ISSN 2618-1584 Vol. 6, Issue 6: 62-67, DOI: 10.25236/FMSR.2024.060609

Analysis of Risk Factors Related to Colorectal Polyps

Yang Wu[1,2,a], Xuehui Ren[1,2,b], Linmei Sun[1,2,c,*]

[1]*Shaanxi University of Chinese Medicine, Xianyang, Shaanxi, China*
[2]*Affiliated Hospital of Xi'an Traditional Chinese Medicine Hospital, Shaanxi University of Traditional Chinese Medicine, Xi'an, Shaanxi, China*
[a]*1293685363@qq.com,* [b]*770072045@qq.com,* [c]*sunlinmei@126.com*
[*]*Corresponding author*

Abstract: *Colorectal polyps are protrusions of local intestinal mucosa that overgrow into the intestinal lumen. Most colorectal polyps have no specific manifestations and are usually found accidentally during endoscopy [1]. According to the nature of pathology, intestinal polyps can be divided into adenomatous and non-adenomatous. Among them, adenoma is considered to be the precancerous lesion of colorectal cancer, and more than 50% of colon cancer comes from adenoma canceration [2]. In recent years, with the change of lifestyle, morbidity and mortality of colorectal cancer presents a trend of getting younger over [3], a serious threat to people's physical and mental health, therefore understand the crucial polyps disease risk factors. Studies [4, 5] believe that the incidence of colorectal polyps is related to many factors such as bad living habits and intestinal flora. This paper reviews the analysis of risk factors related to the incidence of colorectal polyps by referring to relevant literatures at home and abroad, in order to improve the detection and screening of high-risk groups and provide reference for clinical research.*

Keywords: *Colorectal Polyps, Risk Factors, TCM*

1. Etiology and Pathogenesis of TCM

The word "polyp" the earliest recorded in ancient books of traditional Chinese medicine in huangdi neijing, the pivot water expansion ":" im mushroom? The cold qi is outside the intestine, and the qi is in conflict with the defense qi, and the qi is not prosperous. Because of the relationship, the abnormal qi is inside, the evil qi is the rise, and the polyps are born. In traditional Chinese medicine surgery textbooks, colorectal polyps are also known as polyposis hemorrhoids, hanging bile hemorrhoids, hanging bead hemorrhoids, cherry hemorrhoids, etc. [6]. According to the ministry of health issued the disease clinical diagnosis and treatment of traditional Chinese medicine terminology - part of description, can also be called intestinal polyp "intestinal tumor.

Colorectal polyposis is located in the intestine, which is closely related to the spleen, stomach, liver and kidney. (1) The main causes of colorectal polyps are improper diet and abnormal daily life. According to Tai Yin Yang Ming Lun (on Plain Questions), "Improper diet and irregular daily life will cause Yin to suffer from them. Yin by the five zang, into the five zang step full occlusion, under the supper, for a long time Intestinal Pi ". Diet does not cause the damage of the spleen and stomach, make wet and heat evil straight to the intestines and stomach, guide for polyps. (2) External pathogenic factors and emotional trauma are also one of the causes of colorectal polyps. For example: "It is because of the deficiency of evil, people also start from the skin. ... Stay but not go, pass TO GIVE UP in the stomach, in the stomach, the cardia to abdominal DISTENsion, more cold is the intestinal supper to release food, more hot is loose." Any exogenous pathogens, deficiency of vital qi, combined with modern, make transport department, blocked arteries and veins, delay time, cause intestinal disease. (3) Spleen deficiency and damp stagnation are the main pathogenesis of colonic polyps. Kang Jianyuan et al. [7] believed that the key point of the pathogenesis of this disease was "spleen deficiency and cold dampness". Cold dampness, dampness, and phlegm caused the disorder of intestinal qi, and the internal turbidity and qi and blood stasis caused the disease. (4) The main pathological factors of colorectal polyps are stasis, phlegm, stagnation and turbidity. Professor Yan Guangjun concluded that [8] the focus of the onset and carcinogenesis of intestinal polyps lies in the "pipi". Due to the dysfunction of spleen and stomach, deficiency of qi, and abnormal metabolism of body fluid, pathological products such as blood stasis, qi stagnation, and phlegm are produced, which accumulate in the abdomen and form polyps over time. Xiao Guyue [9] found that qi stagnation, blood stasis, dampness and heat, and

