The Effect of Laparoscopic Appendicitis Combined with Moroxynidazole on the Efficacy of Suppurative or Gangrenous Appendicitis and the Logistic Analysis of the Length of Stay

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Abstract: Objective: To study the effect of laparoscopic appendicitis combined with moroxynidazole on the efficacy of suppurative or gangrenous appendicitis and the logistic analysis of the effect on the length of stay. Methods: From June 2018 to April 2020, 120 patients with appendicitis treated in our hospital were randomly divided into two groups: the observation group and the control group, with 60 patients in each group. Laparoscopic appendectomy was performed in both groups. After the operation, the observation group and the control group were treated with malenidazole and ornidazole respectively. The treatment time was 1 Zhou. To compare the therapeutic effect, bacteriological evaluation, perioperative indexes and adverse reactions between the two groups, and to study the factors affecting the length of stay. Results: Compared with the control group, the clinical recovery rate of patients in the observation group was significantly higher, and there was no significant difference between the two groups in the number of anaerobic bacteria before treatment ($P > 0.05$).After treatment, the clearance number and clearance rate of patients in the observation group were significantly higher than those in the control group, and there was no significant difference between the two groups in the amount of bleeding during the bacteriostatic operation ($P>0.05$), The length of stay in the observation group was significantly lower than that in the control group ($P < 0.05$).There was no significant difference between the two groups in terms of transaminase elevation, platelet elevation, nausea, vomiting and ECG abnormalities during the treatment period ($P > 0.05$); male patients, age over 50 years old, appendix perforation, periappendiceal abscess, ornidazole use patients The number of days in hospital was significantly increased, and male patients, patients over 50 years old, appendiceal perforation, periappendiceal abscess, ornidazole use were independent risk factors for the increase of the number of days in hospital.Conclusion: Laparoscopic appendicitis combined with moroxynidazole has a significant effect on the treatment of suppurative or gangrenous appendicitis.At the same time, male patients, patients over 50 years old, appendiceal perforation, periappendiceal abscess and ornidazole use are all independent risk factors for prolonging the length of stay.

1. Introduction

Septic appendicitis and gangrene appendicitis are clinically common acute abdomen, and in clinical treatment, anaerobes is one of the important reasons for the disease progression of suppurative appendicitis and gangrene appendicitis[1], As the disease progresses, it is possible to cause the patient's pelvic inflammation and peritonitis[2]At present, the most effective antibiotics for the treatment of anaerobic bacteria are metronidazole and olonidazole, but with the significant increase in the unreasonable clinical application rate of antibiotics, the bacterial resistance of pyogenic appendicitis and gangrene appendicitis shows a significant upward trend, linnidazole is a new antibiotic for the clinical treatment of anaerobic bacteria infection, its inhibition effect is significantly stronger than metronidazole and olonidazole[3]. The timely postoperative treatment of mlinnidazole in patients has positive significance for the treatment of the disease[4]. This study provides a scientific basis for clinical treatment through the effect of laparoscopic appendicitis

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resection (LA) combined with malinidazole on the efficacy of patients with purulent or gangrene appendicitis and affecting the number of days in hospital.

2. Object and Method

2.1 Basic Document

A total of 120 appendicitis patients treated in our hospital from June 2018 to April 2020 were 66 male and 54 female, with mean age of (33.69 ± 1.33) and mean body mass index of (24.56 ± 2.69) kg / cm2Among them, 90 patients with suppurative appendicitis, 30 gangrene appendicitis patients, according to the principle of randomization, the above patients randomly divided into two groups, respectively observation and control, 60 patients in each group, gender, age, body mass index and appendicitis disease type (P> 0.05), detailed in Table 1. All patients signed informed consent and approved by the hospital ethics committee.

Inclusion criteria: ① all met the diagnostic criteria of appendicitis[5]; ② patients disease diagnosis is sepsis and gangrene appendicitis; exclusion criteria: ① patients allergic to this study drug; ② used antibiotics within 48 hours before this study; ③ condition requires combined treatment with other antibiotics; ④ treatment cannot be evaluated patients; ⑤ patients liver function index higher than normal patients; ⑥ patients with abnormal cardiac and renal function; ⑦ has other diseases taking medication, affect the effect of this study; ⑧ patients during pregnancy or lactation.

