Comparing Methods: Western and Chinese Medical Treatments of Peptic Ulcers

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Abstract:

Peptic ulcers have several causes, and depending on their location, symptoms vary. This is a review and examination of two different methods of treatment: the standard allopathic management of peptic ulcers with antibiotics and a parallel approach, employing Traditional Chinese pattern differentiation and symptomatic treatment. Included is a review of current research on the efficacy of Traditional Chinese Medicine treatments. The conclusion comments on the possible future of integration of these medicines for peptic ulcers, both for efficiency and less invasive treatment.

Introduction:

Approximately 4.5 million people in the United States are affected with peptic ulcers annually (1). Peptic ulcers can have a negative impact on a person’s life causing pain and discomfort, or worse, leading to bleeding or cancer. Although anyone can be affected, there are certain risk factors and causes that increase the risk of developing an ulcer, such as infection with Helicobacter Pylori (H. pylori), or use of non-steroidal anti-inflammatory drugs (NSAIDS). H. pylori infection is present in 95-98% of duodenal
ulcer patients and 60-90% of gastric ulcer cases (2). The discovery of these numbers pushed the Western medicine field to focus on eradication therapy for \textit{H. pylori} using antibiotics in the treatment of ulcers, which often have harsh side effects. Regardless of confirmation of \textit{H. pylori} infection, sometimes medical doctors will give antibiotics at the hint of an ulcer and this general-overprescription has led to an increase of antibiotic resistance (5, 3).

Chinese medicine has its own system of pattern differentiation and related treatments for peptic ulcers. While the Western therapies have proven successful in the treatment of ulcers, there has also been researched acupuncture protocols and associated modalities that are less invasive with promising results.

\textbf{Definition:}

The Mosby Medical Dictionary defines a peptic ulcer as “a sharply circumscribed loss of the mucous membrane of the stomach, duodenum, or any other part of the GI system exposed to gastric juices containing acid and pepsin” (4). In the Merck Second Home Manual, they define peptic ulcers as “a round or oval sore where the lining of the stomach or duodenum has been eaten away by stomach acid and digestive juices”(5). These lesions may be acute or chronic, with chronic ulcers being the “true ulcers.” The acute variety of peptic ulcers is superficial. There will always be multiples of this type of ulcers. They could also be completely asymptomatic, healing without sequelae or
developing scars. True ulcers will be singular, deep in the tissue, persistent and the patients will feel symptoms. The outer muscular coating of the organ will not regenerate and a scar will form, leaving a mark on the area. The mucosa may eventually heal. An ulcer is defined by its anatomic location of where it is occurring or by the circumstances by which the it developed. The most common type of ulcer is duodenal ulcers which occur in the first few inches of the small intestine, just below the stomach (6). The less common type of ulcer is called a gastric ulcer and are found, generally, in the upper curve of the stomach. Ulcers defined by circumstances are called marginal ulcers and stress ulcers. Marginal ulcers occur only in the stomach when a part of the organ has been removed. The ulcer occurs at the area where the stomach has been re-attached to the small intestine. Stress ulcers may appear in the stomach or the duodenum and become a sequelae from the stress of having skin burns, trauma, or severe illness.

Symptoms of Ulcers:

In the typical course of the disease, an ulcer may heal and then recur. The recurrence could cause pain that lasts from days to weeks, and could slowly dissipate or completely disappear. Depending on the location of the ulcer and age of the patient, the symptoms vary. Pediatric and older patients may have non-typical symptoms or no symptoms.
Typical duodenal ulcers have the symptoms of a constant “gnawing, burning, aching, soreness, an empty feeling, and hunger,” which 50% of patients with these ulcers experience (5). A classic symptom of this type of ulcer is epigastric pain which may wake the patient at night, or affects them one to two hours after eating. This pain may be relieved with alkali substances such as milk or antacids, but then returns two to three hours later.