ISSN 2618-1584 Vol. 6, Issue 6: 62-67, DOI: 10.25236/FMSR.2024.060609

qi deficiency were the most important factors in polyps before canceration. (5) The incidence of colorectal polyps is also related to physical status. Chen et al. [10] studied "polyp-related constitution" and believed that polyps were closely related to phlegm dampness, qi deficiency, and dampness and heat in the biased constitution. They believed that the formation of intestinal polyps was based on spleen dysfunction and endogenous dampness and heat, internal arrest of phlegm, and qi and blood stasis, is shown in Table 1.

Table 1: TCM etiology and pathogenesis of colorectal polyps

Colorectal polyps disease of traditional Chinese medicine	Intestine is closely related to spleen, stomach, liver and kidney
TCM etiology of colorectal polyps	Diet not festival, daily life disorder, exogenous pathogens, modern internal injuries
TCM pathogenesis of colorectal polyps	Spleen deficiency and damp stagnation
Colorectal polyps pathological factors of traditional Chinese medicine	Blood stasis, phlegm, stagnation, turbidity

2. The Etiology and Pathogenesis of Western Medicine

2.1. Pathogenesis of Colorectal Polyps

According to the WHO classification, polyps can be divided into four types: adenomatous polyps, serrated polyps, inflammatory polyps and hamartomas [11]. At present, the mechanism of adenomatous polyps is still being explored due to the complex process involving a variety of genes. Among them, the more recognized pathogenesis is based on the Wnt/β-catenin, PTEN and BMP signaling pathways, and the corresponding target genes of each signaling pathway are mutated under various stimulation factors to interrupt the normal operation pathway. The abnormal proliferation and differentiation of colorectal cells and the disorder of intestinal function lead to the occurrence of intestinal polyps [12]. The 2019 WHO classification of tumors of the digestive system divides serrated polyps into five categories, These included hyperplastic polyp (HP), sessile serrated lesion (SSL), SSL with dysplasia (SSLD), and traditional serrated Adenoma, adenoma (TSA) and serrated - unclassified [13], more and more studies suggest that in addition to the adenomatous polyp, SSL and TSA also has certain malignant potential of precancerous lesions, SSL is unique molecular characteristics of typical CIMP and mutated BRAF mutation, and the TSA has greater heterogeneity of molecular spectroscopy, The risk of malignancy and the rate of progression to cancer are not known [14].

2.2. Risk Factors Related to Colorectal Polyps

2.2.1. Hp Infection

Hp is a class I carcinogen certified by the International Agency for Research on Cancer (IARC). The infection rate of HP in China is more than 50%. As for whether the occurrence of colorectal polyps is related to Hp infection, studies have shown that [15] : Long-term Hp infection can lead to decreased gastric acid secretion, which causes changes in intestinal flora. It can also cause up-regulation of gastrin gene expression in colorectal polyps, which induces proliferation of colonic mucosal cells and thus promotes the development of intestinal polyps. Hp infection may cause damage to the colorectal epithelium through the immune response stimulated by chronic inflammation mediated by inflammatory factors such as interleukin-8. Compared with patients without Hp infection, patients with Hp infection were 2.19 times more likely to develop colorectal polyps. WANG M et al. [15] concluded that the increase in Hp infection rate was positively proportional to the increase in the incidence of colonic polyps, the number of polyps and malignant tumors. Li Ruitong [16] studied 518 patients and concluded that HP infection rate was significantly higher in the group with polyp diameter ≥1.0cm than that in the group with polyp diameter < 1.0cm, and the size of adenomatous polyps was related to HP infection. Wang Qiaoyun et al. [17] have different opinions on this, and agree that Hp infection is an independent risk factor for colorectal polyps, but believe that Hp infection is not related to the number, size, location and pathological type of colorectal polyps. Yan Bo et al. [18] were in agreement with Wang Qiaoyun et al. Sun Ying [19] et al. found that the Hp infection rate of polyps in the straight, B and descending colon was significantly higher than that of the control group. And some English literature thought [20] : Hp infection increases the risk of proximal colon polyps and another study showed that [21] : Hp infection caused by the stomach secrete hormone can selective effect Yu Yuanduan colon, thereby increasing the risk of distal colon polyps. These differences are mainly caused