Table 1 Comparison of Basic Patient Data between the Two Patient Groups

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group	Sex (male / female)	Disease type (pypus / gangrene)	Age (age)	Body mass index (kg / cm^2)
Observation group (n=60)	34/26	44/16	33.58±1.45	24.45±2.03
Control group (n=60)	32/28	46/14	33.80±1.59	24.67±2.19
□ ^{2}/t	0.132	0.182	0.792	0.571
p	0.714	0.673	0.430	0.569

2.2 Research Technique

Both groups took laparoscopic appendicitis resection, after surgery, the observation group took linnidazole (Jiangsu Hausen, production batch number: 20190512; 500 m 500mg / times, 2 / d, intravenous infusion), control group patients took olnizoll (Shanxi Baode Pharmaceutical Co., Ltd., production batch number: 20181229,500mg / times, 2 / d, intravenous infusion) for 1 week.

Laparoscopic appendectomy: after general anesthesia, CO2 was used to control artificial abdominal pressure at 10-13mmHg, 3.0cm on the outer edge of the left side of the navel, double ligation at the root of the appendix, purse suture using the 3-0 absorption line, fully rinse the abdominal cavity and place the drainage tube.

2.3 Observing Indicators

①Comparison of the clinical effect between the two groups. Evaluation criteria of treatment effect[6]: After treatment, the body temperature drops to normal, normal leukocytes and lymphocytes are normal, physical examination, no significant tenderness in the left lower abdomen and block, clinical recovery; the above evaluation criteria are abnormal, may be cured with other targeted antibiotics, is clinically invalid.

②Bacteriological evaluation of patients in both groups. Bacteria clearance was compared between the two groups. Bacterial clearly refers to the ratio of the number of bacteria after the number of bacteria before the drug[7].

③ Comparison of perioperative indicators between the two groups. The surgical time, intraoperative bleeding amount and hospital stay time were compared between the two groups.

④Comparison of adverse reactions between the two groups. Higher transaminase, platelet elevation, nausea, vomiting and ECG abnormalities were compared between the two groups.

⑤Univariate analysis of different days of hospital stay. The days of hospitalization were compared between different ages, appendicular perforation, periappendicular abscess, comorbidities, and antibiotic application.

⑥Multivariate analysis affecting the number of hospital stay. logistics multivariate analysis was used to influence the age of hospitalization, the appendix perforation, the periappendicular abscess and the antibiotic application.

2.4 Statistical Methods

All data were analyzed using SPSS19.0 statistical software, measures were represented by mean ± standard deviation, t-test for comparison between groups, chi-square test for measurement data, and P <0.05 was considered statistically significant.

3. Dear Fruit

3.1 Comparison of the Clinical Effects between the Two Patient Groups

The clinical recovery rate of the observed group was significantly higher compared to the control group (P <0.05), as detailed in Table 2.

Table 2 Comparison of The Clinical Effects between the Two Patient Groups

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group	Clinical invalid	clinical recovery
Observation group (n=60)	3(5.00)	57(95.00%)
Control group (n=60)	10(16.67%)	50(83.33%)
□ 2	4.231	
p	0.040	

3.2 Bacteriological Evaluation of Patients in Both Groups

No difference between the number of anaerobic bacteria in the two groups (P> 0.05). After treatment, the number of clearance and clearance in the observed group was significantly higher than in the control group (P <0.05), as detailed in Table 3.

Table 3 Bacteriological Evaluation Of the Patients in Both Groups

Table 3 Bacteriological Evaluation Of Two Groups of Patients

group	Number of anaerobic bacteria before treatment	Number of cleanup after treatment	clearance
Observation group (n=60)	59(98.33%)	58(96.67%)	98.30%
Control group (n=60)	55(91.67%)	50(83.33%)	90.91%
□ 2	1.581	5.931	
p	0.289	0.015	

3.3 Comparison of Perioperative Indicators between the Two Groups

The difference between the intraoperative bleeding in the two groups (P> 0.05), and the observation group was significantly lower than the control group (P <0.05), as detailed in Table 4.

Table 4 Comparison of Perioperative Indicators between the Two Patient Groups

Table 4 Comparison of Perioperative Indexes between the Two Groups

group	Operation time (min)	Intraoperative bleeding volume (mL)	length of stay (d)
Observation group (n=60)	60.77±7.06	45.58±2.36	6.66±1.69

Control group (n=60)	62.99±7.09	44.80±2.45	8.46±1.77
t	1.719	1.776	5.567
p	0.088	0.078	0.000

3.4 Comparison of Adverse Reactions

No difference between elevated transaminase, platelet elevation, nausea, vomiting and ECG abnormalities during treatment between the two groups (P> 0.05), as detailed in Table 5.

