Cases of Cardiac Arrhythmia and Cardiac Failure

by Dr. Jyh-Sheng You
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FOREWORD

Cardiac arrhythmia indicates irregularities of the frequency, rhythm, originating area of the cardiac impulse, conduction speed, and the order of excitation. The TCM terms “palpitation (Xin Ji)” and “stirring heart palpitation (Xin Dong Ji)” are similar to cardiac arrhythmia. A variety of causes may lead to symptoms such as:

1. Cases of Cardiac Arrhythmia and Cardiac Failure
2. The Application of TCM Treatment for Peptic Ulcers
3. Case Study of Acid Regurgitation
4. Herbal Medicinal Safety and Professional Procurement
5. Dr. Pu-Tao Chang on Health Preservation - Pinellia Rhizome (Ban Xia)
6. Pharmacology and Applications of Pinellia Rhizome (Ban Xia) and its Processed Forms
as irregular heartbeats, feeling flustered and disturbed, and feeling unable to act on one’s own. They are usually accompanied by chest tightness, shortness of breath, dizziness, and syncope. “Palpitation (Xin Ji)” can be further differentiated into “palpitations due to fright (Jing Ji)” and “severe palpitations (Zheng Chong).” Palpitations that are caused by fright is termed Jing Ji and severe palpitations without any external stimulation is termed Zheng Chong.

Congestive cardiac failure is commonly caused by heart disease. It leads to severe cardiac compensatory insufficiency. Through recent clinical observations and experimental studies, most scholars believe cardiac failure is a pattern of deficiency in the root and excess at the exterior. Its pathological basis is heart Qi and Yang depletion. Its central pathological link is blood vessel stasis and stagnation. Blood stasis, turbid phlegm, and water-rheum are the patterns of exterior excess. Because excessive pathogens such as blood stasis, turbid phlegm, and water-rheum often manifest due to Zang-Fu depletion, we should reinforce healthy Qi to consolidate the root during treatments. Expelling and purging alone will damage the healthy Qi.

CASE STUDIES AND TREATMENT PROCESS

[Case 1] Arrhythmia Case

Mr. Lee, 67-year old male retired farmer. Patient record number 1062XXX. Initial visit date: 07/31/2006

This patient was having on and off symptoms of palpitations for more than 10 years, which became aggravated over the last year.

01/02/2005: He began to have palpitations again (and went to our ER department). His energy level was fine however.

April 2006: He went to the National Taiwan University (NTU) ER department due to palpitations, had regular follow-up appointments at the outpatient department, and took medication. He also had follow-up appointments at the outpatient department at Veterans General Hospital, where cauterization was suggested. There, he had cardiac catheterization performed, and there was no sign of narrowing or thrombus.

June 2006: He started to have more frequent palpitations, from once every four weeks to three weeks to every week. He would feel his heartbeats increase when bending, exerting strength, and doing exercises that stress the chest; sometimes he felt irregular heartbeats without any particular reason. He began to pant easily when going up and down the stairs or when doing slightly strenuous exercise. He would feel slightly panicked before the attack, but it was not induced by environmental stimulation such as noises. An attack was accompanied by chest tightness and throat constriction. They were usually aggravated when his health was compromised (such as lower back pain due to sprain, or having diarrhea for few days). Because his symptoms were worsening and more frequent, he was exhausted and weak. He sought treatment at many clinics and eventually came to our TCM department on 07/31/2006.

He had a history of hypertension for more than 10 years. (Although his blood pressure had not been high recently; it usually measured around 126-145/90-95mmHg. He had not been taking blood pressure medication regularly; he had only taken it when his systolic pressure was over 140 mmHg.) He had a history of a gout attack 5-6 years ago in which his blood uric acid level was high. It normalized subsequently and he never had another episode of gout. His height was 168cm, current weight was 77.5 kg (it was previously about 76kg), and BMI was 27.5.

His build was medium and slightly overweight. His facial complexion was withered yellow and pale. His lips, tongue, and nail beds were pale. He had bags under his eyes and dark circles. His tongue was light red and slightly dark with a thin, white coating and a deep vertical center crack. His pulse was deep and choppy.

01/02/2005: EKG (ER): Ventricular Premature Contraction (VPC)

01/03/2005: EKG RESTING sinus bradycardia

01/05/2005-01/10/2005: WRIST ECG RECORDER sinus rhythm with intermittent supraventricular tachycardia (187bpm)

Diagnosis

Western Medicine: 1. Arrhythmia (VPC) 2. Hypertension

TCM: Severe palpitations (Zheng Chong) - Qi and Yin deficiency failing to nourish the heart.

Treatment Method: Boost Qi and nourish Yin, calm the mind, and relieve palpitations.
Formula:

<table>
<thead>
<tr>
<th>Formula: Ginseng &amp; Zizyphus Formula (Tian Wang Bu Xin Dan) plus Cinnamon &amp; Dragon Bone Combination (Gui Zhi Jia Long Gu Mu Li Tang)</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salvia Root (Dan Shen)</td>
<td>0.6g</td>
</tr>
<tr>
<td>Raw Rehmannia (Sheng Di Huang)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Oyster Shell (Mu Li)</td>
<td>0.5g</td>
</tr>
<tr>
<td>Ophiopogon (Mai Men Dong)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Cooked Rehmannia (Shu Di Huang)</td>
<td>0.5g</td>
</tr>
<tr>
<td>Schisandra Fruit (Wu Wei Zi)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Cinnamon Twig (Gui Zhi)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Scrophularia (Xuan Shen)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Dragon Bone (Long Gu)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Polygala (Yuan Zhi)</td>
<td>0.3g</td>
</tr>
<tr>
<td>Acorus (Shi Chang Pu)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Platycodon (Jie Geng)</td>
<td>0.3g</td>
</tr>
<tr>
<td>Fu Shen (Fu Shen)</td>
<td>0.4g</td>
</tr>
<tr>
<td>Coptis Rhizome (Huang Lian)</td>
<td>0.2g</td>
</tr>
<tr>
<td>Platycladus (Bo Zi Ren)</td>
<td>0.4g</td>
</tr>
</tbody>
</table>

He came back for follow-up after one week and reported that his symptoms improved after taking the formula for 2-3 days. He did not pant when walking, the palpitations and irregular heartbeats decreased, and he had more energy. He continued with the same formula for one more week and all the symptoms were alleviated.

[Case 2] Cardiac Failure

Mr. Lee, born in 1969, male, married, and a former Beijing ballet dancer. Patient record number 10236XXX.

The patient went to Banciao Far Eastern Memorial Hospital 2 months ago due to sudden chest tightness, palpitations, and difficulty with breathing while moving. After EKG, chest X-ray, and cardiac ultrasound (Left ventricular ejection fraction 23%) he was diagnosed with primary cardiomyopathy, mitral and tricuspid stenosis, and atrial fibrillation. He declined surgical treatment. He used to take medications such as Digitalis, but he felt that they had limited effect. He came to our hospital seeking TCM and western medicine treatments on 08/14/2003 for difficulty in breathing when he lay down.

His health condition had been pretty good except for occasionally catching a cold. He had no unusual personal or family history. The following were found during a physical examination: Dull complexion, purple lips, red tongue with a white coating, deep thin rapid and irregular pulse; jugular venous slightly distended, heart rate 95/min, irregular heart rhythm 3-4 times/min; rough breathing sounds in both lungs, no dry or moist rales.

