

## FEATURE ARTICLE

### Discussion on Certain Issues of the Diagnosis and Treatment of Functional Constipation

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Functional constipation (FC) is a common condition in the clinics. It is often recurrent and frequently has drug resistance and drug addiction. Its therapeutic costs are high as well. Therefore, the quality of life of the patients is seriously affected. Considering the features and advantages of traditional Chinese medicine (TCM) in the treatment of FC, the author suggested that integrative medicine was suitable for FC in the clinics.

#### Identifying the Features of Chinese Medicine and Applying Them with Appropriate Indications

In the clinics, traditional Chinese medicines used are mainly purgatives for constipation. According to the degree of purgative effect, they can be divided into strong, mild and strongly to promote bowel movement for purging water retention. For example, rhubarb, glauber's salt, senna leaf, and aloe have strong purgative effect; Hemp seed, bush-cherry seed, honey, oriental sesame seed are mild in purgation; while pharbitis seed, genkwa flower, Peking euphorbia root, kansui euphorbia root, and croton seed, Indian pokeweed root, caper euphorbia seed can strongly promote bowel movement for purging water retention. In addition, some herbs not belonging to the purgation category but with similar functions, may also be used such as clematis root, cassia seed, tuber fleecflower root, desert-living cistanche herb, Chinese arbovitae seed, david peach seed, bitter apricot seed, Mongolian snakegourd seed, burdock fruit, tatarian aster root and rhizome, ficus, etc.

Based on the pharmacological studies, those Chinese medicines may also be categorized by their active components, which make it easy to use in the clinics. Most purgatives containing anthraquinone

belong to stimulant laxatives, such as rhubarb, senna leaf, aloe, cassia seed, tuber fleecflower root, pharbitis seed, genkwa flower, Peking euphorbia root, kansui euphorbia root, croton seed, Indian pokeweed root, caper euphorbia seed, and bush-cherry seed, etc. Amorphophallus konjac, wheat spermoderm, and desert-living cistanche herb are classified as fiber (bulk-forming) laxatives. Hemp seed, honey, oriental sesame seed, Chinese arbovitae seed, walnut kernel, mulberry fruit, david peach seed, bitter apricot seed, snakegourd fruit, songaria cynomorium herb and Chinese angelica root belong to stool surfactants (softener), also called lubricant. Glauber's salt is classified as osmotic laxative, also called saline laxative. Clematis root, garden radish seed, common perilla fruit, white Atractylodes tuber and some of the Chinese herbs with the effect of promoting qi circulation, such as areca seed, magnolia bark, immature bitter orange, green tangerine peel, eaglewood wood, lindera root, etc., all belong to prokinetic agents.

Therefore, based on TCM syndrome differentiation and the pharmacological features of the medicines, they should be chosen carefully and scientifically. For example, rhubarb and cassia seed are very often used in the clinics. The former has strong effect, with the adverse reactions such as abdominal pain and diarrhea if used at a large dose, so it should be stopped immediately when the syndrome is under control. Cassia seed is mild in its effects, and it can lower the blood pressure and blood lipids. Therefore, it is particularly suitable for patients with FC by taking its decoction or tea.

Medicines that strongly promote bowel

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movement for purging water retention are not usually administered to constipation patients because the intensively purgative effect can cause electrolyte imbalance, such as genkwa flower, Peking euphorbia root, kansui euphorbia root, croton seed, Indian pokeweed root. Fiber (bulk-forming) laxatives or stool softeners are mild in their effects, and both are relatively safe in clinical application. Among these, the desert-living cistanche herb is particularly suitable for the elderly patients, since it has the effect of lubricating the intestine and promoting defecation. Also pharmacological studies show that it can promote intestinal peristalsis, inhibit water absorption in the large intestine and shorten the defecation duration<sup>(1)</sup>.

