

# The lesion range of ulcerative colitis based on the left and right colon

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**Abstract:** The lesion site of ulcerative colitis is often summarized as the whole colon, clinically, observe patients with ulcerative colitis. It was found that the pain and colonoscopy lesions of the patients were different, But now the clinical treatment on the few parts of the treatment. Inspired by western medicine dividing colon cancer into left and right half colon cancer, thus thinking about whether the onset site of ulcerative colitis can also be roughly divided into left half colon and right half colon. It is possible to distinguish the left and right functions of the lesion sites based on the differences in the physiological functions of Chinese and Western medicine differentiation, thereby improving the accuracy of traditional Chinese medicine treatment.

**Keywords:** ulcerative colitis; range of lesions; left and right colon; right colon; left colon; traditional Chinese and western medicine

## 1. Range of lesions of ulcerative colitis

According to the Consensus on the Diagnosis and Treatment of Inflammatory Bowel Diseases (2018, Beijing) <sup>[1]</sup>, the lesion scope of ulcerative colitis can adopt the Montreal (montreal) classification, Divided into lesions only involving the rectum, not up to the sigmoid colon for the rectal type; The involvement was the left hemicolonic type ;The splenic flexure was close to the whole colon <sup>[2]</sup>. This classification method involves different intestinal segments such as rectum, left colon and rectum, which is too detailed. It can learn from the classification method of colon in left and right colon cancer to distinguish the lesion range of ulcerative colitis, Different parts of the transverse colon are divided into left hemicolon and right hemicolon, the left hemicolon includes distal 1/3 transverse colon, descending colon, sigmoid colon and rectum, and the right hemicolon contains cecum, ascending colon and proximal 2/3 transverse colon <sup>[3]</sup>.

## 2. The physiological function of traditional Chinese and western medicine in the left and right half colon

### 2.1. Interpretation the difference between left and right colon from the anatomical structure and physiological function of Western medicine

From embryonic origin as shown in Figure 1 and Figure 2: the right colon originates from the midgut, homologous to the jejunum and ileum; the left colon originates from the hindgut .In terms of physiological function: the colon is mainly responsible for the absorption of water, sodium ions and chloride ions, and the secretion of potassium ions and bicarbonate; the main catalytic enzyme involved in anion exchange is carbonic anhydrase, and its concentration is higher in the right colon near the ileocaeca, but lower in the left colon <sup>[4]</sup>.In terms of anatomical and physiological differences as shown in Figure 3: The right colon includes the cecum, the ascending colon, and nearly two-thirds of the transverse colon.The ascending colon is an upward extension of the cecum. The iliac fossa turns left along the front of the right kidney to the right side of the liver, forming the right colon or hepatic curvature, and moving in the transverse colon .The ascending colon is rich in the posterior abdominal wall and has less mobility. The transverse colon starts from the right curvature of the colon and runs rampant to the left. It forms the left curvature of the spleen in the left quarter and the spleen, which continues in the descending colon .The transverse colon is all peritoneal coated and fixed by the transverse colon, and the left half colon includes the distal third of the transverse colon, descending

colon and sigmoid colon. The sigmoid colon is mesoeped and fixed. The sigmoid colon still has three morphological characteristics of the colon. The colonic band gradually widens in this section, and the sigmoid colon is the multiple site of diverticula and malignant tumors [5]. In terms of blood supply: the right colon is mainly derived from the branch vessels of the superior mesenteric artery; the left colon is mainly derived from the inferior mesenteric artery [5]. In terms of innervation: the right colon is mainly innervated by the vagus nerve with the artery; the left colon is mainly innervated by autosacral 2, sacral 3 and sacral 4 [5]. From the characteristics of intestinal lumen and contents as shown in Figure 4 and Figure 5 : the right colon lumen has a larger diameter, the intestinal wall is thin, and the intestinal contents are mostly non-solid; in comparison, the diameter of the left colon lumen is small, and the intestinal contents are mostly close to the solid state [6].