08/29/2003 EKG exam: Atrial fibrillation with moderate non-specific ST-T changes.

12/29/2003 Cardiac ultrasound exam: Left ventricular ejection fraction 36%, left ventricular end diastolic diameter: 57 mm, and left ventricular end systolic diameter: 48 mm. Diagnosis: Left ventricular contractive failure with mitral and tricuspid regurgitation.

02/28/2005 Cardiac ultrasound exam: Left ventricular ejection fraction 57.8%, left ventricular end diastolic diameter: 54 mm, left ventricular end systolic diameter: 37 mm. Diagnosis: Adequate ventricular systolic function with normal lateral wall activities. Mild mitral and tricuspid regurgitation, left ventricular enlargement and atrial fibrillation.

Composition of Ginseng, Schizandra, and Ophiopogon Formula (Sheng Mai San)

Diagnosis

Western Medicine: Left ventricular contractive failure with mitral and tricuspid regurgitation, and atrial fibrillation

TCM: Severe palpitations (Zheng Chong), panting (deficient panting) - Heart Qi and Ying-Yin deficiency and inhibited blood flow failing to nourish the heart

He took the herbal formulas along with western medication. The symptoms alleviated after two weeks and he was able to lie down at night. He continued to take the modified herbal formula, cut down on the western medication, and all his symptoms alleviated. His facial complexion became rosy. His lips were not purple. The pulse was deep thin slippery but not irregular. There was no longer distended jugular venous.
Follow-up cardiac ultrasound exam: Left ventricular ejection fraction was 57.8%, showing sufficient ventricular systolic function.

Diagnosis and Treatment Thoughts

Arrhythmias are mostly deficient cases. The deficiency can lead to excess, which result in the deficiency-excess complex patterns that we see most of the time clinically. The deficiencies were Qi, blood, Yin and Yang depletion that failed to nourish the heart spirit. I intended to adhere to the treatment principles of boosting Qi, nourishing Yin, and calming the spirit to relieve palpitations. However, I prescribed Cinnamon & Dragon Bone Combination (Gui Zhi Jia Long Gu Mu Li Tang) and Ginseng & Zizyphus Formula (Tian Wang Bu Xin Dan) and got remarkable results.

As for cardiac failure, there are two main principles of clinical applications that are followed in order to reinforce healthy Qi: boost Qi and nourish Yin, and warm and supplement heart Yang. The representative formula used to boost Qi and nourish Yin is Ginseng, Schizandra, and Ophiopogon Formula (Sheng Mai San). It is used to address the Qi and Yin deficiency symptoms at the initial stage of cardiac failure. The representative formula to warm and supplement heart Yang is Ginseng and Aconite Decoction (Shen Fu Tang) or Vitality Combination (Zhen Wu Tang). They are used for the heart and kidney yang deficiency symptoms at the late stages of cardiac failure. In order to reinforce healthy Qi, Salvia Root (Dan Shen), Leonurus (Yi Mu Cao), Notoginseng Root (San Qi), and Red Peony (Chi Shao) are added if there is blood stagnation. Orange Peel (Ju Hong), Pinellia Rhizome (Ban Xia), Hoelen (Fu Ling), and White Atractylodes (Bai Zhu) are added if there is turbid phlegm. Acanthopanax Bark (Wu Jia Pi), Alisma (Ze Xie), Stephania (Fen Fang Ji), and Lepidium (Ting Li Zi) are added if there is water-rheum. The patient in this case did not need to undergo a heart transplant but we need to monitor and regulate his overall Yin, Yang, Qi, and blood balance for a long period of time.

[About the Author]

Dr. You is currently an associate professor at Chang Gung University and the head of the University’s medical preparatory courses. He is also head physician of TCM Internal Pediatric Medicine in the Chinese Medicine Department at Chang Gung Memorial Hospital, committee member of the Chinese Medicine Examiners in Examination Yuan, committee member of the Chinese Medicine in Department of Health at Executive Yuan “Chinese Medicine Policy Consultant”, and an evaluator with the Chinese Medicine Hospital Evaluation Committee.
A peptic ulcer indicates benign damage that penetrates deep into the tissues of the digestive tract wall due to the erosion of the mucosa of the esophagus, stomach, and duodenum by gastric acid. It is typically a deep erosion occurring at the area of the lesser curvature and duodenal bulb close to pylorus. Therefore, peptic ulcers include both gastric and duodenal ulcers. The depth, size, and period vary from person to person.

It is well known that drugs such as NSAIDs are risk factors that cause peptic ulcers, especially gastric ulcers. High doses of the drugs, along with alcohol consumption, increase the potential for stomach bleeding. Other important causative factors of peptic ulcers are an improper diet, fatigue, and long-term emotional stress. Helicobacter pylori infection may also lead to peptic ulcers.

The main reasons that western medications fail to treat peptic ulcers are that patients do not take the medication on time, or that the H. pylori become drug resistant. In this case patients need to undergo another treatment session. Anti-H. pylori drugs sometimes have side effects such as dizziness, diarrhea, thickening of the tongue coating, hindered sense of taste, and allergies. Some patients seek help from Chinese Medicine when they are unable to endure those side effects.

**COMPARISON OF MODERN MEDICINE TREATMENTS AND CHINESE MEDICINE TREATMENTS**

In terms of Chinese Medicine's theory of physiology, the stomach receives food and drink and holds it until they are completely digested. The spleen governs digestion, transforms nutrients, and transports these nutrients to supply the whole body. If the stomach’s functions of descending and emptying are weakened, and spleen's abilities of digestion and transporting nutrients are decreased, the result is liver stagnation, an unhappy state of mind, spleen deficiency, and poor digestion.

After years where the whole body has a physiological Yin-Yang dysfunction, the mucosa that protects the stomach suffers severe damage and easily erupts into serious symptoms such as stomach bleeding, hematemesis, black stool, gastric perforation, and pyloric obstruction.

Peptic ulcers belong to the Chinese Medicine categories of “gastric cavity pain, acid swallowing, and epigastric upset.”

No matter if we are treating peptic ulcers with herbal granules or modern medicine, we should differentiate their current stage: active, healing or remission stage. We should clear heat, remove dampness, harmonize the stomach, and relieve pain during active stage. The formula in this stage is Pinellia Combination (Ban Xia Xie Xin Tang) plus Notoginseng Root (San Qi), Bletilla (Bai Ji), and Dandelion (Pu Gong Ying). We should emphasize strengthening the spleen and harmonizing the stomach during the remission stage in order to prescribe the formulas according to the patterns.

When experiencing acute peptic ulcer pain, eating some soda crackers or taking Wu Bei San with Fritillaria (Zhe Bei Mu) and Cuttlefish Bone (Hai Piao Xiao), an anti-acid, antispasmodic and gastric acid inhibiting Chinese medicinal formula, can help alleviate the pain. Placing a hot pack on Ren 12 (10 cm above navel) and massaging PC6 on both hands and ST36 3 cun below the knees can usually get immediate results.

