

Research Progress on the Current Treatment Status of Anal Sinusitis

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Abstract: Anal sinusitis, also known as anal cryptitis, is a precursor symptom of many anorectal diseases. With the reasons of work and lifestyle, the incidence of this disease is increasing. Due to the initial vague symptoms in the perianal area, it is often overlooked by patients and easily develops into a chronic condition that is difficult to treat. This article provides a review of recent relevant literature on anal sinusitis, aiming to provide references for colleagues in the field.

1. Introduction

Anal sinusitis is an acute and chronic inflammatory disease that occurs in the anal sinuses and surrounding tissues. Due to its unique location and structure, it poses a high risk of inflammation. Clinical manifestations often include a feeling of incomplete bowel evacuation, anal pain, a sensation of foreign body in the anus, a sense of prolapse, anal moisture, itching, and so on. Relevant studies have shown that the 6 o'clock position is the most common site of occurrence (66.7%), with noticeable tenderness during digital examination, deepening and roughening of the anal crypt, and the presence of hard nodules [1]. It often becomes chronic and resistant to treatment, and can further progress into anorectal diseases such as anal papillae hypertrophy, papillomatous fibroma, perianal abscess, and anal fistula. Statistics have shown that approximately 85% of anorectal diseases are associated with anal sinusitis [2].

2. Western Medicine Understanding of Anal Sinusitis

2.1. Pathogenesis

Western medicine believes that the occurrence of anal sinusitis is mainly related to its special structure and location. The shape of anal sinuses resembles an upward-opening funnel, located near the dentate line. Generally, adults have 5 to 6 sinuses, about 1-2 centimeters from the anal verge, varying in size, with a depth of about 3-5 millimeters, hence also known as anal crypts. The anal glands located inside the sinuses can secrete mucus, which lubricates the passage of feces: (1) Due to

the sinus being an upward-opening pouch, the anal gland at the base of the sinus is prone to blockage. (2) Various factors can cause frequent stimulation of the local mucosa at the sinus during defecation, leading to congestion and edema of the sinus and subsequent inflammation. (3) When various factors cause a decrease in the body's resistance, it also increases the susceptibility to inflammation. When anal sinusitis occurs, the local tissues become congested and swollen, causing blockage of the originally small sinus opening. This impairs the drainage of secretions, facilitates bacterial growth locally, and consequently spreads to the surrounding areas, leading to other anal disorders [3].

2.2. Conservative treatment

Conservative treatment of anal sinusitis mainly involves the local application of antibiotics and analgesics. In a clinical study on the treatment of anal sinusitis, Juan Wei used Puzhi hemorrhoid suppositories combined with polymyxin B ointment as the treatment group, and used Puzhi hemorrhoid suppositories alone as the control group. The results showed that the combination of Puzhi hemorrhoid suppositories and polymyxin B ointment had better effects in treating anal sinusitis and had a more significant improvement in clinical symptoms. It was also believed that although Puzhi hemorrhoid suppositories contained antibacterial ingredients, the effective concentration of the drug was too low. Polymyxin B ointment is a commonly used clinical antibiotic ointment and a compounded preparation of multiple antibiotics and analgesics. The combination of the two drugs had a higher overall efficacy [4]. In another study by Li Fengkai [5], anal sinusitis patients (118 cases) were randomly divided into two groups: the treatment group (60 cases) received oral Diosmin combined with Taining suppositories, and the control group (58 cases) received antibiotics orally with Taining suppositories. The results showed that the overall efficacy of the treatment group was significantly higher, and Diosmin was considered a new treatment derived from natural flavonoids. It had a better effect compared to using antibiotics alone by increasing venous tension and promoting lymphatic reflux. The conservative treatment of anal sinusitis often involves the local application of metronidazole suppositories or injections, gentamicin, indomethacin suppositories, etc, to exert an anti-inflammatory and analgesic effect. Although certain results are achieved in clinical practice, long-term use of such drugs may lead to drug resistance, disrupted intestinal flora, and recurrence after discontinuation. For stubborn cases with unsatisfactory conservative treatment efficacy and repeated symptoms, surgical treatment may be considered.