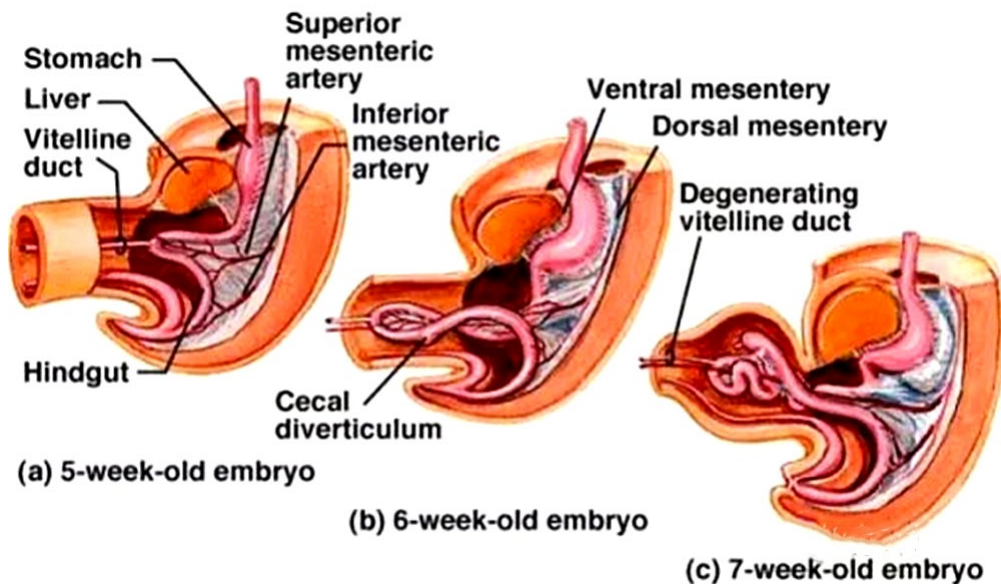


Figure 1: Colonic embryonic development

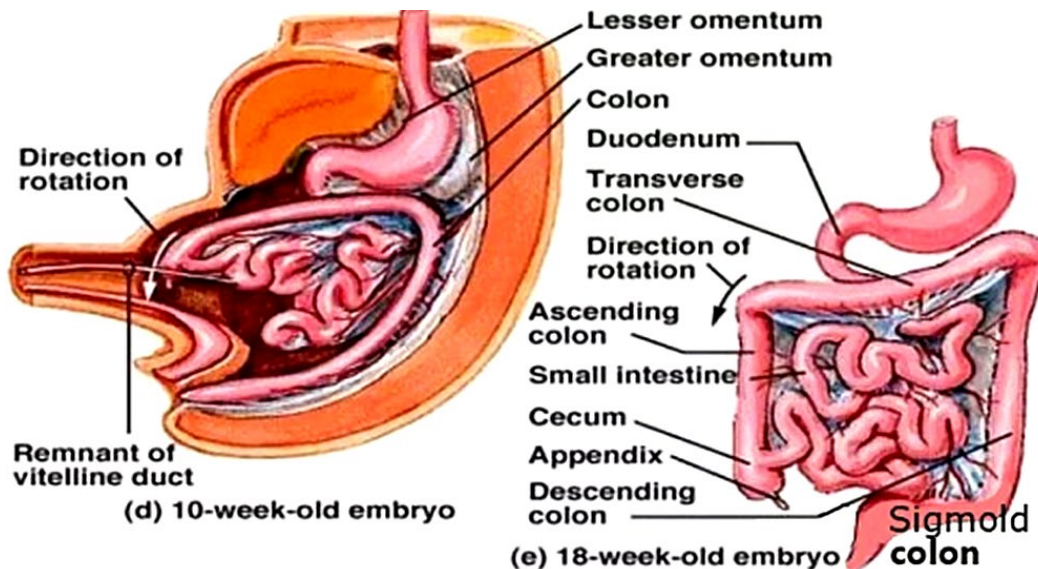


Figure 2: Colonic embryonic development





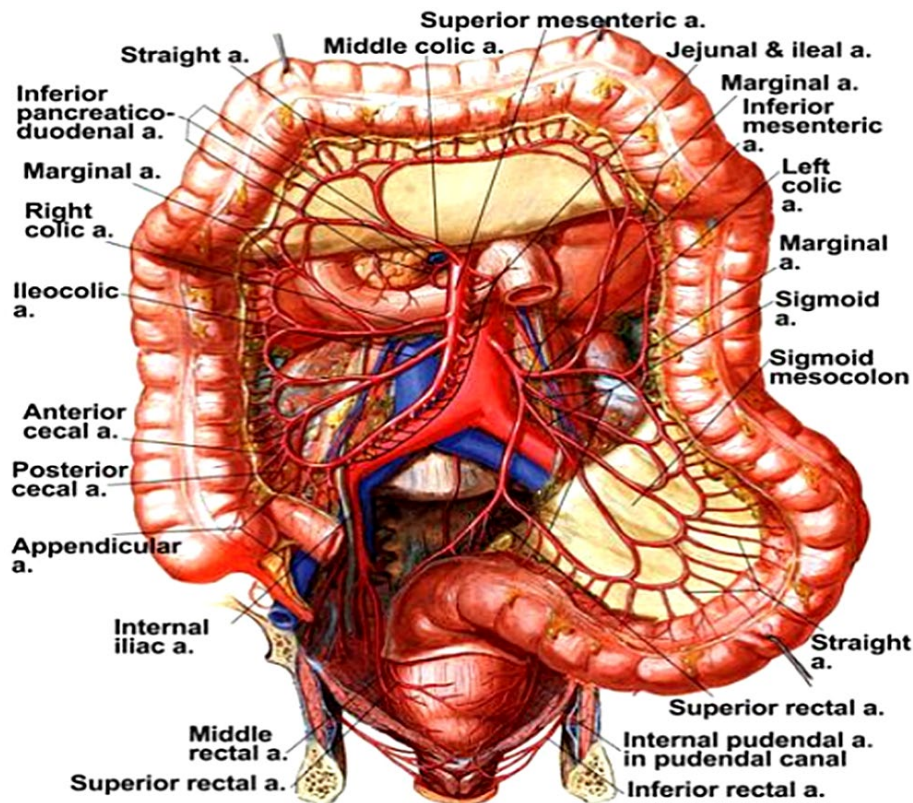


Figure 5: inferior mesenteric artery

## 2.2. Interpretation the left and right colon function from TCM theory

The left half colon and the right half colon are part of the large intestine, so the left half half colon should also have the function of the large colon under the theory of traditional Chinese medicine.

### 2.2.1. Primary of large intestine

"Neijing" said that "is the main body fluid sick", Li Dongyuan also thought that "the large intestine is the main body". "On the spleen and stomach, large intestine and small intestine all belong to the stomach, stomach deficiency on the disease" discussed to "the large intestine, small intestine main fluid, large intestine, small intestine by the glory of the stomach, but can do body fluid in the coke, irrigation of the skin, enrich cou reason"<sup>[7]</sup>. The "jin" in "the large intestine" is relatively thinner than the "liquid" in the "small intestine", which mostly refers to the water in the food residue, and participates in the water metabolism in the body after reabsorption by the large intestine. If the large intestine main body function is abnormal, it will lead to many symptoms. Such as the large intestine deficiency and cold, the function of absorbing water is weakened, water, grain, dross, abdominal pain, diarrhea, bowel and other diseases; such as the large intestine heat, excessive consumption of water, the dregs in the intestine, abdominal pain, constipation and other diseases. Zhang yinan also has a related discussion on the main body of the large intestine, which changes slightly, so the main body fluid, the disease, the body fluid is exhausted and hot, so for the yellow eye, thousand mouth, epistaxis and throat syndrome. Peng Yongguang's "Tiren Compilation · Colon Medicine" said that "pass the unclean way, the shape of change." The shape of the change, is the intangible and thin food dross through the reabsorption of the large intestine into tangible feces, but also contains the principle of the large intestine.