In short, the feature of using granulated Chinese herbs is the ability to prescribe according to the patients’ individual patterns. We should refer to the four examinations, the clinical manifestations of each pattern, and the patients’ needs when prescribing herbs or acupuncture points. Diet, exercise, health preservation, relaxation, and physical and mental balance are things we should also pay attention to in our daily lives.
### List of Clinical Applications of Peptic Ulcers

<table>
<thead>
<tr>
<th>Pattern Types</th>
<th>Symptoms</th>
<th>Formula Suggestion</th>
<th>Acupuncture Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Liver and Stomach Qi Stagnation</td>
<td>Nervous personality, fickle emotions, and (especially) easy to get angry. Epigastric distention and pain, the pain may even radiate to both sides of the chest. Frequent belching and pain due to worries and depression. Occasionally unsmooth bowel movements. Light red sides of the tongue with a thin white coating. Wiry pulse.</td>
<td>Bupleurum &amp; Cyperus Combination (<em>Chai Hu Shu Gan Tang</em>)</td>
<td>PC6, ST 36, Ren 12, LV 3, GB 40, SP4</td>
</tr>
<tr>
<td>2. Intense Stomach Heat</td>
<td>The pathology is damp heat blocking digestion and causing stagnant heat in the liver and stomach. They love to eat spicy, roasted, barbecued, and fried foods or drink alcohol and smoke often, which easily leads to damp heat obstruction in the middle <em>Jiao</em>. Clinical symptoms are epigastric pain with a burning sensation, epigastric upset, thirst without a desire to drink, dry and bitter mouth, yellow urination, and unsmooth bowel movements. The tongue is red with a yellow greasy coating. The pulse is rapid.</td>
<td>Pinellia Combination (<em>Ban Xia Xie Xin Tang</em>)</td>
<td>PC6, ST36, Ren 12, ST44, ST25, LV3, ST40</td>
</tr>
<tr>
<td></td>
<td>This pattern is formed because of oppressed emotions for a long time causing liver Qi stagnation to transform into heat. Clinical manifestations are urgent epigastric burning pain, sour regurgitation, belching, irritability, dry bitter mouth with a desire to drink, and dry stool. The tongue is red with a yellow dry coating. The pulse is wiry and rapid.</td>
<td>Modified Coptis &amp; Rehmannia Formula (<em>Qing Wei San Jia Wei</em>)</td>
<td></td>
</tr>
<tr>
<td>3. Stasis Obstruction in the Stomach Collateral</td>
<td>Chronic illness enters the collaterals, Qi stagnation or Qi deficiency, blood stasis, and even bleeding due to stasis. More intense stomach pain; the pain is like pinprick or knife cutting, localized, and refuses pressure. Hematemesis might be seen and the stools are black. The tongue is purplish and dark with stasis spots. The pulse is choppy and rapid.</td>
<td>Pteropus &amp; Bulrush Formula (<em>Shi Xiao San</em>) plus Salvia Root (<em>Dan Shen</em>), Notoginseng Root (<em>San Qi</em>), and Corydalis (<em>Yan Hu Suo</em>) to dissolve stasis and relieve pain. Or use Bletilla (<em>Bai Ji</em>) and Agrimony (<em>Xian He Cao</em>) to warm the center and stop bleeding</td>
<td>PC6, ST36, Ren 12, SP 10, UB21, UB17</td>
</tr>
<tr>
<td>4. Stomach Yin Depletion</td>
<td>It is due to long-term stomach heat and constrained fire that consumes stomach Yin. The clinical manifestations are dull stomach pain, burning discomfort, belching as if hungry, decreased appetite, dry mouth and throat with thirst, and dry stool. The tongue is red with a scanty coating. The pulse is rapid.</td>
<td>Glehnia &amp; Rehmannia Combination (<em>Yi Guan Jian</em>) plus Peony &amp; Licorice Combination (<em>Shao Yao Gan Cao Tang</em>)</td>
<td>PC6, ST36, Ren 12, SP6, KD3, UB21, UB20</td>
</tr>
<tr>
<td>5. Deficiency-cold of the Spleen and Stomach</td>
<td>These patients usually favor cold and raw foods, which have obstructed the normal digestion and absorption functions of the spleen and stomach. The condition may also be caused by a weak constitution, over exertion, or spleen and stomach function damage due to long-term illness. Cold generates from inside the body, thus the stomach pain is continuous and more intense when the stomach is empty. They may vomit water and the pain is alleviated when eating warm foods. They have fatigue, suffer burnout, and their limbs lack strength, they have decreased appetite, cold extremities, and a tendency to have diarrhea. The tongue is pale with a slippery coating. The pulse is slow and weak.</td>
<td>Astragalus Combination (<em>Huang Qi Jian Zhong Tang</em>) plus Vladimiriae &amp; Cardamom Combination (<em>Xiang Sha Liu Jun Zi Tang</em>) and Ginseng &amp; Ginger Combination (<em>Li Zhong Tang</em>). If there is stomach bleeding, add Bletilla (<em>Bai Ji</em>) Powder and Notoginseng Root (<em>San Qi</em>) to the above formulas.</td>
<td>PC6, ST36, Ren 12, UB 21, UB 20, Ren 6, Ren 4</td>
</tr>
</tbody>
</table>
Case Study of Acid Regurgitation

by Dr. Li-Chuan Hsu & Dr. Zi-Huei Lin
Center for Traditional Chinese Medicine, China Medical University Beigang Hospital

[Patient Information]

Name: Mrs. Su  Patient Record Number: 90XXX
Gender: Female  Marriage Status: Married
Occupation: Housewife  Initial Visit Date: 10/02/2008
Date of Birth: 09/14/1938 (70 years old)  Place of Residence: Beigang Township, Yunlin County
Dates of Visits: 10/02/2008, 10/13/2008, 10/27/2008

[Chief Complaint]

Acid regurgitation with a burning sensation for one month. She vomited on 10/01/2008 (one day before her initial visit.)

[History of Present Illness]

The patient is a 70-year old female. She had been having a poor appetite for one month and an urgency to vomit when she smelled food. She suffered immediate vomiting of ingested foods along with the symptoms of acid reflux. She vomited again on 10/01/2008, therefore she came to our Chinese Medicine department for treatment on 10/02/2008.

[Past History]

Hypertension (under good control with medication), diabetes (under control with medication), cardiac disease (She had cardiac catheterization and stent implantation surgery at Chia-Yi Christian Hospital on 10/08/1997. She is taking medication), asthma (She is taking medication), and both knees had replacement surgery.

[Personal History]

Living Environment: Beigang Township  Smoking: None
Alcohol: None  Allergies to Medication: None
Lifestyle: Regular  Working Environment: At home
Personality: Easy to get nervous  Family History: Mother: Hypertension and stroke

[Examinations (Four Diagnostic Methods of Chinese Medicine)]

[Inspection Examination]
Build: Slightly thin
Complexion: Dark black
Nails: Slightly red
Skin: Lots of stasis spots underneath the skin
Hair: Thin
Eyes: Blood vessels can be seen in the white of the eyes; slightly turbid
Mouth and Lips: Pale lips with stasis color
Tongue: More pale with a white coating

Inquiry Examination
Cold and Hot: Cold extremities
Sweat: Frequent spontaneous sweating
Head and Face: Frequent headache
Urination and BM: She had hard stools usually and had no strength to expel them. She needed to take stool softener to help BM. She had one BM/day when taking stool softener. 2-3 times nighttime urination, yellow color.
Digestion: Immediate vomiting of ingested foods, poor appetite
Drinking: She favored hot drinks
Nose: Normal
Throat: No discomfort
Mouth and Teeth: No discomfort
Chest: Occasional chest dull pain when her cardiac disease attacked
Abdomen: No discomfort
Trunk: Easy to have sore achy low back
Limbs: Had surgical removal of bumps at left wrist so she’s having unsmooth grabbing. Both knees had replacement surgeries at Chang Gung Hospital
Emotions: Easy to feel nervous
Sleep: Hard to fall asleep but slept fine after falling asleep
Energy: Acceptable