2.3. Surgical treatment

2.3.1. Anorectal sinus incision and drainage, seton placement surgery

Before the surgery, intestinal preparation is performed with the patient in the lithotomy position. After successful sacral or local anesthesia, routine disinfection is carried out. The number and location of the lesioned anal crypts are explored using an anoscope. The lower rectum and anal canal are re-disinfected, and a small vertical incision is made 1-2 centimeters outside the infected anal sinus, perpendicular to the anal canal. The incision cuts through the skin, subcutaneous tissue, and superficial sphincter, and the incision edges are trimmed to ensure unobstructed drainage. Alternatively, a seton drainage method can be used: a probe is inserted into the incision, and with the other hand, the index finger guides it into the anal canal and then it exits above the corresponding lesioned anal sinus. A rubber band is placed to secure the seton, and the tension of the rubber band is adjusted after the surgery. This method is also used in the treatment of other infected anal sinuses. Finally, disinfection is performed, followed by the placement of a vaseline gauze drain and dressing. In a review of the treatment process in 634 cases of anal sinusitis, Xu Zheng et al. found that 334 patients were treated with anorectal sinus incision and drainage surgery, while 300 patients received

conservative treatment (antibacterial therapy, sitz baths, rectal administration). The results showed that incision and drainage surgery significantly improved the treatment of anal sinusitis and effectively prevented the occurrence of abscesses or anal fistulas, with a cure rate of 94.4%, compared to a cure rate of only 25.3% in the conservative treatment group [6]. In a clinical study by Yang Wenzhi et al, the treatment group (180 cases) underwent anorectal sinus incision and drainage guided by three-dimensional transrectal ultrasound, while the control group received compound nystatin suppositories for local treatment. The results showed a cure rate of 94.44% and an efficacy rate of 100% in the treatment group, compared to a cure rate of 25% and an efficacy rate of 80% in the control group [7]. The results were similar to those of the study led by Xu Zheng et al.

2.3.2. Anorectal sinus excision and release surgery

After thorough intestinal preparation, preoperative exploration is performed to identify the location of the lesioned anal sinus (methylene blue staining can be used for marking). The patient is placed under lumbar-sacral anesthesia, and routine disinfection is carried out. Anorectal sinus incision: an incision is made at the site of the infected anal sinus (local tissue mucosal redness or depression can be observed). Using a hook probe, the infected anal sinus is lifted slightly, and a radial incision is made from the inside to the outside along the lifted anal sinus, with the incision extended to the anal margin as necessary. The anal columns and affected tissues on both sides of the lesion are cleaned and removed, and the internal sphincter is partially elevated and incised using mosquito forceps. The incision edges are trimmed to ensure unobstructed drainage. After the surgery, the wound is covered with petrolatum gauze and then dressed with sterile gauze. In a clinical study by Chen Zhengshi on the treatment of anal sinusitis with anorectal sinus excision and release surgery, the treatment group underwent anorectal sinus excision and release surgery, while the control group underwent anorectal sinus incision surgery. Although there was no difference in wound healing time between the two groups, the treatment group had higher pain scores and cure rates (100%) than the control group [8]. In a clinical study by Liu Yinong on the treatment of anal sinusitis with internal sphincterotomy and anorectal sinus excision, the control group received indomethacin suppository application. The results showed a cure rate of 22.5% in the control group and a cure rate of 62.5% in the surgery group, indicating that the surgical treatment group had significantly better outcomes and good wound healing [9].

