Bie Jia* (Carapax Amydae Sinensis) 30g
- Bai Hua She She Cao (Herba Hedyotidis Diffusae) 30g
- Gan Cao (Radix Glycyrrhizae) 6g
- San Qi Fen (Pulvis Radicis Notoginseng) 3g, infused in the prepared decoction

**Modifications**

1. For damage to Yin due to severe fever, D i Gu Pi
112 MANAGEMENT OF CANCER

(Cortex Lycii Radicis) and Wu Wei Zi (Fructus Schisandrae) were added.

2. For exuberant Heat, Zhi Zi (Fructus Gardeniae Jasminoidis), Shi Gao‡ (Gypsum Fibrosum), Da Huang (Radix et Rhizoma Rhei), and Hu Zhang (Radix et Rhizoma Polygoni Cuspidati) were added.

3. For Blood stasis due to binding of Heat, Tao Ren (Semen Persicae) and Quan Xie‡ (Buthus Martensi) were added.

4. For Blood depletion and Qi Deficiency, Huang Qi (Radix Astragali seu Hedysari) and Ji Xue Teng (Caulis Spatholobi) were added.

5. For Wind stirring due to exuberant Heat, Ling Yang Jiao‡ (Cornu Antelopis) and Gou Teng (Ramulus Uncariae cum Uncis) were added.

6. For mental confusion and delirious speech, An Gong Niu Huang Wan (Peaceful Palace Bovine Bezoar Pill) was added.

7. For Damp-Heat accumulating and steaming, Huang Lian (Rhizoma Coptidis), Yin Chen Hao (Herba Artemisiae Scopariae), Yi Yi Ren (Semen Coicis Lachryma-jobi), and Jin Qian Cao (Herba Lysimachiae) were added.

8. For severe pain, Yan Hu Suo (Rhizoma Corydalis Yanhusuo) was added.

9. For severe vomiting, Xuan Fu Hua (Flos Inulae), Dai Zhe Shi‡ (Haematitum) and Zhu Ru (Caulis Bambusae in Taenias) were added.

Patients started taking the decoction on the third day after the start of the Lp-TAE treatment. One bag per day was used to prepare a decoction by adding to 1000ml of water and boiling down to 500ml of liquid, taken in equal portions twice a day. TCM treatment continued for two weeks. As with the comparison group, treatment with the Western drugs detailed above was given should any symptoms appear.

Results

Table 4-2 (1) Appearance of side-effects

<table>
<thead>
<tr>
<th></th>
<th>Average number of days of fever</th>
<th>No. of patients with vomiting</th>
<th>No. of patients with poor appetite</th>
<th>No. of patients with gastrointestinal hemorrhage</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCM treatment group</td>
<td>8.5 (48 patients)</td>
<td>9</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Comparison group</td>
<td>11.5 (112 patients)</td>
<td>42</td>
<td>79</td>
<td>20</td>
</tr>
<tr>
<td>P</td>
<td>&lt;0.05</td>
<td>&lt;0.01</td>
<td>&lt;0.05</td>
<td>No significant difference</td>
</tr>
</tbody>
</table>

Table 4-2 (2) Pain in the liver area

<table>
<thead>
<tr>
<th></th>
<th>Average days of grade III pain $^$</th>
<th>No. of patients with grade III pain on day 3</th>
<th>No. of patients with grade III pain on day 7</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCM treatment group</td>
<td>10.5</td>
<td>116</td>
<td>20</td>
</tr>
<tr>
<td>Comparison group</td>
<td>14.4</td>
<td>114</td>
<td>50</td>
</tr>
</tbody>
</table>

$^\$ Pain graded according to WHO criteria.

Note: By day 7, there was a significant difference between the two groups, $P<0.05$ (t test used for statistical purposes).

Conclusion

The authors observed that, after treatment of liver cancer patients with the Lp-TAE regime, symptoms such as fever, vomiting, poor appetite, and pain in liver area appearing within the period of observation generally correspond to the main symptoms treated by Xiao Chai Hu Tang (Minor Bupleurum Decoction).

The observation indicated that the TCM treatment group fared significantly better than the comparison group in terms of improvement in fever, vomiting, poor appetite, and pain in the liver area.
The average recovery time in the TCM treatment group was less than in the comparison group, thus enabling patients in that group to start the next course earlier.