Palpation Examination
Pulse: (Left) Cun: faint; Guan: faint, choppy when pressed deep; Chi: faint
(Right) Cun: faint; Guan: Slightly tight with Qi counterflow feeling; Chi: faint
Palpation: Cold extremities
[Western Medicine Physical Examination]

General: Height: 150cm  Weight: 47Kg
Vital Signs:
Temperature: 36.3°C
Heart Rate: 98/min (10/02/2008), 106/min (10/13/2008), 98/min (10/27/2008)
Blood Pressure: 131/68 mmHg (10/02/2008), 137/69 mmHg (10/13/2008), 132/71 mmHg (10/27/2008)
Breath Rate: 21 ~ 24/min

HEENT:
Head: Normal exterior
Eyes: Blood vessels seen in sclera; slightly turbid Conjunctiva: Slightly turbid exterior
Eyelids: Normal
Eyesight: Normal, had cataract surgery
Ears: Normal exterior, no abnormal secretions
Nose: Normal exterior, no abnormal secretions
Throat: Normal exterior
Neck and Shoulder: Hard to lift right arm
Chest: Normal exterior
Abdomen: Normal
Lower Back: She mentioned she had bone spurs so her back is frequently sore and achy. She did not suffer scoliosis.
Limbs: Both knees have had replacement surgeries. She had surgery on her left wrist. It was hard for her to lift her right arm

[Overall Review]

Patient was a 70 year old female with the complaint acid regurgitation for the last month. She had a poor appetite, nauseous when she smelled food, and immediate vomiting of ingested foods. She typically had hard stools and had no strength to push them out. She needed to take stool softener to facilitate bowel movements. Her four diagnostic examinations: dark complexion with stasis spots underneath the skin; lips were pale with slight stasis; pale tongue with a white coating; diminished weak, hoarse voice; she favored hot drinks, had acid reflux with a burning sensation; vomited food immediately after ingesting them, and had a poor appetite; cold extremities, urinates 2~3 times during the night; overall her pulses were faint while the left Guan was tight. As for the choppy left Guan, this patient panted when she talked, so we know her pulse matched the pattern. As the choppy left Guan, this patient panted when she talked, so we know her pulse matched the pattern. As for the choppy left Guan, this patient panted when she talked, so we know her pulse matched the pattern.

[Follow-Ups]

2nd Visit: 10/13/2008
The acid reflux and burning sensation were about 50% improved. She had stopped vomiting but still had a poor appetite. Her stools were still too hard to expel. The acid reflex and burning sensation were about 50% improved. She had stopped vomiting but still had a poor appetite. Her stools were still too hard to expel. Stool softeners were still needed.
Formula: Cardamon & Fennel Formula (An Zhong San) 6g, Aconite, Ginger & Licorice Combination (Si Ni Tang) 3g, Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia) 1.5g and Rhubarb (Da Huang) 0.3g. Continue to take three times a day after meals. Fourteen days of the formula were prescribed.

3rd Visit: 10/27/2008
The acid reflux and burning sensation were about 80% improved. She had stopped vomiting and her appetite increased. Her stools were still too hard to expel. Stool softeners were still needed.
Formula: Cardamon & Fennel Formula (An Zhong San) 6g, Aconite, Ginger & Licorice Combination (Si Ni Tang) 3g, Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia) 1.5g and Rhubarb (Da Huang) 0.3g. Continue to take three times a day after meals. Fourteen days of the formula were prescribed.

DISCUSSION

[Pulse]

This patient’s overall pulse was faint, and her right Guan pulse was faint and tight. Bin-Hu’s Teaching on Pulse Diagnosis (Bin Hu Mai Xue) mentions, “When Qi and blood are weak, the pulse would also be weak.” The Treatise on Cold Damage (Shang Han Lun) also mentions, “When there is Qi debilitation, the pulse would be faint.” And “If the radial (an kou) pulse is weak, it is called Yang insufficient.” So we know that this patient had a Yang insufficiency pattern. Her pulse also had a tight shape. As Treatise on Cold Damage (Shang Han Lun) mentions, “The fu yang (anterior tibial) pulse is faint and tight, tight indicates cold, and faint indicates deficiency. When there is contention between faint and tight, it causes shortness of breath.” This patient panted when she talked, so we know her pulse matched the pattern. As for the choppy left Guan pulse, Treatise on Cold Damage (Shang Han Lun) mentions, “When the pa-
tient's pulse is faint and choppy, it is caused by the doctor's treatment.” This patient had taken many kinds of medication and the side effects seemed to accumulate and could not be clean out from the body through circulation and metabolism, thus choppy pulse was observed.

[Pattern Analysis]

This patient's chief complaint was acid regurgitation with a burning sensation. She had immediate vomiting of ingested foods and a poor appetite; her lips were pale and her tongue was pale with a white coating; her facial complexion was dark black with stasis spots underneath the skin. According to Chinese Medicine, her pattern was the deficient cold type. Her favoring hot drinks indicated cold in the middle jiao. Her low, weak, and hoarse voice indicated Qi insufficiency. Her overall pulse being faint indicated her Qi was weak and Yang was insufficient. According to Chinese Medicine internal medicine differentiation and treatment theory, "The symptoms of acid regurgitation due to cold pattern are on and off vomiting, chest and stomach distension and oppression, belching with a stinky rotten smell, prefer to spit out phlegm, prefer hot drinks, cold extremities, fatigue and a lack of strength, loose thin stools, light red tongue with a thin white coating, and a deep slow pulse." The Treatise on Cold Damage (Shang Han Lun) mentions, "When in Lesser Yin disease there is immediate vomiting of ingested food and drink, seething in the heart with a desire to vomit, yet an inability to vomit. But at the beginning the extremities are cold, and the pulse is string-like and slow (yin pulse), this indicates repletion in the chest (upper jiao). One cannot precipitate, but should use vomiting. If there is cold-heat above the diaphragm and hot retching, one cannot use vomiting, but should use warming. Si Ni Tang is appropriate." and "When the pulses are deep, choppy, slow, wiry and faint, there is cold-rheum above the diaphragm and cold vomiting case in a deficiency cold pattern."

[Formula]

Cardamon & Fennel Formula (An Zhong San):

Cinnamon Twigs (Gui Zhi) warms the channels and unblock Yang; Fennel (Xiao Hui Xiang) warms and opens the stomach, rectifies Qi and harmonizes the center; Galanga (Gao Liang Jiang) warms and dissipates the cold pathogens in spleen and stomach; Corydalis (Yan Hu Suo) invigorates blood and moves Qi; Oyster Shell (Mu Li) controls acid; Cardamom (Suo Sha Ren) awakens the spleen, warms the center and moves Qi.