2.3.3. Injection Therapy

In the study of treating anal sinusitis with injection therapy, Zeng Tingting et al. [10] set up gentamycin injection as the treatment group, metronidazole injection plus gentamycin retained enema as control group I, and incision and drainage surgery as control group II. The cure rates of the three groups were 96.8% for the treatment group, 73.3% for control group I, and 96.8% for control group II. It is worth noting that the injection therapy for anal sinusitis has a comparable efficacy to incision and drainage surgery, but it has advantages such as less pain, faster recovery, and lower cost. However, the study included a small number of cases, and the clinical efficacy still needs further confirmation.

3. Traditional Chinese Medicine Understanding of Anal Sinusitis

Traditional Chinese medicine classifies anal sinusitis as "internal toxins". The "Danxi Heart Method" states: "When it is accompanied by heat, the blood is eliminated, clear and bright in color, with abdominal pain. When it is accompanied by cold, it is turbid and dark in color. Turbidity is considered as internal toxins, and internal toxins accumulate over time before becoming apparent". According to traditional Chinese medicine, the pathogenesis of this disease lies in the patient's indulgence in fatty and sweet foods, consumption of unclean or spicy foods, damp-heat and internal

toxins descending to the anal area, and stasis of blood and heat leading to the onset of the disease. Therefore, the principles of treatment should be "clearing heat and promoting diuresis, cooling blood and resolving stasis".

3.1. Internal Treatment in Traditional Chinese Medicine

For oral administration of Chinese herbal medicine, He Dandan randomly divided 98 patients into two groups. The treatment group received detoxification and blood stasis-dissipating decoction plus modified oral treatment, while the control group received levofloxacin + mesalazine suppository treatment. The efficacy, levels of inflammatory factors before and after treatment, and recurrence were compared between the two groups. The results showed that the total effective rate in the treatment group was significantly higher than that in the control group ($P < 0.05$). The differences in levels of procalcitonin (PCT), interleukin-6 (IL-6), and C-reactive protein (CRP) between the two groups before treatment were not statistically significant ($P > 0.05$). After treatment, the levels of PCT, IL-6, and CRP in the treatment group were significantly lower than those in the control group ($P < 0.05$). The recurrence rate in the treatment group was significantly lower than that in the control group ($P < 0.05$). This confirmed the effectiveness of the detoxification and blood stasis-dissipating decoction in treating anal sinusitis, which can significantly reduce the levels of inflammatory factors and lower the recurrence rate [11]. Zhang Ning [12] randomly divided 100 cases of damp-heat descending syndrome anal sinusitis into a treatment group and a control group, with 50 cases in each group. The control group received gentamycin sulfate plus metronidazole enema, while the treatment group received modified Qingre Shenwen decoction orally based on the control group. The results showed that the improvement in anal pain, swelling, dampness, inflammation factors (tumor necrosis factor, interleukin levels decrease), oxidative stress indicators, and immune function indicators, as well as the recurrence rate, were better in the treatment group compared to the control group. This confirmed the definite therapeutic effect of modified Qingre Shenwen decoction in treating anal sinusitis with damp-heat descending syndrome, which plays a positive role in relieving discomfort in the anal area, improving oxidative stress, and enhancing immune function. Zhou Hongyan [13] and others conducted a study on treating spleen deficiency type anal sinusitis with Bushen Yiqi decoction. They randomly divided 86 patients with anal sinusitis into two groups, with the control group receiving Gantai suppository plus modified chitosan biological gel treatment, and the study group receiving Bushen Yiqi decoction plus modified treatment based on the control group. The results showed that the total effective rate in the study group was significantly higher than that in the control group, and the recurrence rate was lower in the study group. This confirmed the positive effect of Bushen Yiqi decoction in treating spleen deficiency type anal sinusitis, but the article did not explore the possible mechanisms of action of Bushen Yiqi decoction. Zhang Ning [14] and others randomly divided 80 patients with damp-heat internal retention type anal sinusitis into a treatment group and a control group, with 40 people in each group. The control group received gentamycin sulfate injection combined with metronidazole injection enema treatment, and biofeedback treatment after enema. The treatment group received modified Longdan Xiegan decoction orally based on the control group. The results showed that the clinical cure rate of treatment group was significantly better than that of control group ($P < 0.05$). The scores of anal tenderness, hyperemia, edema, swelling and Pain in the treatment group were lower than those in the control group. It is more effective in regulating the balance of anti-inflammation / Pro-inflammation, enhancing the function of humoral and cellular immunity, inhibiting oxidative stress and reducing the recurrence rate.