ISSN 2618-1584 Vol. 6, Issue 6: 62-67, DOI: 10.25236/FMSR.2024.060609

by different methods of histopathological evaluation. Chen Zhicao [22] et al. believed that there was no statistically significant difference in HP infection rate between the pedunculated group and the sessile group of polyps, while Li Ruitong [16] was in agreement with him. The classification of polyp pedunculates was based on morphological criteria, and there were differences in the interpretation of polyp morphology by different researchers. Yan Bo [18] and Kong Na [23] and Li Ruitong [16] believed that there was no obvious correlation between the pathological types of intestinal polyps and Hp infection. Pay ChengFeng [24] research analysis summary from the pathological types: Hp infection will only increase the tubular adenoma, tubular - a villous adenoma, low level of risk of intraepithelial neoplasia. In 2013, Sonnenberg A et al. [25] studied 156,000 cases and concluded that HP infection rate was higher in hyperplastic polyps, adenomatous polyps, especially advanced AP, villous adenoma or adenoma with high-grade dysplasia and adenocarcinoma. Meanwhile, the strength of association between HP and adenomatous polyps increased with the size and number of adenomas, but not with the site of AP occurrence. Zhi-tao Chen found [22] Hp infection with the Hp infection and the size of adenoma adenoma associated with the incidence of high-grade intraepithelial neoplasia statistically significant differences in change. According to the existing research, most scholars think [26] Hp infection are independent risk factors of colorectal polyps, but Hp colorectal polyps and pathological type of relationship is uncertain, to expand the sample size, uniform pathology testing related to whether the further study.

2.2.2. Demographic characteristics

The patient's gender and age are also important factors in the occurrence and development of colorectal polyps. Qin Ying et al. [27] found that male is a risk factor for colorectal adenomatous polyps, considering that male groups are more susceptible to the influence of more risk factors, such as smoking, drinking, eating red meat and other risk factors. Zhou Haiping et al. [28] showed that advanced age was one of the independent risk factors for the incidence of colorectal polyps. The risk of colorectal polyps increased by 2.68 times after the age of 40, and the risk increased by 1.80 times after the age of 70. Lu Hong Qilong [29] summed up that there were more male patients with colorectal polyps than female patients. The peak age of polyps was 41-60 years old. Yuanzhen Hao et al. [30] summarized worldwide studies that showed that the recurrence of colorectal polyps was related to the gender and age of the patients. Male, Asian age > 50 years old and Western age > 60 years old are risk factors for colorectal polyp recurrence, mainly due to the antagonistic effect of estrogen/progesterone on cytohormone receptors in female patients, which can reduce the recurrence rate of female colorectal polyps. Elderly patients are more likely to suffer from constipation or long-term exposure to other stimulating factors, increasing mechanical stimulation and causing chronic inflammation. Thus increasing the risk of colorectal polyps.