Aconite, Ginger & Licorice Combination (Si Ni Tang):

Zheng Qin-An said, “Si Ni Tang is the main formula to restore Yang. This formula was listed as cold entering Lesser Yin. The symptoms are blue dark color nails, abdominal pain and diarrhea, great dripping sweat, a heavy body with aversion to cold, faint and feeble pulse, and counterflow cold of the four limbs. All of these were caused by the accumulation of Yin Qi. If one does not use a Si Ni formula to restore Yang, the last ray of sunlight will be extinguished. Here Zhang Zong-Jing used restoring Yang to dispel Yin, which was not easy. Since this formula could restore Yang, it could be taken people with diseases caused by deficiency of Yang with exuberance of Yin. Zhang Zong-Jing did not point out individually, but it is fine for all Yang deficient people to be treated with this method. Ancient people said, "There is nothing warmer than Fu Zi", so we know that Aconite (Fu Zi) is a ball of raging fire. People's bodies are all dependent on the ball of true fire. If the true fire dies out, people will have true Yin diseases. When used as the chief herb, Aconite (Fu Zi) can supplement the congenital exhausted fire. Dried Ginger (Gan Jiang) is used as assistant for its acrid-warm and dissipating properties to be the precursor that leads directly to the root. Additionally, use Licorice (Gan Cao)’s sweet to moderate the healthy Qi. Here to moderate means to lodge. Thus the true fire is lodged and hidden to secure the root of life, and things can be regenerated.”

Pinellia Rhizome (Ban Xia):

Acrid and neutral. It is a specialized herb that stops vomiting, and also treats chest distension, cough and dyspnea, and directs Qi downward. Commentary on the Classic of Materia Medica (Ben Jing Shu Zheng) mentions, "When there is Qi counterflow, the Yang ascends and is unable to descend. Pinellia Rhizome (Ban Xia) is grown after the three Yang solar terms and is harvested in the mid summer when Yin just starts to grow, thus it favors Yin Qi and reaches initial Yang. It reaches the initial Yang, so it does not moisten - even it is
Yin; it favors Yin Qi, so it still enters Yin even though it is drying. With this character of alternating Yin and Yang, it has lubricating and drying abilities, and of course it can enter Yin from Yang and treat the pathogens that occupy the Yang sites. Thus, Pinellia Rhizome (Ban Xia) is not only descending, it makes Yang enter Yin, when Yin is harmonized there will be no rheum retention.

General speaking, vomiting is caused by Qi counterflow, and Qi counterflow is caused by mutual agitation of water and Qi. It is the indication of Pinellia Rhizome (Ban Xia). The Yellow Emperor’s Inner Classic: Basic Questions (Huang Di Nei Jing Su Wen) mentions, “The Lesser Yin symptoms such as vomiting, coughing, abnormal rising of Qi, and panting, are caused by Yin Qi being underneath with Yang Qi above, and the floating Yang Qi doesn’t have anything to comply with.” When the Yang Qi is floating and not descending, symptoms like vomiting and retching will attack.

This patient’s right guan pulse had a feeling of Qi counterflow, and she was having acid regurgitation symptoms. Pinellia Rhizome (Ban Xia) was added to help descend Qi.

Rhubarb (Da Huang):

Bitter and cold. It purges static blood, blood blockage, cold, and heat; it breaks concretions and conglomerations, accumulations and gatherings, and rheum and food retention to clear up the stomach and intestines; it eliminates stagnation, purges, promotes digestion, regulates the center, and transforms food to harmonize the five zang organs. Rhubarb (Da Huang) is called the “general” for it can exercise the orders and innovate; it can expel fire that has attached to blood, fluids, urine, tears and spittle; it can also unblock the blood and penetrate fire into earth to free and regulate all the pathways and collaterals, and purge all the retention in the stomach and intestines. Materia Medica (Ben Jing) mentions its functions: “It clears up the stomach and intestines, eliminates stagnation, purges, promotes digestion, regulates the center, and transforms food to harmonize the five zang organs.”

This patient’s left guan pulse was faint and choppy (had ten-dency), according to Treatise on Cold Damage (Shang Han Lun), “When the radial (sun kou) pulse is faint and choppy, faint pulse means Wei Qi is not moving, and choppy pulse means Ying Qi is incompetent.” Also the patient was having a hard time with bowel movements and had to take stool softeners, so I made a bold judgment that there was slight heat accumulation in the blood level. Rhubarb (Da Huang) was added to promote the bowel movements.

**HEALTH EDUCATION**

Proper rest; diet should be light - hard, sticky, and greasy foods, sour spicy foods, fine wines, and stimulating and fried foods should all be avoided. If the appetite decreases due to frequent acid regurgitation, one should eat less but more often; rice, soups and porridges are suitable for nourishing stomach Qi.

Patients with spleen and stomach deficient cold can add ginger to their rice porridge when cooking to diffuse and promote spleen Yang, and to harmonize stomach Qi.

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Code</th>
<th>Formulas</th>
<th>Pin-Yin Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric ulcer</td>
<td>0601</td>
<td>Cardamon &amp; Fennel Formula</td>
<td>An Zhong San</td>
</tr>
<tr>
<td>Spleen deficiency, diarrhea, and chronic gastroenteritis</td>
<td>1122</td>
<td>Ginseng &amp; Atractylodes Formula</td>
<td>Shen Ling Bai Zhu San</td>
</tr>
<tr>
<td>Spleen-stomach Yang deficiency</td>
<td>0813</td>
<td>Aconite, Ginseng &amp; Ginger Combination</td>
<td>Fu Zi Li Zhong Tang</td>
</tr>
<tr>
<td>Heat in the chest and chill in the stomach</td>
<td>1202</td>
<td>Coptis Combination</td>
<td>Huang Lian Tang</td>
</tr>
<tr>
<td>Disharmony of stomach Qi.</td>
<td>0516</td>
<td>Pinellia Combination</td>
<td>Ban Xia Xie Xin Tang</td>
</tr>
<tr>
<td>Qi deficiency with profuse phlegm</td>
<td>0407</td>
<td>Six Major Herb Combination</td>
<td>Liu Jun Zi Tang</td>
</tr>
<tr>
<td>Tonify Qi and fortify the spleen</td>
<td>0508</td>
<td>Four Major Herb Combination</td>
<td>Si Jun Zi Tang</td>
</tr>
</tbody>
</table>
Chinese herbal medicinal are mainly produced in Mainland China. More than 90% of the herbal medicinal used in Taiwan are from Mainland China. Governments of various countries have started to set up management organizations and establish management criteria, among which safety, quality and effectiveness are the common evaluation standards.

The curative effects of Chinese herbal medicinal are affirmed by over two thousand years of traditional medical practice. Through modern scientific research on medicinal efficacies and clinical trials, we can reassure their curative effects and dosages. Currently, the quality of the Chinese herbal medicinal used by various countries are mainly evaluated in terms of dryness, foreign bodies, impurities, extraction ratios, contents of marker constituents, and fingerprints. Traditional Chinese herbal medicinal are well recognized from their long-term curative effects and safety in clinical practice. However, due to environmental changes (natural and artificial) and commercialization, the safety of Chinese herbal medicinal need to re-examined. Through modern scientific testing and verification, they can continue to provide healing benefits to the public.

Sun Ten Pharmaceutical has marketed products all over the world—on five continents and more than twenty countries. Due to the increasing requirements of medicinal quality and safety by various countries, and the requirements of submitting scientific examination and related documents, Sun Ten Pharmaceutical established “Herb Sourcing Team” in 2008. They are independent from the management group and operate directly under the General Manager in order to foster professionalism and independence, as well as, to have the full support from both the R&D and factory QC departments and obtain the best quality medicinal that are stable, controllable, and meet regulatory compliance.

