GASTRITIS: A BRIEF REVIEW OF HERBAL TREATMENT AND CONVENTIONAL THERAPY ALTERNATIVES

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ABSTRACT: *Gastritis, whether it may be acute or chronic, has persisted throughout the ages. In order to eradicate this disease, researcher have focused on discovering new treatments or they have brought to light various different therapies that were previously under the radar. Multiple recent studies have revealed that gastritis can be cured by the use of medicinal herbs and shrubs, or by the administration of different optimised combinations of conventional medicinal drugs. This paper reviews the recent literature involving studies carried out in multiple regions, along with randomised structured clinical trials for verifying effective treatments for gastritis patients. The 'best' treatment cannot be determined as the cause of this disease varies from patient to patient. In most of the cases, the source of this disease is the pathogen Helicobacter pylori, for which set antibiotic regimens have been used. Unfortunately, due to the ever-increasing problem of resistance against certain antibiotics, the previous first-line treatments have started to fail for such patients. To fix that scenario, some modifications have been introduced recently such as herbal medicine, probiotic therapy, etc.*

Keywords: Gastritis, *Helicobacter pylori*, Eradication, Treatment, Natural, Medicines

Abbreviations: GIT: Gastrointestinal Tract; SAIDs: steroidal anti-inflammatory drugs; NSAIDs: non-steroidal anti-inflammatory drugs

1. INTRODUCTION

The role of the gastrointestinal tract (GIT) is to convert the foodstuff into nutrients, which in turn provide energy vital for life. Various organs have essential functions in this organ system. The stomach, present in the upper GIT, plays one of the most important roles in digestion. It uses chemical and mechanical action to churn and break down the food coming from the oesophagus. Thus, it has been noticed that an unhealthy stomach leads to a wide variety of problems, involving indigestion, malnutrition and unwanted weight loss [1]. Gastritis is one of the most common gastric disorders. It is characterised as inflammation of the gastric mucosal epithelial lining of the stomach and is quite epidemiologically prevalent [2]. It may cause bleeding and a lot of pain, along with a wide variety of various other symptoms. Chronic gastritis is also considered as a pre-cancerous lesion. [3, 4].

Gastritis may be caused by pathological infections, psychological issues, over-consumption of alcohol, free radical activity, nutritional problems or by the use of certain medications such as SAIDs or NSAIDs [5]. There can be an increase or decrease in stomach acid secretion. Chronic gastritis can be classified into different sub-types. There is non-atrophic gastritis caused by *Helicobacter pylori* infection, atrophic gastritis which can be caused by *H. pylori* or by autoimmunity, gastritis caused by radiation or chemicals and eosinophilic gastritis caused by food sensitivity and food allergies.

Helicobacter pylori is one of the most widespread pathogens, infecting a large proportion of the human populace [6]. Chronic active gastritis by *H. pylori* infection is very common but is usually asymptomatic. Nevertheless, 15% patients develop gastric ulcers and 5% may develop gastric carcinomas. Therefore, when the symptoms develop, various complications may arise [7]. On the other hand, acute *H. pylori infection* is mostly a childhood disease. Gastric discomfort, pain and vomiting are the common symptoms but they are commonly resolved in one to two weeks. Eradication of *H. pylori* can cure gastritis [8, 9].

2. HERBAL TREATMENTS

Leaves of the Olive plant *Olea europea*, have many health benefits. In order to determine whether the benefits extend to treating stomach ailments, a study was carried out, in which gastritis was induced in rats by damaging their gastric mucosa via administration of hydrochloric acid/ethanol. It had to be verified if extracts from olive leaves could protect the epithelial lining from getting damaged. Before administering the ethanol and hydrochloric acid, two hundred and three hundred mg/kg of olive leaf extract were administered. The experiment was successful since the induced gastritis was fully prevented in this manner. In addition, the olive leaf extract provided an anti-inflammatory effect by decreasing the numbers of different inflammatory factors. A boost was also seen in the gastric antioxidant activity as the extract promoted different antioxidant enzymes and molecules such as superoxide dismutase, glutathione reductase, glutathione peroxidase and catalase. Thus, it was determined that this natural remedy was exceptionally therapeutic against gastritis [4].