2.2.3. Eating habits

Under the extensive research of many scholars, smoking, drinking, red meat, low fiber and other dietary habits have been identified as risk factors for colorectal polyps [31]. Lv Yingying et al. [32] found that compared with non-smokers, the incidence of colorectal polyps in smokers increased by 30%. There is also a certain relationship between smoking time, smoking intensity and colorectal polyps. Smoking time of more than 20 years is related to distal polyps, polyp nature and size, and is closely related to serrated polyps and high-risk adenomas [33, 34], which is strongly related to the carcinogenic pathway of serrated polyps. Including CpG island methylation phenotype, DNA microsatellite instability and BRAF gene mutation [35]. Some studies have suggested [36] that modifiable environmental risk factors such as smoking and alcohol consumption are associated with polyps, and more closely with sessile serrated adenomas. The pathway of alcohol-induced polyps is not completely clear. It is considered that alcohol and its metabolite acetaldehyde induce DNA methylation to interfere with the absorption of potential anti-cancer nutrients such as folic acid and calcium, thereby increasing the incidence of polyps. According to relevant studies [33, 34], drinking is more closely related to traditional adenomas. Red meat and processed meat are recognized as carcinogens by the World Health Organization and are risk factors for colorectal tumors and polyps. The reason may be that N-nitroso compounds, heme iron and bile acids in meat have an effect on inflammation or cancer stem cells, which increases the risk of colorectal cancer [37]. There is a correlation between hyperplastic polyps and sessile serrated polyps [38, 39]. Liu Jing et al. [40] showed through multivariate regression analysis that eating meat >3 times/week and high-fat diet were independent risk factors affecting the incidence of colorectal polyps, while eating vegetables was a protective factor to reduce the incidence of colorectal polyps. Dietary fiber reduces the risk of colorectal polyps by increasing the amount of feces, diluting fecal carcinogens in the colon lumen, shortening the time of feces passing through the intestine, and increasing the diversity of intestinal microbiota [41]. However,

ISSN 2618-1584 Vol. 6, Issue 6: 62-67, DOI: 10.25236/FMSR.2024.060609

because of the wide range of dietary fiber, the results of population studies are different.

2.2.4. The intestinal flora

A number of studies have shown that gut microbiota is closely related to the occurrence of colorectal polyps. Wang Enyu found that compared with the healthy group, the distribution of intestinal flora in the colorectal polyps group was significantly different at the species, family and genus levels [42]. In clinical studies, patients with polyps generally have a high relative abundance of pathogenic bacteria (such as Fusobacterium, Bacteroides, and Parabacterium) and opportunistic pathogenic fungi (such as Candida and Aspergillus) [43], accompanied by a decrease in beneficial intestinal bacteria (such as Bifidobacterium, Lactobacillus, short-chain fatty acid-producing anerobacteria, Clostridium butyricum) [44]. Tom [45] analysis thought for uplift type and quantity for multiple polyps form, size of 1.5 cm, proximal colon or colon polyps in patients with intestinal dramatic decline in the number of lactobacillus and bifidobacterium e. coli number increases, adenomatous polyp patient bifidobacterium, intestinal lactobacillus quantity is not adenoma patients significantly decreased, The number of Escherichia coli in patients with colorectal polyps is significantly higher than that in patients with non-adenomatous polyps, suggesting that the changes of intestinal flora are related to the morphological characteristics and pathological types of colorectal polyps. In recent years, the search for prediction of polyps or bowel flora markers related research is becoming more and more and more significant change in the related samples for bacteria abundance of microbial bacteria and bacteria and lack of protective, medical certificate for early colorectal cancer progression [31]. A case-control study [42], colorectal polyps in patients with oral browns carbon dioxide addicted to fiber bacteria abundance than a significant rise in healthy patients, has certain diagnostic performance. Foreign studies have identified potential polyp classification biomarkers (Streptococcaceae, Lachnoclostridium, and Ralstonia) by metagenomic sequencing of fecal samples, emphasizing the importance of intestinal flora changes in the occurrence and progression of colorectal cancer. Meanwhile, it provides potential new biomarkers for the diagnosis of early colorectal cancer [46]. Another foreign study [47] found that: The functions of aminoacyl-trna biosynthesis, ribosome synthesis, mismatch repair and homologous recombination in the polyps group were significantly lower than those in the control group. Therefore, increasing the abundance of faecalibacterium is a potential research target for preventing the formation of colorectal polyps. This study lays a foundation for intestinal microecology as a diagnostic marker. At present, the technology of detecting intestinal flora has reached a high level, but there is no unified conclusion on the mechanism and biomarkers of intestinal flora and colorectal polyps/cancer progression. A large number of high-quality researches are still needed to finally achieve the purpose of clearly predicting the occurrence and development of diseases