The goal of establishing the Herb Sourcing Team is “professional medicinal procurement.” Therefore, the first requirement is for the team to have considerable capabilities and experiences. Current members of the team include Master and Ph.D. graduates with specialties in botany, chemistry, Chinese medicine, and...
other professional fields. They have engaged in medicinal identification, origin inspection, component analysis, quality research, and procurement practices for more than five years (up to 30 years). The medicinal identification techniques they utilize, in addition to the traditional differentiation (color, smell, flavor), also include the appearance of morphological traits, tissue microscopic identifications, fingerprints, and medicinal origin investigation. They have outsourced cooperation available for DNA molecular identification when necessary.

An important condition of “professional medicinal procurement” is high-quality suppliers. Sun Ten Pharmaceutical has effectively established long-term good relations with several major medicinal suppliers in northeast, north, central, and southern China to have direct access to quality medicinals from their authentic medicinal origins. The medicinal suppliers we cooperate with all have more than 20 years of procurement, processing, and marketing experience. They are familiar with the export specifications and requirements for Taiwan, Hong Kong, Japan, and Europe. They have close relationships with the medicinal origins and are familiar with the resources. They can assure us that their factories are GMP compliance and have passed China’s GMP for prepared medicinal certification. Both parties have joined force to promote medicinal safety and quality through close cooperation and resource sharing over the recent years.

### Dr. Pu-Tao Chang on Health Preservation - Pinellia Rhizome (Ban Xia)

by Dr. Pu-Tao Chang

Rong Xing Traditional Chinese Medicine Clinic

Indications: Treat the gastrointestinal and respiratory systems.

Caution: Dry mouth; avoid prescribing it to those with a dry mouth.

Why is this herb called “Ban Xia”? In one year there are 24 solar terms. In the first half of the year there are 12: Start of Spring, Rain Water, Awakening of Insects, Vernal Equinox, Clear and Bright, Grain Rain, Start of Summer, Grain Full, Grain in Ear, Summer Solstice, Minor Heat, and Major Heat; and another 12 in the second half of the year: Start of Autumn, Limit of Heat, White Dew, Autumnal Equinox, Cold Dew, Frost Descent, Start of Winter, Minor Snow, Major Snow, Winter Solstice, Minor Cold, and Major Cold. There are four solar terms between Start of Summer and Summer Solstice, which is approximately two months. Within these two months, it is the best time to harvest this medicinal. Pinellia Rhizome (Ban Xia), harvested during this period contains the highest amount of effective medicinal constituents. Its most abundant components are alkaloids, which make it effective to dissolve phlegm.

Of the formulas that contain Pinellia Rhizome (Ban Xia), the most famous one is Citrus & Pinellia Combination (Er Chen Tang). It is composed of Pinellia Rhizome (Ban Xia), Citrus Peel (Chen Pi), Hoelen (Fu Ling), and Licorice (Gan Cao). “Er Chen” refers to Citrus Peel (Chen Pi) and Pinellia Rhizome (Ban Xia) because these two herbs are stored for a long period of time before their use. The composition of the alkaloids and essential oils evaporation considerably over time during storage, which reduces their irritating side effects. Citrus & Pinellia Combination (Er Chen Tang) is especially good to dissolve wet phlegm. In a presence of dry phlegm, lung-moistening herbs such as Fritillaria (Zhe Bei Ma), Aster (Zi Wan), Glehnia Root (Bei Sha Shen), Benincasa (Dong Gua Zhi), and Mulberry (Sang Bai Pi) can be added. Flow is wet phlegm differentiated from dry phlegm? Using a stethoscope one can hear a “rattling” sound from the wet phlegm patient’s pulmonary lobe area on the chest. Dry phlegm can be observed from continual dry coughing in which the phlegm can never be expectorated.

Citrus & Pinellia Combination (Er Chen Tang) with Ginseng (Ren Shen) and White Atractylodes (Bai Zhu) added is called Six Major Herb Combination (Liu Jun Zi Tang). Vomiting during pregnancy is certainly a result of the vomiting center of the medulla oblongata of the brain being stimulated. Pinellia Rhizome (Ban Xia) is a very good choice as it contains alkaloids that can inhibit the vomiting center of the medulla oblongata to stop the vomiting reaction.

There is another famous formula created by Doctor Zhang Zhong-Jing over 1800 years ago, composed of seven herbs including Pinellia Rhizome (Ban Xia), called Minor Bupleurum Combination (Xiao Chai Hu Tang). Pinellia Rhizome (Ban Xia) is used within the formula to direct counter-flow downward and stop vomiting. Many people who have a cold and cough will start coughing...
### Products Containing Pinellia Rhizome (Ban Xia)

<table>
<thead>
<tr>
<th>Code</th>
<th>Chinese Name</th>
<th>Pin-Yin Name</th>
<th>English Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0201</td>
<td>二陈汤</td>
<td>Er Zhu Tang</td>
<td>Atractylodes &amp; Arisaema Combination</td>
</tr>
<tr>
<td>0202</td>
<td>二陈汤</td>
<td>Er Chen Tang</td>
<td>Citrus &amp; Pinellia Combination</td>
</tr>
<tr>
<td>0305</td>
<td>小青龙汤</td>
<td>Xiao Qing Long Tang</td>
<td>Minor Blue Dragon Combination</td>
</tr>
<tr>
<td>0307</td>
<td>小柴胡汤</td>
<td>Xiao Chai Hu Tang</td>
<td>Minor Bupleurum Combination</td>
</tr>
<tr>
<td>0312</td>
<td>大柴胡汤</td>
<td>Da Chai Hu Tang</td>
<td>Major Bupleurum Combination</td>
</tr>
<tr>
<td>0318</td>
<td>小柴胡汤去芩</td>
<td>Xiao Chai Hu Tang Qu Ren Shen</td>
<td>Minor Bupleurum Combination Minus Ginseng</td>
</tr>
<tr>
<td>0319</td>
<td>大柴胡汤去大黄</td>
<td>Da Chai Hu Tang Qu Da Huang</td>
<td>Major Bupleurum Combination Minus Rhubarb</td>
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<tr>
<td>0405</td>
<td>五积散</td>
<td>Wu Ji San</td>
<td>Dang Gui &amp; Magnolia Formula</td>
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<tr>
<td>0407</td>
<td>六君子汤</td>
<td>Liu Jun Zi Tang</td>
<td>Six Major Herb Combination</td>
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<td>0504</td>
<td>平肝流气饮</td>
<td>Ping Gan Liu Qi Yin</td>
<td>Dang Gui &amp; Pinellia Combination</td>
</tr>
<tr>
<td>0514</td>
<td>半夏六君子汤</td>
<td>Ban Xie Liu Jun Zi Tang</td>
<td>Pinellia &amp; Ginseng Six Combination</td>
</tr>
<tr>
<td>0516</td>
<td>半夏泻心汤</td>
<td>Ban Xia Xie Xin Tang</td>
<td>Pinellia Combination</td>
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<tr>
<td>0517</td>
<td>半夏白术大枣汤</td>
<td>Ban Xia Bai Zhu Tian Ma Tang</td>
<td>Pinellia &amp; Gastrodia Combination</td>
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<td>0518</td>
<td>加味八仙汤</td>
<td>Jia Wei Ba Xian Tang</td>
<td>Saposhnikovia &amp; Qiang Huo Combination</td>
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<tr>
<td>0603</td>
<td>竹叶石膏汤</td>
<td>Zhu Ye Shi Gao Tang</td>
<td>Bamboo Leaves &amp; Gypsum Combination</td>
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<tr>
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<td>定喘汤</td>
<td>Ding Chuan Tang</td>
<td>Ma Huang &amp; Ginkgo Combination</td>
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<td>金沸草散</td>
<td>Jin Fei Cao San</td>
<td>Schizonepeta &amp; Pinellia Formula</td>
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<td>Zhi Zhuo Gu Ben Wan</td>
<td>Hoelen &amp; Polyergus Formula</td>
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<td>0903</td>
<td>柴胡加麦冬脉汤</td>
<td>Chai Hu Jia Long Gu Ma Li Tang</td>
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<tr>
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<td>Chai Hu Gui Zhi Tang</td>
<td>Bupleurum &amp; Cinnamon Combination</td>
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<td>Chai Xian Tang</td>
<td>Bupleurum &amp; Scute Combination</td>
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<td>香砂六君子汤</td>
<td>Xiang Sha Liu Jun Zi Tang</td>
<td>Vladimiriae &amp; Cardamom Combination</td>
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<td>Ling Gan Jiang Wei Xin Xin Ren Tang</td>
<td>Hoelen &amp; Schisandra Combination</td>
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<td>保和丸</td>
<td>Bao He Wan</td>
<td>Citrus &amp; Crataegus Formula</td>
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<td>桑芩汤</td>
<td>Chai Ling Tang</td>
<td>Bupleurum &amp; Hoelen Combination</td>
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<td>健胃冬汤</td>
<td>Mai Men Dong Tang</td>
<td>Ophiopogon Combination</td>
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<tr>
<td>1121</td>
<td>养胃散</td>
<td>Shen Su Yin</td>
<td>Ginseng &amp; Perilla Combination</td>
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<td>1123</td>
<td>革覆代赭石汤</td>
<td>Xuan Fu Dai Zhe Shi Tang</td>
<td>Inula &amp; Hematie Combination</td>
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<td>1202</td>
<td>黄连汤</td>
<td>Huang Lian Tang</td>
<td>Coptis Combination</td>
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<tr>
<td>1209</td>
<td>钩藤散</td>
<td>Gou Teng San</td>
<td>Gambir Formula</td>
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<tr>
<td>1301</td>
<td>滋肾汤</td>
<td>Wen Dan Tang</td>
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<td>滋阴汤</td>
<td>Wen Jing Tang</td>
<td>Dang Gui &amp; Evodia Combination</td>
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<td>冷哮丸</td>
<td>Ning Sou Wan</td>
<td>Fritillaria &amp; Platycodon Formula</td>
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<td>酸心汤</td>
<td>Yang Xin Tang</td>
<td>Astragalus &amp; Zizyphus Combination</td>
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<tr>
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<td>藿香正气散</td>
<td>Huo Xiang Zheng Qi San</td>
<td>Pogostemon Formula</td>
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<td>2003</td>
<td>鹤子降气汤</td>
<td>Su Zi Jiang Qi Tang</td>
<td>Perilla Combination</td>
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<tr>
<td>5535</td>
<td>半夏</td>
<td>Ban Xia</td>
<td>Rhizoma Pinelliae preparatum</td>
</tr>
</tbody>
</table>