3.2. External Treatment Methods in Traditional Chinese Medicine

3.2.1. Retention Enema

Liu Jing [15] randomly divided 80 patients with anal fistula into a control group (40 cases) and an experimental group (40 cases). The experimental group received an enema treatment with the formula of invigorating the spleen and regulating the liver, while the control group received a rectal suppository treatment with Pujizhichuang ointment for hemorrhoids. The results showed that the levels of neuropeptide Y (NPY), substance P (SP), and prostaglandin E2 (PGE2) in the experimental group were lower than those in the control group. The experimental group had higher levels of CD3+, CD4+, and CD4+/CD8+ compared to the control group, while the level of CD8+ was lower than that of the control group. These results indicate that the enema treatment with the formula of invigorating the spleen and regulating the liver is effective in treating anal fistula patients with spleen deficiency and liver depression type, improving immune function, reducing recurrence rate, and relieving pain symptoms. Wei Jianqiang [16] conducted a clinical observation on the treatment of anal fistula. They randomly divided 240 outpatient patients into two groups: one group received oral antibiotic treatment, and the other group received an enema treatment with the formula of Coix Seed and Aconite Decoction. The effective rate and recurrence rate between the experimental group and the control group were compared. The results showed that the enema treatment with the formula of Coix Seed and Aconite Decoction had a significantly higher effective rate and a lower recurrence rate compared to the oral antibiotic therapy, demonstrating its definite therapeutic effect. Xu Zhihui [17] and others randomly divided 88 anal fistula patients into an observation group and a control group (44 cases each). The observation group received a retention enema with Zhitong Ruxin Soup, while the control group received a metronidazole enema. They continuously treated both groups for three cycles (30 days) and evaluated the inflammatory factor indicators, tumor necrosis factor-alpha (TNF- α), C-reactive protein, clinical efficacy, improvement of symptoms, and adverse reactions. The results showed that the observation group had significantly better efficacy than the control group. The observation group also had significantly lower scores for perianal itching, heaviness, pain, wetness, and levels of inflammatory factors compared to the control group. This study confirmed the definite therapeutic effect and good safety of Zhitong Ruxin Soup in the treatment of anal fistula. Cheng Donghong [18] randomly divided 72 anal fistula patients into a treatment group, control group 1, and control group 2 (24 cases each). The treatment methods were as follows: the treatment group received a rectal injection of 30 mL liquid from Ku Bai Li Shi, control group 1 received an injection of 2 mL of gentamicin sulfate solution diluted with 28 mL of normal saline, and control group 2 received an enema of 200 mL of liquid from Ku Bai Li Shi. All three groups were treated once every other day. One month of continuous treatment was considered one course. The results showed that in the treatment group, the cure rate was 41.67%, the effective rate was 54.17%, and the ineffective rate was 4.17%, with a total effective rate of 95.83%. In control group 1, the cure rate was 33.33%, the effective rate was 41.67%, and the ineffective rate was 25.00%, with a total effective rate of 75.00%. In control group 2, the cure rate was 45.83%, the effective rate was 50.00%, and the ineffective rate was 4.17%, with a total effective rate of 95.83%. There was no significant difference in the treatment effects between the treatment group and control group 2, but both were superior to gentamicin enema.