Other types of ulcers, such as gastric, marginal and ulcers caused by stress do not follow the same symptom patterns of duodenal ulcers. Eating may relieve pain or eating could cause pain. Blockage of the small intestine caused by edema from gastric ulcers can cause nausea, bloating or vomiting after meals. Edema may also lead to feeling very full after eating.

Peptic ulcers have potentially dangerous complications. Hemorrhaging is the most common complication, which occurs in 20% of peptic ulcer patients and may be life-threatening if there is massive bleeding (6). Dizziness and fainting may occur if the bleeding leads to low blood-pressure along with vomiting of blood that looks like coffee grounds, or passing of bloody or black stools. A serious complication that transpires in 5% of duodenal ulcer patients is perforation (6). There will be a sudden, very painful feeling felt throughout the abdomen. The area will be tender to touch with rebound tenderness. The patient may feel pain in either one or two shoulders and it may increase with deep inhalation. If there is a fever present, this situation requires
immediate emergency intervention of surgery. Cancerous tumors may develop from benign duodenal ulcers but it is extremely rare, accounting for under 1% (6). Infection with the *H. pylori* infection increases the risk of developing stomach cancer to three to six times (5).

**Diagnosis:**

Generally, when a patient comes in with stomach pain, the medical doctor suspects an ulcer. Some MDs will treat it as if it is an ulcer, with the mindset that if symptoms dissipate, the cause was indeed an ulcer. Endoscopy is another way to diagnose an ulcer, and is the recommended first choice in diagnosis. It also determines the cause. This method may be used to stop bleeding, along with decreasing future bleeding in an ulcer. Barium contrast x-rays are another test used for diagnosis, yet they are less reliable than endoscopy. This type of x-ray can be useful, however, only in analyzing the severity and size of duodenal and stomach ulcers. Biopsies can be used to determine if the ulcers are cancerous or if there is *H. pylori* infection. Lab tests may be ordered to determine if the *H. pylori* bacteria is present. They include the *Helicobacter pylori (HPY)* IgG Antibody Serum blood test and the stool and breath (PY) tests (7). False negatives may occur, so the latter of the tests should be used in combination with each other, along with the symptoms and endoscopy or biopsy results. Stool antigen tests are used to monitor the course of the ulcer and to ensure complete resolution after implemented treatment.
Etiology:

“When the normal defenses and repair mechanisms of the lining of the stomach and duodenum are weakened,” the lining becomes more susceptible to damage from the stomach acid and ulcers develop (5). The two most common causes of ulcers are:

1. *H. pylori* infection which is present in 95-98% of duodenal ulcer patients and 60-90% of gastric ulcer cases (7)

2. Use of aspirin, corticosteroids and many nonsteroidal anti-inflammatory drugs (NSAIDs), although not all patients who take these medications will develop ulcers (6).

Research indicates that *H. pylori* infection may cause peptic ulcers because it “blocks inhibitory signals from the antrum thereby increasing gastrin release and impairing inhibition of gastric acid secretion” (6). Other factors that contribute to the development of peptic ulcers are: hyperactive hydrochloric acid secretion, cigarette smoking (which irritates the lining and decreases healing time), high levels of pepsinogen 1, and if a patient has a first degree relative with gastric or duodenal ulcers, he/she will be three times more likely to develop this condition also.

There are certain diseases in which peptic ulcers may also occur: chronic pulmonary disease, cirrhosis, Zollinger-Ellison syndrome, and multiple endocrine neoplasia type I (hereditary endocrine syndromes, chronic renal failure, and α-antitrypsin deficiency).
**H. Pylori and the Inflammation Response:**

*H. pylori* is a neutrophile, preferring to grow in neutral acidic environments with a pH range of 5.5-8 for optimal growth (8). The stomach has a highly acidic environment; pH of 1-3, sometimes getting up to pH of 4-5 right after eating. *H. pylori* passes through the stomach acid in order to get to the mucus layer, where it lives safely in a lower pH environment. It then multiplies and attacks the stomach epithelial cells.