In Nepal, there exists a Chepang community which for a long time has been using medicinal plants to treat various diseases. A two-year long study was carried out in which information was gathered via questionnaires. It was discovered that twenty-two different species of plants were used for curing gastritis. Different parts of different species were used, such as the bulb of *Allium sativum* and the barks of *Betula alnoides* and *Diploknema butyracea*, the latter whose seed was also used for its gastroprotective effect. The leaves of *Cissampelos pariera* and *Ocimum basilicum* were used along with the root of *Curculigo orchioides*. *Lindera neesiana* provided the medicinal fruits and stem juice was extracted from *Marsdenia roylei* [10]. Aside from the Chepang community, there is also the Lepcha community (in East

Nepal), where medicinal properties of multiple different plants species have been utilised over the years. A survey took place in the summer of 2015 and it was recorded that most of the plants were used to treat GIT disorders. For the treatment of gastritis in particular, *Zanthoxylum oxyphyllum, Lindera neesiana, Phyllanthus emblica, Terminalia bellirica* and *Stephania glandulifera*, along with many other species were utilised [11].

Oats are an important cereal and provide numerous nutritional and health benefits. In a recent study by Suchecka and team, a molecule present in oats, called beta-glucan, was investigated for its potential in prevention of gastritis. Gastritis was induced in rats by the administration of sodium deoxycholate, which mimics bile to an extent, causing acute inflammation of the stomach lining. The acute gastritis could lead to chronic gastritis and eventually gastric cancer if it does not recede; therefore, it is of utmost importance to treat the acute gastritis so as to prevent chronic gastritis. In this experiment, two different molecular weight fractions of beta-glucan (high molecular weight and low molecular weight) were given to the rats. The results showed that both of the beta-glucan fractions enhanced the overall antioxidant activity in the gastric environment, effectively lessening the inflammation of the gastric mucosal epithelial lining. This indicated that beta-glucan of oats does have a therapeutic and/or preventive effect against gastritis. However, oat bran may cause irritation in individuals who are unable to take in cellulose; and so for cases such as those, the beta-glucan fractions can be extracted from the oat, purified and given as supplements to patients suffering from gastritis, effectively resolving the issue with their dietary restrictions [12].

Aside from using natural herbal treatments to cure gastritis, some employ a mixture of both the herbal therapies and conventional medicine. The Chinese and neighbouring nations have harboured the use of herbal extracts and essences in treating atrophic gastritis. Clinical trials showed that when Chinese herbal therapies were used alongside conventional medicines, there was a greater alleviation of symptoms and an increased anti-inflammatory response, compared to when only conventional western medicine regimens were used. Medicinal herbs that showed significant antimicrobial activity against *H. pylori* comprised of *Saussurea lappa, Eugenia caryophyllata* and *Abrus cantoniensis* [13].

3. CONVENTIONAL WESTERN MEDICINE

Gastritis is mostly caused by *H. pylori* infection, which requires proper antimicrobial treatment. In order to treat gastritis without misusing the antibiotics and minimising their overall use, great care has to be taken in deciding the antibiotic regimens. Two first-line options have been recommended. The first one involves the 'concomitant therapy'. This includes four drugs that are to be taken in combination. They include a proton pump inhibitor, clarithromycin, metronidazole and amoxicillin. Then, there is the fourteen-day long 'bismuth-containing quadruple therapy'. This regimen involves four drugs that are to be taken together in combination, including bismuth, metronidazole, tetracycline and a proton pump inhibitor [14].