### 2.2.2. The preacher

"Su wen · Linglan Secret Book" discussed to "the official of the official, change out of how". The large intestine is the "officer of the warehouse", is one of the six viscera, is the grain of the dregs unclean storage conduction, the transmission of the heart. "Transmission" and "conduction", that is, the conduction of unclean dross, "change", that is, the dross into tangible excrement. In the Qing Dynasty, Gao Shiyan in the "Su Ask straight solution" further added: "food and change dung, so the change and come out". Wang Hongtu notes: "In the lungs and the large intestine, the large intestine is the heart that

carries the dross and excrete feces." He clearly states that the so-called "change" of the large intestine is to convert the dietary dross into feces and discharge it from the body.

### **2.2.3. Zang-fu organs qi machine related**

Thu Danxi mentioned in the "bureau play", the spleen of the Yin injured, transmission of the official dereliction of duty. The spleen and stomach are in the middle coke, the spleen is rise and turbidity, which is the source of qi and blood biochemistry and the key to the rise and fall of qi. The reabsorption of large intestine depends on the gas and spleen; the transmission of dross in the intestine depends on the gas and spleen turbidity. Huang Yuanyu said in "Su Ling Micro Yun": "dung drowning, his job in the liver. To carry forward the liver, and the dregs filled, hinder its comfortable gas, it hit the two Yang, its drainage, urge the wind, so the transmission is unimpeded." The main liver drainage, the whole body qi machine, liver qi coordination, the large intestine delivery dregs smooth. The liver hides blood, moisten the viscera, liver blood and feet can be filled, and the dross in the intestines can be run. Tang Rongchuan said in the Book of Medicine: "The conduction of the large intestine is the heart of the lungs, so the conduction" The function of the large intestine depends on the lifting and falling effect of the lung, the lung, in the large intestine transmission dross, is more closely related to the function of the lung. Lung treatment, regulating the qi of a body, lung qi is sufficient to the conduction function of the large intestine.

### **2.2.4. Maintenance of camp health**

One of the basic theories of traditional Chinese medicine —camp health theory, mutual root, Yin and Yang balance, business in the pulse is Yin, health in the pulse outside the Yang. The blood is full, running through the viscera and reaching the meridians. The blood nourishes the intestines through the intestinal channels, nourishing the intestines and helping the ability to transmit dross. Wei outside the pulse, Yang, with warm, promote the role of defense. The large intestine is the main body, requiring warm Weiyang to transpiration and gasification in the spleen. If the evil of phlegm wet water drinking stops in the pulse, wei qi will play its warm driving force, in order to prevent the evil knot in the pulse of the dross down.

## **3. Theory of analyzing the different lesions of ulcerative colitis based on the left and right colon of traditional Chinese and western medicine**