*H. pylori* has the enzyme *urease* on the outside of it. *Urease* is an enzyme that breaks down the urea found in the stomach, in order to produce the byproducts ammonia and carbon dioxide (9). Ammonia is a basic molecule, so *urease* is used by *H. pylori* to reduce the acidity of the stomach acid through the ultimate creation of ammonia. *H. pylori* has an acid gated membrane channel that controls the amount of alkali (ammonia) that is produced by the bacterium to fight gastric acid. The ammonia fights the gastric acid that enters the outer membrane of the bacteria, preventing the acidity from entering the inner membrane (10).

When *H. pylori* reaches the stomach, it uses *urease* to produce a large amount of ammonia in order to survive, causing the local environment, directly surrounding the bacterium, to become mainly neutral (8). It then uses its flagella to penetrate the mucus layer to attach to the stomach epithelial cells. During this *H. pylori* infection, monocytes and neutrophils are activated by the *urease* that the *H. pylori* created because *urease* is
immunogenic, meaning a substance that is able to produce an immune response (9). This is the beginning of the inflammation process that is toxic to human cells and incites acute gastritis. The ammonia that is released also plays a part in eroding the mucus lining, contributing to the gastritis that is associated with this infection.

Once *H. pylori* reaches the stomach epithelial cells, it adheres and begins to secrete exotoxins that disrupt cell integrity, causing apoptosis of cells, and ultimately promoting inflammation (8). The use of exotoxins has the goal of breaking down the junctions between the stomach epithelial cells. As the cells break down, the inflammatory cytokines inside of them are stimulated so as to attract neutrophils to the area, thus promoting more inflammation. Cytokines are proteins that are crucial in fighting off infection in our bodies, using cell signaling for infection, inflammation and immune response. In this situation, however, since inflammatory cytokines signal themselves, they become pathological because they advance the inflammatory response. There is evidence proving that these pro-inflammatory cytokines actually play a role in the process of pathological pain (11).

The eventual breakdown of the epithelial cells causes the hydrochloric acid layer to penetrate the mucus layer and attack the epithelial cells directly, ultimately causing an ulcer. This causes more hydrochloric acid production, leading to more cell death and results in more of an inflammatory response - creating a toxic circle of events. Because
the inflammatory response is unable to clear the infection, the inflammation is sustained (12). This process is shown in Fig. 1 below.

**Figure 1:** (13)

**Western Treatment:**

If the cause of the ulcer is known to be *H. pylori*, a two week regimen of three different antibiotics will be implemented. If this regimen is unsuccessful, the patient may be given multiple rounds (14).
For symptomatic relief, drugs may be given to neutralize or block the secretion of stomach acid. Proton pump inhibitors are used to “reduce the production of acid by blocking the enzyme in the wall of the stomach that produces acid” (15) and are given to patients with ulcers without differentiation of cause (5, pg 142). If hemorrhaging occurs, surgical intervention is necessary to resect the damaged muscle and blood vessels.

Some lifestyle changes may be implemented to ease the painful symptoms the patients feel. Small, bland meals, without any irritating elements, eaten frequently throughout the day can bring relief. Certain food items that may incite pain in many patients, but not all, are heavy, fatty, fibrous or heavily spiced foods. Tobacco and alcohol can be irritating to the tissues and are discouraged in peptic ulcer patients.

Antibiotic Resistance:

All standard treatment options available for peptic ulcers, including those caused by \textit{H. pylori}, have incited the argument for the need to explore other treatments options.

\textit{H. pylori} is associated with 95\% of duodenal ulcers, and 70\% of gastric ulcers (3). \textit{H. pylori} is also found in approximately half of the world’s population and it is estimated that \textit{H. pylori}-positive patients have a 10-20\% lifetime risk of developing ulcer disease (8). The discovery of these numbers pushed the gastroenterological field to turn more
toward eradication therapy for *H. pylori* in the treatment of ulcers, rather than ulcer healing drugs (3).