### **Medicine of Purgation Should Be Stopped Immediately When the Syndrome Is Under Control. If Used Long-term, They Could Damage Colon**

Purgative medicines usually have strong effect, and even toxicity. They could damage the vital qi as well as Pi (脾) and Wei (胃), so the herbs should be stopped at once when the syndrome is relieved. Modern pharmacological studies show that the long-term application of purgatives containing anthraquinone can cause melanosis coli and cathartic colon<sup>(2)</sup>. Recently, domestic and international studies of purgatives containing anthraquinone focusing on the teratogenicity and carcinogenicity have shown that they have mutagenic effect in mice<sup>(2)</sup>. Liver-toxicity is another safety issue involving the application of purgative medicines. As the main active component in senna leaf and fruit sennoside can be decomposed to rhein anthrone, which resembles dantron in its molecular structure, a well-known liver-toxic medicine<sup>(3)</sup>. As an herbal medicine, rhubarb consists of rhein anthrone as well. It was reported that long-term administration of senna leaf and other herbal laxatives could cause hypertrophic osteoarthropathy, and also body fluid loss due to increasing bowel movements, which could cause loss of ions or metabolic disorders, e.g., hypokalemia.

### **Nourishing Yin to Lubricate Intestine Should Be Administered with Purgatives with Mild Effect**

The FC of yin-deficiency type is very common in the clinics. Because of the deficiency of yin and fluid, the intestine fails to lubricate, and accumulated stool becomes dry, which makes it difficult to pass through. The treatment of nourishing yin and promoting the

generation of body fluid to moisten dryness and promote defecation could be applied to soften stool. The basic formula is Zengye Decoction (增液汤) consisting of figwort root, dwarf lilyturf root and raw rehmannia root. The commonly used medicines to tonify yin and lubricate the intestine are as follows: raw rehmannia root, dwarf lilyturf root, figwort root, fragrant solomonseal rhizome, grossy privet fruit, yerbadetajo herb, mulberry fruit, etc. Cassia seed and tuber fleece flower root are paired herbs to be used for mild purgation. Chinese angelica root is commonly used for generating blood and lubricating the intestine due to the fact that "body fluid and blood are derived from a common source". Deficiency of blood will definitely result in yin deficiency. For constipation of both blood and yin deficiency type, astragalus root and Chinese angelica root are used to tonify qi and generate blood, aiming at accelerating the qi flow. For the purpose of nourishing yin, herbal nuts are often added to lubricate the intestine. The typical formula is Wuren Pill (五仁丸), which consists of david peach seed, apricot seed, Chinese arbovitae seed, pinon, bush-cherry seed and tangerine peel. When the bowel movement becomes normal, purgative medications should be stopped, but the medicine with nourishing yin and blood effect could be added to strengthen the body constitution.

### **Tonifying Qi and Promoting Pi Transportation Medicines Should Be Used with Qi Lifting Herbs to Ascend the Clear Qi and Decend the Turbid Qi**

There is a saying, "Before downwarding qi, herbs pushing qi up should be used in TCM". Therefore, tonifying qi medications are usually used with lifting qi medications to achieve the effect of ascending the clear qi and decending the turbid qi. The commonly used herbs of lifting qi are bugbane rhizome, Chinese thorowax root, hindu lotus leaf, and notopterygium rhizome root.

TCM theory holds that qi is the driving power, and qi deficiency will result in insufficiency in driving, irregular defecation and even constipation finally. In the "Treatise on Febrile Diseases" (伤寒论), raw or a large dose of white Atractylodes tuber was administered for constipation of the qi deficiency type to tonify qi, so as to improve transportation and promote defecation. Pharmacological study shows that Baizhu Decoction (白术煎剂) has significant effects of accelerating gastric

emptying and improving intestinal motility in mice<sup>(4)</sup>. In the clinics, white *Atractylodes* tuber and immature bitter orange are commonly used as paired drugs such as in the Zhizhu Pill (枳术丸). *Astragalus* root was usually used with tangerine peel in Huangqi Decoction (黄芪汤) in "Formularies of Bureau of People's Welfare Pharmacies" (和剂局方).