As soon as they start to talk; also, the cough stops when they stop talking. This cough, caused by ascending counter-flow Qi, is the indication of Pinellia Rhizome (Ban Xia). Pinellia Rhizome (Ban Xia) is used to direct the counter-flow Qi downward. When the Qi stops counter-flowing upwards, coughing will naturally stop as will asthma and vomiting.

Pinellia Rhizome (Ban Xia) is toxic. Ancient physicians observed clinically that when Pinellia Rhizome (Ban Xia) was combined with Aconitum (Fu Zi), it resulted in a rejection phenomenon, just like Licorice (Gan Cao) with plants of the Euphorbiaceae family such as Gansui Root (Gan Sui), Euphorbia (Du Ji), and Genkwa Flower (Yuan Hua). Therefore there are incompatibilities such as the “eighteen antagonisms” and “nineteen mutual inhibitions.” In addition, Pinellia Rhizome (Ban Xia) was listed as being contraindicated during pregnancy in the ‘《Pouch of Pearls, Verse on Medicinal Properties (Zhen Zhu Nang Yao Xing Fu)》. However, if it is used in a formula composed with a principle of monarch, minister, assistant, and guide, there would not be rejection side effects. ‘《The Yellow Emperor’s Inner Classic (Huang Di Nei Jing)》 explained, “When there is a hardening, there will be no harm (to the woman) and (the fetus) will not be harmed either.” Hardening indicates pregnancy or sickness, and there will be no harm using herbs such as Pinellia Rhizome (Ban Xia) and Arisaema (Tsian Nan Xing). It means we don’t need to worry about the very little side effects. When used properly, even if some rejection activities occur, the effects of treatment can still be achieved. For example, in Zhang Zhong-Jing’s ‘《Essentials from the Golden Cabinet (Jin Gui Yao Lue)》・Cold Sputum》 we could find Radix Kansui (Gan Sui) and Licorice (Gan Cao) used
Pharmacology and Applications of Pinellia Rhizome (Ban Xia) and its Processed Forms

Pinellia Rhizome (Ban Xia) is the dry tuber of Arceae plant Pinellia ternata (Thunb.) Breit. It is acrid, warm, and toxic and functions to dry dampness and dissolve phlegm, direct counterflow downward to arrest vomiting, and disperse pi and dissipate masses. It is a commonly used medicinal clinically. The toxicity of Pinellia Rhizome (Ban Xia) was recorded in ancient literature. The major clinical manifestation of its toxicity is a strong irritation to the mucosal cells of the organism. If it is taken raw, it can cause symptoms such as glossopharyngeal and oral numbness, swelling, pain, drooling, trismus, abdominal pain, vomiting, and choking. Therefore, ancient physicians put great attention on the processing of Pinellia Rhizome (Ban Xia) used to reduce its toxicity before it was applied clinically. Since the Han Dynasty, the processing methods used are in the order of: soup wash, ginger processing, boiling, slow fire, yeast processing, alum processing, ginger radish processing, ginger licorice processing, wine ginger processing, gleditsia alum ginger processing, Fu Ban Xia preparation, and ginger halitum processing; there are more than 70 kinds of processing methods. They are complicated and have various specifications and standards, which have different influences on the medicinal effects.

Traditional medicine considers that Pinellia Rhizome prepared with Alum (Qing Ban Xia) is good to dry dampness and dissolve phlegm, especially cold phlegm. Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia) is good to direct counterflow downward and arrest vomiting, thus can be used to treat wet phlegm; Prepared Pinellia Rhizome (Fu Ban Xia) strengthens the spleen, regulates the Qi, and treats wind phlegm and dizziness; Raw Pinellia Rhizome (Sheng Ban Xia) is for external use only to treat abscess, swelling and phlegm node.

TOXICITY TEST\(^1\)

1. Acute toxicity test: Raw Pinellia Rhizome (Sheng Ban Xia) suspension given to mice orally: \(LD_{50} 42.7 \pm 1.2g/kg\), Prepared Pinellia Rhizome (Zhi Ban Xia) 80g/kg, no toxic reactions were observed.

2. Sub acute and accumulation of toxicity tests: Prepared Pinellia Rhizome (Zhi Ban Xia) had no ef-
fects on mouse weight; raw Pinellia Rhizome (Sheng Ban Xia) group had significant weight-gain inhibit effects. Death was seen in both groups. As the dosage increased and the administration time extended, the effects had also enhanced, which caused an increase of kidney compensation.