There is however an issue with the concomitant therapy, as it is not as highly effective as it was before. Quite a few times, this therapy has become unsuccessful due to the problem of bacterial resistance that has developed against the antibiotic clarithromycin, and as the resistance is gradually increasing worldwide, the success rate of this therapy is getting lower and lower. In order to overcome this issue, in Uruguay, Dacoll and colleagues designed an optimised regimen in which they made some changes and removed clarithromycin completely. A fourteen-day trial was carried out which involved the combination of high doses of amoxicillin and metronidazole with the proton pump inhibitor- esomeprazole. Five hundred milligrams of metronidazole and one gram of amoxicillin were administered thrice a day, while forty milligrams of the proton pump inhibitor were administered twice a day. The high doses of both metronidazole and amoxicillin were efficient in eradicating *H. pylori*, including the clarithromycin-resistant strains, all with minimal side effects. The patient tolerance to this therapy was monitored and approved. This optimised therapy has turned out to be a decent alternative, especially for those regions where clarithromycin resistance is spreading [15].

For eradication of *H. pylori* to cure gastritis, there exists a triple therapy that involves the combination of twenty milligrams of omeprazole (a proton pump inhibitor), one gram of amoxicillin and five hundred milligrams of clarithromycin, which are administered twice a day, for a fixed number of days. A controlled and randomised clinical trial was carried out by Tan and her team to determine the effect of adding polaprezinc to the triple therapy. One group was given the triple therapy only while the other group was given polaprezinc along with the triple therapy. The results of this trial showed that the eradication of *H. pylori* was higher in the group which was given polaprezinc along with the triple therapy. Additionally, there was no added toxicity since the gastro-protective polaprezinc is an antioxidant with anti-inflammatory properties [16].

Bismuth also has gastro-protective and antimicrobial properties. A prospective randomised study led by Wang and colleagues was carried out in China from 2011 to 2013, to determine the effectiveness of adding bismuth to the triple therapy of clarithromycin, omeprazole and amoxicillin. The patients were given either the ten day long triple therapy which consisted of a combination of clarithromycin, omeprazole and amoxicillin, or they were given the alternative therapy- the ten-day long bismuth quadruple therapy, which consisted of the previously mentioned triple therapy plus one hundred and twenty milligrams of bismuth sub-citrate. The results of this trial showed that the bismuth quadruple therapy was more effective as a first-line treatment than the triple therapy itself since the eradication of *H. pylori*, and thus the subsequent treatment of chronic gastritis was higher when the former was administered. There was also increased anti-inflammatory activity and greater symptomatic benefits [17]. Furthermore, patients who suffered from

antibiotic resistance showed remarkable recovery when administered with the bismuth quadruple therapy, even if they had gained no benefit from other previous therapies [18, 19].

4. PROBIOTIC THERAPY

Probiotics have been a hot topic in the scientific community and since they are essentially related with gut health, it is not a surprise that they are being thought of as viable therapeutic agents to cure gastritis. Probiotics have been considered for their antibacterial effect against *Helicobacter pylori* as they are involved in improving the antibiotic tolerability and have the helpful advantage of decreasing the adverse effects [20, 21]. Hence they can be useful for patients who have difficulty with compliance as they help tolerate the antibiotics [14]. Probiotics such as *Bifidobacterium, Lactobacillus* and *Saccharomyces boulardii*, when given in combination with triple therapy, greatly reduce side effects of the aforementioned therapy. They also come in use when there are cases of antibiotic resistance in populations [22, 23].

5. CONCLUSION

Gastritis is one such disease that has been a huge inconvenience for a large percentage of the human population. Along with the advancement of knowledge in the fields of pathology, physiology and enzymology, improved treatments for curing this disease have recently been discussed. Many natural herbal treatments have proven to be effective, promoting the anti-inflammatory and anti-oxidant activity in the gastric environment. The herbal medicine may also be given in combination with the conventional western medicinal drugs, and this has actually given encouraging results. As for the conventional medical treatments, there have been changes in regimens, as the first line treatments that were previously used have now been rendered unsuitable for some patients, especially those suffering from antibiotic resistance. Hence, some factors had been optimised or modified in those treatments, and the successful clinical trials assisted in proving their validity and reliability. Probiotics are also being considered for their potential benefits in this area.

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