3.2.2. Rectal Administration of Chinese Herbal Medicine

Wang Baoguang [19] conducted a clinical observation on the treatment of anal fistula with Zhuhong Gao. The anal fistula patients (84 cases) were randomly divided into an experimental group and a control group (42 cases each). The experimental group received Zhuhong Gao gauze strip rectal administration for dressing changes, while the control group received topical treatment with ciprofloxacin hydrochloride ointment. Both groups changed dressings once daily, and each treatment course lasted for three weeks. The results showed that the total effective rate in the experimental group was 90.47%, while it was 73.80% in the control group. However, both groups experienced

varying degrees of allergic reactions during the treatment process, with 2 cases of skin allergy in the experimental group and 1 case in the control group. The allergies rapidly subsided after discontinuing the medication. Liu Lei [20] randomly divided 98 anal fistula patients into a treatment group (50 cases) and a control group (48 cases). The treatment group received rectal administration of Niu Huang Zhi quan suppositories, while the control group received rectal administration of compound Jiaocai ester suppositories. The experimental results showed that Niu Huang Zhi quan suppositories had a definite therapeutic effect on relieving edema and pain in the treatment of anal fistula, as evidenced by the comparison of pain, heaviness, swelling, and other scores between the two groups.

3.2.3. Traditional Chinese Medicine Fumigation and Sitz Bath for Anal Sinusitis

Zheng Hongyan [21] selected 96 patients with anal sinusitis as the study subjects, randomly dividing them into an observation group and a control group, with 48 cases in each group. The control group received conventional treatment with Pujizhi Hemorrhoid Suppositories, while the observation group received additional treatment with traditional Chinese medicine (30g of Huangbai, Kushen, Dahuang, and Cangzhu each, 25g of Wubeizi, 15g of Bingpian, Poxiao, and Machixian each, and 12g of Baishao, Gancao, and Weilingxian, plus 8g of Xuanmingfen) for fumigation and washing. The results showed that the observation group had better overall clinical efficacy, shorter healing time of anal sinuses, faster disappearance of complications, and lower recurrence rate. It was believed that the effects of traditional Chinese medicine fumigation and washing were derived from the thermogenic effect and pharmacological properties of the herbs, which helped relax the tense muscles, relieve spasms of the anal sphincter, promote perianal blood circulation, and facilitate the absorption of inflammatory factors. Qin Shaolong [22] and others conducted a clinical study on the treatment of anal sinusitis in 80 cases using traditional Chinese medicine fumigation and sitz bath combined with Huaiqin ointment for local application (the fumigation and sitz bath formula consisted of 36g of Huangbai, Kushen, Qinyao, Fangfeng, Guifeng, and Xuanshen each, and 18g of Honghua, Taoren, and Danggui). After the sitz bath, Huaiqin ointment was applied externally. The results showed that the treatment was ineffective in 4 cases and effective in 76 cases, with an overall effective rate of 95%. It was believed that traditional Chinese medicine fumigation and sitz bath could clean the perianal area, enhance local vascular permeability, promote blood circulation, and reduce swelling.

3.2.4. Acupuncture Treatment

Acupuncture treatment for anal sinusitis has a long history in China, Song Jingying [23] and others treated 38 cases of anal sinusitis with acupuncture. Acupoints used were Changqiang, Ciliao, Chengshan, Dachangshu, and Panyaoyu (1 inch apart from Yaoyu on both sides). Treatment was administered every other day, with a total of 10 sessions considered as one course. The results showed complete recovery in 15 cases (39.5%), significant improvement in 17 cases (44.7%), mild improvement in 5 cases (13.2%), and no improvement in 1 case (2.6%), with an overall effective rate of 97.4%. The study confirmed the efficacy of acupuncture for this condition, although it had limitations such as a small sample size and lack of control group. Li Qing [24] and others randomly divided 94 patients with anal sinusitis into an experimental group and a control group. The control group received herbal detoxification enema, while the experimental group received acupuncture treatment in addition to the same herbal enema (acupoints used were Hegu, Huiyang, Chengshan, Shenshu, and Erbai). The results showed that 57 cases (60.6%) in the experimental group achieved a cure, 33 cases (35.1%) showed improvement, and 4 cases (4.3%) showed no improvement, with an overall effective rate of 95.7%. The combination of acupoint acupuncture and herbal enema for detoxification demonstrated precise efficacy in the treatment of anal sinusitis, closely related to the functions of clearing heat, detoxifying, eliminating dampness, promoting blood circulation, and relieving qi stagnation associated with acupuncture.