**PHARMACOLOGICAL EFFECTS**[2,3]

1. Effects on Peritoneal Irritation in Mice

The results showed that the group of processed Pinellia Rhizome: Prepared with Alum (Qing Ban Xia), Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia), Pinellia Rhizome (Fa Ban Xia), Cooked Pinellia Rhizome (Shu Ban Xia) had a very significant irritation on peritoneal mucous membrane of mice when compared with the Corn Starch in the control group. However, when compared with the raw Pinellia Rhizome (Sheng Ban Xia) group, the irritation was significantly reduced. There were no significant differences between the four types of processed Ban Xia. Raw Pinellia Rhizome (Sheng Ban Xia) powder suspension caused a very strong irritation when injected intraperitoneally, and there was a very significant difference compared to Corn Starch control group.

2. Antiemetic Effects

The experimental results measured from the decoctions of Pinellia Rhizome (Ban Xia) and its processed variants showed they provided protection against emetic CuSO₄; Decoctions of Pinellia Rhizome (Ban Xia) and its processed variants can significantly reduce the amount of animals vomiting, but did not reduce the number of vomiting animals; the antiemetic rates were 52% and 50%, in which processed forms had weaker effects than raw ones.

3. Effects on Phlegm Dispelling

The excretion of phenol red in mice was the method used to observe the phlegm dispelling effects of Pinellia Rhizome (Ban Xia). Alcohol extracts of both raw and processed Pinellia Rhizome (Ban Xia), as well as, Rodent Tuber (Shui Ban Xia) were prepared into solutions for the experiment. The results showed the alcohol extracts of processed Pinellia Rhizome (Ban Xia) and Rodent Tuber (Shui Ban Xia) had certain phlegm dispelling effects, and there were very significant differences statistically between the processed and the control groups. Raw Pinellia Rhizome (Ban Xia) and Rodent Tuber (Shui Ban Xia) did not show a significant phlegm dispelling effect, which did not match the reported results using the capillary drainage method. It might be related to the differing animal models.

4. Effects on Cough Relieving in Mice

Compared with the Corn Starch control group, Pinellia Rhizome Prepared with Alum (Qing Ban Xia), Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia), Pinellia Rhizome (Fa Ban Xia), and Cooked Pinellia Rhizome (Shu Ban Xia) group can significantly extend the cough incubation period and very significantly reduced the number of coughs. Compared with the raw Pinellia Rhizome (Sheng Ban Xia) group, there were no significant differences in induced cough incubation period, but the number of coughs was significantly reduced. There were no significant differences between the four kinds of processed products. Compared with Corn Starch control group, the raw Pinellia Rhizome (Sheng Ban Xia) group can also extend the cough incubation period significantly, and reduce the number of coughs significantly.

Ammonia fumigation in mice was the method used to observe the cough relieving effects of raw and processed Pinellia Rhizome (Ban Xia). The results showed both raw and processed Pinellia Rhizome (Ban Xia) suspensions had significant cough relieving effects. The cough rates were 60% and 53.3%.

5. Effects on Gastric Secretory Functions in Rats

The results showed that, when compared with the Corn Starch control group, Pinellia Rhizome Prepared with Alum (Qing Ban Xia), the Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia), Pinellia Rhizome (Fa Ban Xia), and Cooked Pinellia Rhizome (Shu Ban Xia) group had very little effects on the amount of gastric secretion, pepsin activity, and gastric acidity. There were no significant differences between the four kinds of processed products. When comparing the processed vs. raw Pinellia Rhizome (Sheng Ban Xia) groups, and raw Pinellia Rhizome (Sheng Ban Xia) vs. Corn Starch control group, there were very little effects on the amount of gastric secretion and gastric acidity. However, the effects on the level of PGE2 in the gastric juices and pepsin activity were significant. Pinellia Rhizome Prepared with Alum (Qing Ban Xia), Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia), Pinellia Rhizome (Fa Ban Xia), and Cooked Pinellia Rhizome (Shu Ban Xia) can all be antagonistic to raw Pinellia Rhizome (Sheng Ban Xia)’s inhibition effects of PGE2 and pepsin in the gastric juice and reduce gastric acid. Among them, Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia) was slightly stronger.

**CLINICAL APPLICATIONS**[4]

From pharmacological efficacy experimentation, toxicology, and clinical efficacy we observed; raw Pinellia Rhizome (Sheng Ban Xia)
and stop diarrhea, and dispel wind phlegm. The main functions of relief cough. The main functions of alumen are to stanch bleeding cold, warm the center and arrest vomiting, and dissolve phlegm and of Fresh Ginger (Xia) showed that there were no significant differences between the four increase the medicinal effect.” However, the experimental results also were both significantly inhibited. These showed that the processing significantly reduced the toxicity and irritation of Pinellia Rhizome (Ban Xia), thereby reaching the purpose of processing, “Dispel toxicity while preserving the medicinal nature; reduce toxicity and increase the medicinal effect.” However, the experimental results also showed that there were no significant differences between the four kinds of processed products, Pinellia Rhizome Prepared with Alum (Qing Ban Xia), Pinellia Rhizome Prepared with Ginger (Jiang Ban Xia), Prepared Pinellia Rhizome (Fu Ban Xia), and Cooked Pinellia Rhizome (Shen Ban Xia), when it came to toxic side effects and clinical efficacy.

Among the ingredients used in processing, the main functions of Fresh Ginger (Sheng Jiang) are to release the exterior and dissipate cold, warm the center and arrest vomiting, and dissolve phlegm and relieve cough. The main functions of alumen are to stanch bleeding and stop diarrhea, and dispel wind phlegm. The main functions of lime are to dry dampness, kill worms, stanch bleeding, and relieve pain. The main functions of Licorice (Gan Cao) are to harmonize the center and relax tension, moisten the lung, and detoxify and harmonize all herbs. The main functions of Pinellia Rhizome (Ban Xia) are to dry dampness and dissolve phlegm, direct counterflow downward to arrest vomiting, disperse pi and dissipate masses, among which “dissolving phlegm” is the most important function. The four ingredients used in processing all have collaborative functions. Wu-Hao et al. researched animal irritation caused by and the toxicity of raw Pinellia Rhizome (Sheng Ban Xia), ginger soaked Ban Xia, ginger and alumen processed Ban Xia, alumen processed Ban Xia, and ginger juice cooked Ban Xia. The results showed that ginger juice cooked Ban Xia can significantly reduce the irritation of rabbit corneas and mice abdominal cavities caused by raw Pinellia Rhizome (Sheng Ban Xia), and very significantly increased the LD50 in mice when injected intraperitoneally. There were no significant effects on toxicity and irritation when comparing ginger soaked Ban Xia and raw Pinellia Rhizome (Sheng Ban Xia), which indicated that the key to detoxification was the “cooking.” The assistant ingredient, Fresh Ginger (Sheng Jiang), was mainly used to strengthen Pinellia Rhizome’s (Ban Xia) functions of directing counterflow downward to arrest vomiting, dissolving phlegm, and relieving cough. It cannot significantly eliminate Pinellia Rhizome’s (Ban Xia) toxicity. Therefore, the key to remove Pinellia Rhizome’s (Ban Xia) toxicity is to reduce its toxicity and irritating constituents by heating. Assistant ingredients such as Fresh Ginger (Sheng Jiang), alumen, lime, and Licorice (Gan Cao) are used for their collaborative functions, not entirely for their detoxification functions.

References available upon request