3. Conclusion

At present, the incidence of colorectal polyps is increasing year by year, and because of its lack of clinical specific changes that can be easily found in the early stage, it is particularly important to identify its high risk factors. By reviewing the relevant literature at home and abroad, it is found that smoking, drinking, red meat, low-fiber diet, male, advanced age, and intestinal flora imbalance are high risk factors for colorectal polyps. People with high risk factors should undergo regular colonoscopy and adjust their living and eating habits to control the risk of colorectal polyps. At present, the pathogenesis of colorectal polyps at home and abroad is not clear, and various etiological factors affect each other, it is difficult to evaluate the mechanism of single factor, and more rigorous studies are needed to verify.

References

[1] Ye Qianyun, Liu Fengbin. Risk factors and methodology of colorectal polyps [J]. Chin J Traditional Chinese Medicine,2018,33(03):1100-1103.

[2] Cao Panxuan, Shen Yongzhou, Huang Yanqin, et al. Clinical characteristics and pathological types of 7408 cases of intestinal lesions detected by colorectal cancer screening [J]. Chin J Digestive Endoscopy, 2018, 35(09):630-633.

[3] Araghi M, Soerjomataram I, Bardot A, et al.Changes in colorectal cancer incidence in seven highincome countries:a population-based study[J]. Lancet Gastroenterology& Hepatology, 2019, 4(7):511-518.

[4] Lu Ying-Ying, ZHU Bing-xi. Establishment of scoring model for early screening of colorectal polyps in high-risk population [J]. Chinese Journal of Medical Research,2019,48(08):132-136.

[5] Yang Liping, Ma Zhenqi, Wang Xuehong, et al. Research progress on the relationship between