The industry’s standard of treatment for *H. pylori*, 20 plus years ago, was a course of a proton pump inhibitor, amoxicillin, and clarithromycin for 7-10 days (16). Clarithromycin, however, was often used for infectious bacterial diseases on the skin or in the respiratory system. Increased prescription of the drug lead to mutations, which consequently lead to an increase of clarithromycin resistant *H. pylori* (16). Levofloxacin was then proposed as a replacement a decade ago, but the same situation arose. One study done by Park et al. on *Helicobacter pylori* Clarithromycin resistance concluded that empiric therapy for treatment of *H. pylori* should be restricted in the U.S., because of the possibility that antibiotic resistant *H. pylori* could affect more of the population than previously thought (17).

Treatment is currently focusing on a combination of antibiotic drugs that has so far been proven effective. Clarithromycin is being replaced with metronidazole, or two other antibiotic options. In one study done by Ström et al., 1997, they suggested an immediate repeat course of three antibiotics, amoxycillin, metronidazole and omeprazole, after a 14 day course of the drugs in order to assure eradication and prevent relapse (18). The question that cannot help but arise is: how confident are western medical physicians that a similar mutation, or a new resistance, will not happen again?
Probiotics:

The human gut microbiota is thought to house over 100 trillion microbial cells which have an influence on metabolism, immune function, and our human physiology (19). This is ten times more than the amount of human cells in the body.

A probiotic is a living microbial species that may have a positive effect on bowel microbiota and improve health (12). The topic of probiotics repeatedly arises when discussing the treatment of ulcers with a broad spectrum antibiotics. This is because the antibiotics kill without focus, and the collateral damage of wiping out *H. pylori* can be the effective killing of other microbiota that could be playing a beneficial role in gut health. The unspecified killing of bacteria in our guts can therefore create gastrointestinal health problems (19).

In a literature review conducted by Lesbros-Pantoflickova et al., if probiotics were administered with the typical antibiotic treatment for eradicating *H. pylori*, this reduced the prevalence of negative side effects caused by the antibiotics (nausea, vomiting, diarrhea), which increased patient compliance to the primary treatment (12). Furthermore, the addition of a probiotic supplement was found to help eradicate the bacteria more effectively than just the antibiotic therapy alone. While no study in this literature review was able to show complete eradication of *H. pylori* using just probiotics, in both the human and animal studies, a decrease in the bacterial load of *H. pylori* was
shown, along with a decrease in the symptoms of gastritis (12). Different probiotics have been found to cause an inhibitory effect on the adhesion of *H. pylori* on the endothelial cells of the stomach in multiple ways, including competition for adhesion sites, or secreting antimicrobial substances that prevent colonization (12). Along with the inhibitory effect, probiotics can help modulate the cytokine reaction in order to reduce the inflammation and allow healing to occur (12). Complete eradication of *H. pylori* is somewhat controversial because of the high numbers of the world’s population that is infected with *H. pylori* (50%), in comparison to the amount of people that ultimately develop ulcers (10-20% of those infected) (8). This leads to the debate as to whether the bacteria is, or can be, a functioning part of a normal healthy gut environment (12).

**Chinese Medicine:**

Western medicine lets the label of the disease dictate the course of the treatment. Chinese medicine not only uses the patient’s presentation of physical symptoms, but also incorporates an encompassing view of the patient’s health as the main diagnostic guide for the course of treatment. Chinese medicine utilizes a variety of modalities in the treatment of disease which include acupuncture, herbal formulas, and nutritional recommendations. There has been research on the effectiveness of different techniques that can be used in combination with acupuncture.
### Pattern differential and treatment:

#### Symptoms and Nutritional advice sourced from: Chinese Natural Cures (20)

#### Pattern principles, protocol and formulas sourced from: The Practice of Chinese Medicine (21)

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Stomach damp-heat</th>
<th>Stomach- Spleen deficient cold</th>
<th>Liver qi invading the Stomach</th>
<th>Stomach yin deficiency</th>
<th>Stasis of blood in the Stomach</th>
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<tr>
<td>Abdominal fulness</td>
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#### Treatment Principle:

- Clear heat
- Resolve dampness
- Harmonize Stomach

- Warm Middle Jiao
- Strengthen Spleen and Stomach

- Smooth Liver
- Regulate qi

- Nourish yin
- Benefit Stomach
- Stop pain

- Move blood
- Eliminate stasis
- Harmonize Stomach
- Stop pain

#### Point protocol:

<table>
<thead>
<tr>
<th>Formula</th>
<th>Ren-10 (xia wan)</th>
<th>Ren-9 (shui fen)</th>
<th>ST-21 (liang men)</th>
<th>SP-9 (yanlingquan)</th>
<th>SP-6 (san yin jiao)</th>
<th>BL-20 (tou wei)</th>
<th>BL-21 (wei shu)</th>
<th>Ren-12 (zhong wan)</th>
<th>LV-14 (qi men)</th>
<th>P-6 (nei guan)</th>
<th>ST-36 (zuan san li)</th>
<th>Ren-12 (zhong wan)</th>
<th>ST-36 (zuan san li)</th>
<th>SP-6 (san yin jiao)</th>
<th>Ren-10 (xia wan)</th>
<th>ST-22 (guanmen)</th>
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<th>SP-10 (xue hai)</th>
<th>BL-17 (geshu)</th>
<th>SP-4 (pung sun)</th>
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#### Formula:

- Cooling, drying foods: Bananas, Bamboo shoots, Bitter endive, Mung beans, Adzuki bean, Peppermint.
- Warming foods: Fennel, Nutmeg, Cardamon, Cinnamon, Garlic, Beef.
- Light, sweet foods: Sweet orange, Kumquat, Barley, Celery, Brown sugar, Red and black dates.
- Oily foods: Duck, Cheese, Chicken eggs, Cuttlefish, Abalone, Asparagus.
- Blood nourishing, invigorating foods: Saffron, Sturgeon, Sweet basil.

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14
Bench Science Demonstrating Benefits of Traditional Chinese Medicine:

There is a wide range of different methods of treatment in Traditional Chinese Medicine (TCM) for ulcers. The majority of research using the TCM model to treat peptic ulcers has been done in China and Russia. The following studies have mostly been conducted on animals (rats, mice, rabbits), which suggests that there needs to be further research to support the use of the TCM model as a viable treatment method in humans. Alternately, with a vast amount of literature depicting positive results in the treatment of peptic ulcers, the TCM model has an encouraging future.

Acupuncture:

In a study conducted by Yang et al, they used a randomized control model to observe the use of specific acupuncture points to improve the sleep quality of 40 male Wistar rats. REN-12 (zhong wan) and ST-36 (zu san li) were used for gastric treatment while UB-62 (shen mai) and KD-6 (zhao hai) were used to promote sleep. Operating from the perspective of the brain-gut axis, researchers demonstrated how poor quality of sleep can aggravate peptic ulcers. Healthy sleep plays an important role in the regulation of many vital functions in health and disease. The acupuncture points used by Yang et al. were stimulated by manipulating the needle for about 30 seconds, once every 5 minutes during 20 minutes of needle retention. The treatment was conducted once daily for five days. The study concluded that the stimulation of these four acupuncture points can
relieve the gastric mucosal lesion, and prolong the sleeping duration in rats with gastric lesions ulcers. This study may be used in the future to further explore if there is a correlation between the gastrointestinal disorders and sleeping. (22)

Researcher Dong observed the effect of ST-36 (zu san li) and REN-12 (zhong wan) on the expression of hypothalamic gonadotropin-releasing hormone (GnRH) mRNA in stress-induced gastric ulcers. It used 60 male Wistar rats who were randomly divided into 6 groups: a control group, a simple bundling group, a gastric ulcer model group, a REN-12 (zhong wan) group, a ST-36 (zu san li) group, and a REN-12 (zhong wan) + ST-36 (zu san li) group, with 10 cases in each group. Manual acupuncture stimulation was applied to REN-12 (zhong wan), bilateral ST-36 (zu san li) or REN-12 (zhong wan) + ST-36 (zu san li) for 20 min once daily for 2 days. This study observed a significant decrease in the levels of hypothalamic GnRH mRNA expression in the group that combined both acupuncture points, concluding these points can relieve stress-induced gastric ulcer in rats due to its effect in down-regulating hypothalamic GnRH mRNA expression (23).