Modern studies have shown that the right colon contains the cecum, ascending colon and the proximal 2 / 3 transverse colon. First, compared with the left colon, the right colon is closer to the small intestine, the intestinal lumen diameter is larger, the intestinal wall is thinner and easier to expand, and the intestinal contents are mostly non-solid<sup>[6]</sup>. The larger intestinal lumen increases the contact area with enterogens, which facilitates the reabsorption of water, sodium and chloride ions by the intestinal wall, so that the right colon is dominated by the main body function of the large intestine. Studies have shown that, on the one hand, the large intestine endothelium has abundant absorbing cells that act like a sponge to absorb water and electrolytes from the clear fluid in the lower row of the small intestine<sup>[8]</sup>. On the other hand, it refers to the secretion of some "body fluid", where the body fluid refers to the inorganic salts, bicarbonate and mucus secreted by the large intestinal mucosa. These alkaline fluids together form a protective barrier for the intestinal tract<sup>[9-10]</sup>. The blood supply in the right colon comes from the branch vessels of the superior mesenteric artery, and the blood supply is relatively abundant<sup>[11]</sup>. This confirms the theory that the qi is used to protect the intestine. Then, we can guess whether if the right colon ulcer, has a greater influence on reabsorption, and then prone to diarrhea; because to abundant blood supply, blood will be more; meanwhile, whether the wasting symptoms will be more obvious due to excessive blood loss. In terms of anatomical position, the intestinal segment of the right colon is mainly the rising segment, and the rise of its contents requires the rise of the spleen, the publicity of the lung and the rise of the liver; At the same time, the evil of heavy turbidity such as phlegm and wet water is more likely to stagnation, coupled with reabsorption dysfunction, intestinal stasis, long stagnation and heat, so the Chinese medicine syndrome differentiation, the right colon lesions to the large intestine dampness and heat, heat poison and heat, drugs to clear heat and dampness, cool blood and detoxification, qi and blood as the method<sup>[12-14]</sup>.

Modern studies show that the left hemicolon includes 1 / 3 of the distal transverse colon, the descending colon, and the sigmoid colon. First of all, modern studies have shown that the left hemicolele includes the distal 1 / 3 of the transverse colon, the descending colon, and the sigmoid colon. Compared with the right hemicolectum, the left hemicolectum is closer to the rectum, the diameter of the intestinal lumen is smaller and the intestinal contents are more close to solid, Structure

determines function, The main function of the left hemicolon is transient storage, and the intestinal contents are transmitted by intestinal peristalsis, so it can be said that the left hemicolon is dominated by the function of conducting dregs. For the left hemicolon, the intestinal lumen is small and the contents are close to a solid state, which is less mobile than the liquid state. By which power does the left hemicolon transmit its dregs? Wei Qi has the function of pushing, Jin can carry Qi, Jin carries Wei Qi in the intestinal canal, encouraging the internal Qi, pushing the dregs downstream. This shows that the peristalsis of the left hemicolon is more dependent on Wei Qi for propulsion. Of course, the dross function of large intestine conduction is also the continuation of the function of gastric turbidity, and the dross in the intestine depends on lung qi and temper turbidity. Because the intestinal lumen of the left colon is small and the contents are solid, when the ulcer occurs, the solid intestinal is more obvious for the ulcer friction, will the abdominal pain symptoms be more severe than the right colon? Can ulcer surface and solid friction, can more likely to appear perforation? Because the blood supply of the left colon is relatively poor, and the transmission of dross in the intestine mainly depends on intestinal peristalsis, when the ulcer is produced, the stress reaction of the body will make the intestinal peristalsis slow down, so that the dross run weak, will also be dry stool, defecation is not smooth. From the anatomical position, the intestinal segment of the left colon is mainly in the descending segment, the dregs in the intestines, will affect the turbidity function of the stomach, easy to abdominal distension, poor appetite and other diseases; the lung in the large intestine, the large intestine is not common, prone to cough, chest tightness, shortness of breath and other diseases. Therefore, the dialectical treatment of traditional Chinese medicine, the left half colon lesions are mainly lung temper deficiency, medication to invigorate qi and spleen, lung and intestines, qi and blood as the method.

In conclusion, the right colon is the lead, relying on the publicity of the lung, the spleen and the liver; the left colon conduction dregs is the lead, and the depression of the lung and the turbidity of the spleen and stomach.