4. Integrated Traditional Chinese and Western Medicine Treatment

4.1. Combination of Traditional Chinese and Western Medicine

Qin Jian [25] conducted a retrospective analysis on 119 patients with anal fistulitis, dividing them into a research group (61 cases) and a control group (58 cases) based on different treatment methods. The research group was treated with Bai Tou Weng Tang plus mefenamic acid suppositories, while the control group was treated with mefenamic acid suppositories alone. The total effective rate of the research group reached 96.72%, which was higher than that of the control group (86.21%). This indicates that combination therapy with traditional Chinese and Western medicine is more effective in treating anal fistulitis, can better improve patients' clinical symptoms, reduce inflammatory factors, lower recurrence rates, and have higher safety. Some scholars randomly divided 60 patients with anal fistulitis into a control group and a treatment group. The control group was treated with Lincomycin and lidocaine gel, while the treatment group received an additional Chinese medicine enema (30g Coix Seed, 20g Sophora flavescens, 12g Coptis chinensis, 15g Phellodendron amurense, Angelica sinensis, Paeonia lactiflora, Desmodium styracifolium each, 10g Frankincense, Myrrh, and Licorice tablets). The results showed that the total symptom and sign scores after combination therapy were lower than those before treatment in the control group, and the difference was not statistically significant ($P>0.05$).

4.2. Combination of Surgery and External Application of Chinese Medicine

Xu Zhengshi [26] randomly divided 80 patients with anal fistulitis into two groups (40 people each). The control group underwent anal fistula incision and postoperative treatment with Puzhi hemorrhoid suppository; the treatment group underwent anal fistula excision and postoperative Chinese medicine fumigation and washing. The clinical efficacy, anal pain level, and wound healing time of the two groups of patients were compared, and the results confirmed that the combination of anal fistula excision and Chinese medicine fumigation and washing had better clinical efficacy. Lei Ting et al, conducted a clinical observation on the treatment of damp-heat descending type of anal fistulitis with Chinese medicine enema and anal fistula incision and drainage. Both groups of patients underwent anal fistula incision and drainage first, and then the treatment group was given Chinese medicine decoction enema, while the control group was treated with Procto-Glyvenol cream and compound chloramphenicol and metronidazole suppository. The results showed that the cure rate of the treatment group (87.5%) was higher than that of the control group (67.5%), proving that the combination of surgery and Chinese medicine therapy is more effective in treating anal fistulitis.

5. Discussion

Anal fistulitis is a common clinical disease with various causes, and there is currently no unified consensus on its etiology. Due to the subtle initial symptoms of this disease, it is often overlooked by patients and easily progresses into a chronic condition that is difficult to treat. Currently, Western medicine primarily uses antibiotic therapy for the treatment of anal fistulitis, and surgery may be employed when conservative methods are ineffective. However, the efficacy of these treatments is not definite, and long-term use of antibiotics can have an impact on the body's immune system. Traditional Chinese medicine (TCM) treatment for this disease has shown definite efficacy and is characterized by its flexibility and diversity in medication. Therefore, in clinical practice, healthcare professionals should fully utilize the academic concepts of both TCM and Western medicine, aiming for early diagnosis and treatment. Efforts should be made to combine the advantages of TCM's flexible prescription and definite efficacy with the methods of Western medicine, aiming to alleviate patients' suffering and improve their quality of life.

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