ISSN 2618-1584 Vol. 6, Issue 6: 62-67, DOI: 10.25236/FMSR.2024.060609

intestinal flora and colonic polyps [J]. Chin J Med, 2021, 57(02):139-141.
[6] Chen Hongfeng. Surgery of traditional Chinese medicine[J]. Shanghai: Shanghai Science and Technology Press, 2007:289.
[7] Kang Jianyuan, Huang Bin, Zhang Chunhong. Research progress of TCM treating colon polyps [J]. Journal of guangzhou university of Chinese medicine, 2020, 5 (11): 2270-2273. The DOI: 10.13359 / j.carol carroll nki GZXBTCM. 2020.11.040.
[8] Xu Dazhi, Xiang Caiqiong, Yan Guangjun, et al. YanGuangJun treated from "transformation of the new product" intestinal polyps [J]. Journal of henan traditional Chinese medicine, the lancet, 2023 (11): 1668-1671. The DOI: 10.16367 / j.i SSN. 1003-5028.2023.11.0323.
[9] Xiao Guyue. Clinical research on the distribution characteristics and influencing factors of traditional Chinese Medicine syndrome factors of colonic polyps cancerization [D]. Chengdu University of Traditional Chinese Medicine,2019.
[10] Chen Thushi, Hu Ling, Gong Lin, et al. Thoughts on the relationship between the occurrence of gastrointestinal polyps and the constitution and syndrome of traditional Chinese Medicine [J]. Chin J Traditional Chinese Medicine,2015,30(07):2425-2427.
[11] Nagtegaal I D, Odze R D, Klimstra D, et al. The 2019 WHO classification of tumours of the digestive system [J]. Histopathology, 2020, 76(2): 182-8.
[12] Wang Yiqing. Chinese medicine compound acupoint sticking intervention of spleen wet type clip stasis colonic adenoma polyp recurrence of exploratory research [D]. Beijing university of Chinese medicine, 2020. DOI: 10.26973 /, dc nki. Gbjzu. 2019.000070.
[13] Nagtegaal ID,Odze RD,Klimstra D,et al.The 2019 WHO classification of tumours of the digestive 2020,76 system [J]. Journal of Histopathology, (2) : 182-188. The DOI: 10.1111 / ihs. 13975.
[14] Yang Kai-hui, Ma Rui-jun, WANG Rong. Research progress on the pathogenesis of colorectal serrated polyps and the role of microrna [J]. Journal of Complex Diseases,2024,23(01):118-121+125.
[15] Wang M, Kong W J, Zhang J Z, et al. Association of Helicobacter pylori infection with colorectal polyps and malignancy in China [J]. World J Gastrointest Oncol, 2020, 12(5): 582-91.
[16] Li Ruitong. Correlation between Helicobacter pylori infection and different pathological types of colorectal polyps and colorectal cancer [D]. Hebei North University,2021.
[17] Wang Qiaoyun, Zhang Lijiu, Song Shasha. Characteristics of colorectal polyps and colorectal cancer and their correlation with Helicobacter pylori infection [J]. Journal of gastroenterology and liver disease, 2021, 30 (4) : 405-410. The DOI: 10.3969 / j.i SSN. 1006-5709.2021.04.008.
[18] Yan Bo, Yang Shanfeng, Li Xiang. Colon polyps and the relativity analysis of helicobacter pylori infection [J]. Journal of bengbu medical college, 2019, 44 (11) : 1511-1512. The DOI: 10.13898 / j.carol carroll nki. Issn 1000-2200.2019.11.021.
[19] Sun Ying, Li Nuo, Wen Yanhui et al. Helicobacter pylori infection and colon polyps correlation studies [J]. China laboratory diagnostics, 2017, 21 (4) : 573-575.
[20] Bernstein H, Bernstein C, Payne C M, et al. Bile acids as carcinogens in human gastrointestinal cancers [J]. Mutat Res, 2005, 589(1): 47-65.
[21] Houli N, Loh S W, Giraud A S, et al. Mitogenic effects of both amidated and glycine-extended gastrin-releasing peptide in defunctioned and azoxymethane-treated rat colon in vivo [J]. Regul Pept, 2006, 134(1): 9-16.
[22] zhi-tao Chen, wang ping, sheng-bin sun, etc. Correlation of risk factors of colorectal adenoma and Helicobacter pylori infection with adenoma characteristics and serum gastrin levels [J]. Chin J General Med, 2017,20(02):154-158.
[23] Gong Na, WANG Jiangang, Yin Fang et al. Study on the relationship between Helicobacter pylori infection and colorectal polyps and colorectal cancer [J]. Medical Information,2021,34(11):35-39.
[24] Fu Chengfeng. Relationship between Helicobacter pylori and the occurrence, recurrence and canceration of colorectal polyps [D]. Jinan University,2018.
[25] Sonnenberg A, Genta R. Helicobacter pylori is a risk factor for colonic neoplasms [J]. The American journal of gastroenterology, 2013108 (2) : 208-215.
[26] Rao Y H, Luo Z Y. Helicobacter pylori infection: an independent risk factor for colorectal polyps [J]. Journal of Gastroenterology and Hepatology,2018,27(10):1139-1143.
[27] Qin Ying ShenXingJie, lury, etc. Risk factors analysis and prediction model construction of colorectal adenomatous polyps [J]. Shandong Medicine, 2021,62(21):58-61.
[28] Zhou Haiping, Shen Zhonglei, Zhao Jianpei, Zhou Zhendong, Xu Yidong. Colorectal adenomas distribution characteristics and risk factors analysis [J]. Chinese gastrointestinal surg, 2018, 21 (6): 678-684. The DOI: 10.3760 / cma. J.i SSN. 1671-0274.2018.06.011.
[29] Lu Hong, Qi Li, Chen Hui, Huang Jiegang. Structure and diversity of gut microbiota in patients with negative colonoscopy and colorectal polyps based on age [J]. Journal of Yangtze university (natural science edition), 2019 (4): 119-124. The DOI: 10.16772 / j.carol carroll nki.