#### 4. Conclusions

Inspired by the right half colon cancer, the author divides the lesions of ulcerative colon cancer into left half colon cancer and right half colon cancer. Based on the difference of physiological function, the scope of left and right half colon. From another point of view, it can also be regarded as another explanation of "the same disease" and the refinement of the disease treatment. At the same time, in the process of combing the article, we are also thinking about several questions. First of all, the right colon is more abundant, the camp is full, and the defense function is stronger. In contrast, however, the health of the left colon is more to promote the work, so the scope of ulcerative colitis is mostly in the left colon? Can through which symptoms are light, which symptoms are heavy, to roughly judge the part of the ulcer and treat, in order to reduce the economic burden of laboratory examination to the patient? All of these need to be observed and explored.

#### References

- [1] Liu Yang, Chen Jing. Correlation of the large intestine "mission" function and the immune microenvironment[J]. *Shi Zhen Chinese medicine*, 2018,29(10):2458-2460.
- [2] Wu Kaichun, Liang Jie, Ran Zhihua, et al. Consensus opinion on the diagnosis and treatment of inflammatory bowel disease(Beijing, 2018)[J]. *Chinese Digestive Magazine*, 2018,38(05):292-311.
- [3] Liu Jungang, Huang Xiaoluo, Zhang Lihua, Deng Yuqing, Liao Lixian, Liang Dingyu, Huang Jin Lian, Huang Li Haoyun, Mo Xianwei, Tang Weizhong. Comparison of clinicopathological characteristics of patients with left and right colon cancer[J]. *Colorectal anal department*, 2021, 27(03): 240-243.
- [4] GERVAZ P, BUCHER P, MOREL P. Two colons-two cancers: paradigm shift and clinical implications[J]. *J Surg Oncol*, 2004,88(4):261-266.
- [5] Yang Liu, You Liuping, Yu Jiayong, Zhao Hanzheng, Huang Yuenan. Progress in the difference between left and right colon cancer[J]. *Shandong Medical Journal*, 2021,61(26):100-103.
- [6] Zhang Kai, Liu Tongshan. Discussion of the hot issues in the surgical treatment of obstructive left hemicolon cancer [J]. *Chinese medical journal*, 2021,56(10):1053-1057.
- [7] Li Dongyuan. *Treatise on Spleen and Stomach [M]*. Beijing: China Press of Traditional Chinese Medicine, 2007.
- [8] Wang Qian, Li Mengli, Xia Mengjiao, Zhu Jie, by Feng Ming, Yan Ran, Zheng Chuan. Exploring the pathophysiology of colorectal cancer based on health theory[J]. *Sichuan traditional Chinese*

*medicine*, 2019,37(03):26-28.

[9] Qiu Feng, Zheng Chuan, Zhu Jie, Yan Ran, by Feng Ming. *TCM pathophysiology of colorectal cancer based on "large intestine"*[J].*Guide to Traditional Chinese Medicine*,2018,24(01):68-70.

[10] He Xin, Zhang Muhan, Lu Yao, et al. *Protective modulation of mucins in the intestinal mucosal barrier Section mechanism*[J].*Medical review*,2017,23(01):1-5.

[11] Chen Dingzhang, Zhou Xiaodong, Zhu Xiaoxing, Li Cailing, Guo Yue. *Changes in and significance of blood flow mechanical parameters of mesenteric arteries in patients with ulcerative colitis*[J].*Heart magazine* 2003(05):452-453+456.

[12] Zhang Shengsheng, Shen Hong, Zheng Kai, Ye Bai. *Consensus opinion of TCM diagnosis and treatment of ulcerative colitis (2017)*[J].*The Chinese Journal of Traditional Chinese Medicine*, 2017, 32(08): 3585-3589.

[13] Zhong Huan, Li Mengli, by Feng Ming, Yan Ran, Jin Zhao, Zheng Chuan. *Analysis on the malignant transformation of ulcerative colitis by "countercurrent boat holding method"*[J].*Hunan Journal of Traditional Chinese Medicine*, 2018, 34(05):147-148.

[14] Yao Xiaodong. *Against the current boat method to find the source and match the connotation of wind medicine*[J]. *Journal of Shandong University of Traditional Chinese Medicine*,2004(04):262-263.