Researchers Han et al looked at the brain-gut model to observe 40 male Wistar rats with stress-induced gastric mucosal injury. They were randomly divided into control group, a treatment group, and a prevention group. ST-36 (zu san li), REN-12 (zhong wan) and PC-6 (nei guan) were needled for 20 min once daily for 5 days. The results concluded that this group of acupuncture points can promote the repair of gastric
mucosal injury and improve gastrointestinal function. Acupuncture also proved to have an effect in preventing gastric mucosal injury compared to the control (24).

A study performed in Russia by scientist Organ, tested human subjects using ST-36 (zu san li) and auricular points to demonstrate the possible influence on acid production and alkalinization in the stomach in patients with duodenal ulcer and hyperacidity. It proved that 20 minutes of acupuncture on ST-36 (zu san li) intensifies acid production while 40 minutes inhibited acid production. Combination of auricular and corporal acupuncture suppressed acid production in the gastric body and improved alkalinizing function of the antrum of the stomach, concluding to be a potentially effective treatment for ulcers. (25)

Electric-Stimulation:

A randomized control study by Deng et al, used electronic stimulation (e-stim) on UB-18 (gan shu) on 60 rats with compromised liver function. Substance P in the gastric mucosa, hypothalamic tissues, and hippocampal 5-hydroxytryptamine content was observed, investigating the mechanism in the possible improvement of gastric ulcers. The rats were divided into two treatment groups: one group received the e-stim on UB-18 (gan shu), and the other received e-stim on a non-acupuncture point. They applied e-stim to bilateral UB-18 (gan shu) for 20 min once daily for 2 weeks, with one day's interval between two weeks. The non-acupoint was located about 2.5 cm lateral to the umbilicus. The results were that substance P expression levels in the gastric
antrum, and hypothalamic tissue were increased in the model group, but notably decreased in the UB-18 (gan shu) group, but not in the non-acupoint group. The hippocampal 5-HT content was remarkably lower in the model group than in the normal group, but obviously higher in the UB-18 (gan shu) group than in the model group. This study concluded that e-stim on UB-18 (gan shu) can reduce gastric ulcer index in rats with gastric ulcers and reduced liver function (26).

Yi et al composed a randomized control study of 40 rabbits who received e-stim on the three different meridians to observe their possible effects on gastric mucosal lesion. The rabbits were divided into three groups: the Stomach meridian group, the Gallbladder meridian group, and the Urinary Bladder meridian group. Groups were treated with e-stim at points along the above meridians. This study concluded that the Stomach meridian was the only meridian that was effective and could protect the gastric mucosa against injury. (27)

Moxibustion:

Peng et al observed the effect of burning moxibustion on ST-21 (liang men) and ST-36 (zu san li) in the proliferation and apoptosis signaling proteins in rats with stress-induced gastric ulcer. Forty rats were randomly divided into four groups: negative control (NC), ulcer control (UC), acupuncture points on the stomach meridian (ASM), and acupuncture control (AC). Rats in NC and UC groups didn't receive any moxibustion,
while rats in ASM and AC groups were treated with burning moxibustion stimulating ST-21 (liang men) and ST-36 (zu san li) and their controlled points. Compared with UC group, the ulcer index of ASM and AC groups decreased, and the injured gastric mucosa was improved. The ASM group showed better effect than AC group (P < 0.05). This study showed that burning moxibustion over ST-21 (liang men) and ST-36 (zu san li) could promote the healing of gastric mucosal lesion possibly by inhibiting cell apoptosis and promoting cell proliferation in stress-induced gastric ulcer. (28)