ISSN 2618-1584 Vol. 6, Issue 6: 62-67, DOI: 10.25236/FMSR.2024.060609

1673-1409.2019.04.023.
[30] HAO Y, WANG Y, QI M, et al. Risk Factors for Recurrent Colorectal Polyps [J]. Gut Liver, 2020, 14(4): 399-411.
[31] Long Sidan, Sun Xizhen, Zhao Dongyan, etc. Research progress on the etiology of intestinal polyps [J]. Chinese Medicine Review,2020,26(14):2728-2732.
[32] Lu Ying-Ying, ZHU Bing-xi. Establishment of scoring model for early screening of colorectal polyps in high-risk population [J]. Chinese Journal of Medical Research,2019,48(08):132-136.
[33] Xu Jue,Chi Peihan,Qin Kang et al. Association between lifestyle and dietary preference factors and conventional adenomas and serrated polyps.[J] .Front Nutr, 2023, 10: 1269629.
[34] Fliss-Isakov N, Zelber-Sagi S, Webb M, et al. Smoking Habits are Strongly Associated With Colorectal Polyps in a A Population-based Case-control Study[J]. J Clin Gastroenterol, 2018, 52(9): 805-811.
[35] Anderson J C, Calderwood A H, Christensen B C,et al. Smoking and Other Risk Factors in Individuals With Synchronous Conventional High-Risk Adenomas and Clinically Significant Serrated Polyps[J]. Am J Gastroenterol,2018,113(12):1828-1835.
[36] Wei Jie et al. Association of distinct microbial signatures with premalignant colorectal adenomas[J]. Cell host & microbe 2023, 31(5): 827-838
[37] World Cancer Research Fund,American Institute for Cancer Research.Food,nutrition,physical activity,and the prevention of cancer:A global perspective[R]. Washington DC:American Institute for Cancer Research,2018:251-253.
[38] Fliss-Isakov Naomi,Kariv Revital,Webb Muriel et al. Mediterranean dietary components are inversely associated with advanced colorectal polyps: A case-control study.[J].World J Gastroenterol, 2018, 24: 2617-2627.
[39] Mosley Dominique,Su Timothy,Murff Harvey J et al. Meat intake, meat cooking methods, and meat-derived mutagen exposure and risk of sessile serrated lesions.[J] .Am J Clin Nutr, 2020, 111: 1244-1251.
[40] Liu Jing, Zhang Jiangchun, Yang Jian, et al. Patients with colorectal polyps diet structure and the structure of intestinal flora analysis [J]. Journal of central south medical science magazine, 2023 ploidy (5): 767-770. The DOI: 10.15972 / j.carol carroll nki. 43-1509 / r. 2023.05.037.
[41] Zhu Zhixin,Guan Xifei,Liu Nawen et al. Association between dietary factors and colorectal serrated polyps: a systematic review and meta-analysis.[J] .Front Nutr, 2023, 10: 1187539.
[42] Wang Enyu. Colorectal polyps in patients with oral cavity and the composition of intestinal flora analysis [D]. Hebei university of engineering, 2023. The DOI: 10.27104 /, dc nki. Ghbjy. 2022.000350.
[43] Guo Lei, Zhu Haihang, Zhou Buliang. The relationship between colorectal cancer and bile acid metabolism and intestinal flora distribution [J]. J Practical Clinical Med,2019,23(02):95-96+99.
[44] Gong Yujie, Sun Jingping. Relationship between colorectal polyps and changes of intestinal flora [J]. Journal of Clinical Gastroenterology,2020,32(01):52-55.
[45] Xu Tao, Tong Jianjun, Ma Li, et al. Relationship between morphology and clinicopathological characteristics of colonic polyps under colonoscopy and changes in intestinal flora [J]. Chinese journal of microecology, 2022 (11): 1320-1323. The DOI: 10.13381 / j.carol carroll nki. CJM. 202211013.
[46] Grion Beatriz, Alessandra Rudi, et al. Identification of taxonomic changes in the fecal bacteriome associated with colorectal polyps and cancer: potential biomarkers for early diagnosis[J]. Frontiers in microbiology, 2024, 14(12): 924-926. Doi: 10.3389 / fmicb. 2023.1292490
[47] Badal V D, Vaccariello E D, Murray E R. The gut microbiome, aging, and longevity: a systematic Review [J]. Journal of Nutrients, 2020, 12 (12): 3759. DOI: 10.3390 / nu12123759.