### Promoting Qi Circulation Should Be Combined with Resolving Food Stagnation

Generally speaking, constipation is the result of qi stagnation and large intestine failing in transportation due to variable causes. On the other hand, constipation will obstruct the flow of qi, which results in the disordered qi movement in organs. Therefore, regulating qi herbs should be applied during all stages of treatment for constipation, e.g., immature bitter orange and magnolia bark in Maren Pill (麻仁丸), tangerine peel in Huangqi Decoction, bitter orange in Runchang Pill (润肠丸) and Jichuan Decoction (济川煎). Liumo Decoction (六磨汤), which consists of eaglewood wood, aucklandia root, areca seed, lindera root, immature bitter orange, rhubarb, is a classical decoction for regulating qi in the clinics, in which aucklandia root can be replaced by garden radish seed for a better effect. Furthermore, differentiation of mild and severe forms of syndromes and the excessive or deficient body constitution should be paid attention to for choosing proper medicines to regulate qi, i.e., for mild cases, tangerine peel, bitter orange, fingered citron fruit are selected. For moderate cases, green tangerine peel, immature bitter orange, magnolia bark, lindera root, Chinese thorowax root are used. For severe cases, areca seed, garden radish seed, eaglewood wood are used.

For chronic constipation, drugs for resolving food stagnation should be used with herbs with promoting qi effect since smooth bowel movement can facilitate qi circulation. Rhubarb can be used as resolving food stagnation and it should be stopped once the syndrome is under control. Some promoting qi circulation medicines have the function of resolving stagnation as well, such as immature bitter orange, magnolia bark, areca seed and garden radish seed.

Latest pharmacological studies show that regulating qi medicines could regulate the gastro-intestinal motility. Immature bitter orange, lindera root, areca peel, areca seed, etc. could promote gastrointestinal motility and

strengthen its contraction. Tangerine peel, immature bitter orange, fingered citron fruit and eaglewood wood, etc. containing volatile oil substances can promote defecation and improve intestinal mobility<sup>(5)</sup>.

### Regulating Qi Movement in Organs Should Focus on Ventilating Fei (肺)-qi

TCM believes that Fei is the key organ to regulating qi movement, including qi up and down, as well as in and out. Fei and large intestine are interior-exteriorly related organs. Therefore, the transportation of large intestine is dominated by the opening and closing of Fei-qi. Regulating Fei-qi is one of the important treatments for chronic constipation. Tatarian aster root and rhizome, as the prioritized medications, if used with garden radish seed together, can generate the effects of opening Fei-qi and the anus. In addition, loquat leaf, bitter apricot seed, balloonflower root and common perilla fruit can be applied as well to regulate Fei-qi to treat constipation.

### Herb Treatment Should Be Combined with Diet Therapy, Regular Defecation Habit Should Be Established

Good habits in life is the basis for relieving constipation. Bowel movement after getting up or after breakfast is physiological defecation. People should not spend too much time on defecation. Reading while defecating should be stopped. Also, proper exercise, 3 000 mL water drinking per day, one cup of cold water in the morning, all these contribute to relieve constipation. More fiber in diet is helpful. According to U.S. FDA Pyramid-shaped Recipe Standard, fiber-rich food should be taken as the major part in daily food intake, such as Chinese cabbage, taro, wheat bran, whole wheat powder, pachyrhizus, corn, etc. For constipation, medicated diets can also be used, including Huangqi Songziren rice porridge (黄芪松子仁粥, *Astragalus* root, pinon, rice), Juemingzi rice porridge (决明子粥, fried cassia seed, chrysanthemum flower, rice, sugar candy), Binglang rice porridge (槟榔粥, areca seed, rice, honey), Suzi Maren rice porridge (苏子麻仁粥, common perilla fruit, hemp seed), Congrong Suoyang rice porridge (苳蓉锁阳粥, desertliving cistanche herb, songaria cynomorium herb, rice), etc.

### Distinguishing the Diagnosis of Outlet Obstruction Constipation from FC Should Keep in Mind

In the clinic, FC should be distinguished from

outlet obstruction constipation (OOC). OOC manifests as difficulty in passing stool with manual assisting needed for defecation and a sense of unfinished defecation, etc. In the constipation category of the Roman III diagnosis criteria, OOC belongs to the diseases of the anus and rectum, the so-called functional disorder of defecation (FDD). FDD diagnosis must firstly meet the diagnostic criteria of FC, and must also conform with objective evidences of unharmonized contraction in the pelvic base muscle, insufficient looseness of the anal sphincter, or insufficiency of defecation drive. If the oral medicine intervention does not work, surgical intervention should be conducted to improve the patients' quality of life.

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