Chang et al demonstrated the protective effect of moxibustion on ST-36 (zu san li) and ST-34 (liang meng) on gastric mucosal injury in stress-induced ulcers. 60 healthy rats (30 males, 30 females) were divided into three groups: a control group, an injury model group, a group where ST-36 (zu san li) was used, and a group where ST-34 (liang meng) was used. It concluded that pretreatment with moxibustion of ST-36 (zu san li) or ST-34 (liang meng) protects gastric mucosa against stress injury. (29)

**Herbal Treatment:**

Park et al. performed two identical studies using Ganoderma Lucidum (Ling Zhi) as a method of treatment for acute ulcers. All laboratory rats underwent treatment for 15 days. In the group that received Ganoderma Lucidum (Ling Zhi), the gastric mucosal injuries were not as severe as they were in the control group; demonstrating an effective method of treatment for acute ulcers (30, 31).
This study observed Si Jun Zi Tang (Four Gentleman Decoction) for the treatment of stress-induced ulcers in mice. Psychological distress is correlated to gastric acid outputs. This formula is used in Chinese medicine to enhance the digestive function of the Spleen and Stomach. This study was successful in showing that Si Jun Zi Tang (Four Gentleman Decoction) can have an inhibitory effect on the release of hydrochloric acid in the treatment of stress-induced ulcers. (32)

Conclusion:

Millions of people in the United States are diagnosed with peptic ulcers each year. It most commonly affects the duodenal lining, with less incidence of gastric mucosal lining. When an ulcer is suspected, standard treatment by Western practitioners is generally triple antibiotic therapy for eradication of H. pylori since it affects 60-98% of ulcer cases. When H. pylori is introduced into the body, it causes the body to become trapped into a toxic cycle of inflammation, acid over production, and cell death. A proton pump inhibitor is recommended when there is overproduction of gastric acid present. While Western standard therapy of antibiotic drugs has proven successful for elimination of the H. pylori bacteria, there are two major issues with their use. Antibiotics also can give some patients unpleasant side effects of nausea, vomiting, and diarrhea which decreases patient compliance. Their use might not be successful in resolving the infection for all cases, leading to some patients being prescribed many courses of these drugs. Overprescription of antibiotics, not just for ulcers but other conditions as well, has led to the creation of strains of antibiotic resistant H. pylori.
Even when the antibiotics are successful in the treatment of ulcers, the unintentional consequence is the non-specific killing of the microbiota in the gut, many which have a positive effect on health. Research has shown that probiotics when given in conjunction with antibiotics can have a beneficial effect in reduction of side effects, as well as helping in the treatment to eradicate _H. pylori_ more completely. Although probiotics have not been successful in eradicating _H. pylori_ alone, they have been able to show a decrease in the bacterial load while potentially breaking the inflammatory cycle associated with infection. Reviewing the number of the population affected by _H. pylori_ (50%) compared to how many people ultimately develop ulcers (10-20%), further research might be beneficial to further explore whether _H. pylori_ could be present in a healthy gut environment without any negative consequences.

Unlike Western medicine which uses the diagnosis of the disease to influence the course of treatment, TCM looks at the entire constitution as well as presenting symptoms to determine best course of action. Western and Chinese medicine both agree that lifestyle and dietary factors can be involved, and behavioral changes beneficial; however, they differ on the specifics of these recommendations. There has been research on the effectiveness of Chinese medicine modalities - acupuncture, electric stimulation, moxibustion, and Chinese herbs. The studies in this paper illustrate the benefits of using the Stomach channel, specifically ST-36 (zu san lì), as a primary tool in peptic ulcer treatment and prevention with other points being
effective, depending on presentation. Herbal formula, *Si Jun Zi Tang*, and single
Chinese herb, *Ganoderma Lucidum* (*Ling Zhi*), could open up a branch of research in
the control of gastric acid production to reduce or replace the use of proton pump
inhibitors in allopathic care. While there are promising implications of these animal
studies, human models are the next step to definitively determine if they are viable
treatment options moving forward.

As shown in the above research, there is more than one option in the treatment of
ulcers. In the future, an integrated health approach incorporating Chinese medicine may
be utilized to minimize risk and side effects of Western treatment with antibiotics.
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