Table 5 Comparison of The Adverse Reactions between the Two Patient Groups

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group	The transaminase is elevated	Platelet rise	N and V	electrocardiographic abnormality
Observation group (n=60)	2(3.33%)	1(1.67%)	3(5.00%)	1(1.67%)
Control group (n=60)	3(5.00%)	3(5.00%)	4(6.67%)	2(3.33%)
□ ^{2}	0.212	1.032	0.152	0.342
p	0.648	0.309	0.697	0.559

3.5 Univariate Analysis of Different Days of Hospital Stay

Statistical differences between different ages, appendix perforation, days of periappendicular abscess, comorbidities and antibiotic application (P <0.05), men, over 50, appendix perforation, periappendicular abscess, and olnizole, as detailed in Table 6.

Table 6 Univariate Analysis Of the Different Days of Hospital Stay

Table 6 Single Factor Analysis of Different Hospitalization Days

metric		length of stay (d)	T	*P*
sex	man (n=66)	9.02±2.03	8.470	0.000
	woman (n=54)	5.78±2.15		
age	> 50 years old (n=11)	8.91±2.09	2.314	0.022
	50 (n=109)	7.42±2.03		
appendiceal perforation	yes (n=25)	8.98±2.15	3.490	0.001
	deny (n=95)	7.18±2.33		
periappendiceal abscess	yes (n=36)	8.88±3.06	3.415	0.001
	deny (n=84)	6.99±2.65		
Antibiotic use status	Linlinidazole (n=60)	6.66±1.69	5.567	0.000
	Ontronzole (n=60)	8.46±1.77		

3.6 Multivariate Analysis Affecting the Number of Hospital Stay Days.

Multivariate analysis of male patients, age over 50 years, appendix perforation, periappendicular abscess, and olonidzole use were independent risk factors for the increased number of hospitalization, as detailed in Table 7.

Table 7 Multivariate Analysis Of the Affected Hospital Days

Table 7 Multi Factor Analysis of the Influence on the Length of Stay in Hospital

factor	β	S.E.	Wald	P	OR	95%CI
sex	1.018	2.361	1.322	0.001	1.019	0.899-1.926
age	1.062	3.269	1.333	0.002	1.632	1.331-2.320
appendiceal perforation	0.369	4.139	1.691	0.000	1.089	0.632-2.065
periappendiceal abscess	1.02	2.36	1.32	0.00	1.02	0.905-1.935
Antibiotic use	1.06	3.27	1.33	0.00	1.63	1.33-2.323

4. Conclsion

Anaerobic bacteria are clinically common pathogens in patients with suppurative appendicitis and in patients with gangrene appendicitis[8], At present, the treatment of pyogenic appendicitis and gangrene appendicitis mainly uses nitroimidazole drugs, metronidazole and olonidazole are the more common clinical treatment drugs[9], However, clinical drug treatment has found that with the continuous expansion of the clinical use scope of metronidazole and orontronidazole, the drug resistance of patients has increased sharply. Therefore, in clinical treatment, the adjustment of timely and effective treatment drugs is of great significance for the improvement of the treatment effect of patients[10].

In this study, by analyzing the treatment effect and the treatment of bacteria, the treatment effect and bacterial clearance of the patients were significantly higher than the control group. The analysis believes that this study used malinidazole is a new nitromidazole, after the application of linnidazole, linnidazole will rapidly in the microbial cells of anaerobic bacteria, In the anaerobic state, the body is in a low oxidation effect, its redox potential is in a low potential, through the efficiency of nitrotransport protein effectively reduced, microorganisms further synthesize ammonia with cytotoxins, further inhibit microbial DNA synthesis, and effectively degrade the formed DNA duplex structure, further inhibit DNA synthesis, further block replication, and promote microbial killing. Tang Yun et al In contrast to the application of linnidzole and olonidazole after appendectomy, the treatment effect was significantly increased, which is mutually confirmed with this study.

In addition, by comparing the adverse reactions of the two groups of patients, the difference between the two groups, the analysis believes that after the application of nitromidazole drugs, drugs in the process of metabolism, the patient's digestive tract and blood system is greater, in the metabolic effect of the drug, the body's glucuronic acid and sulfuric acid binding ability significantly improved, and in this process, mainly rely on UGT1A9 mediated, For patients with mild and moderate liver function abnormalities, well tolerated but not for severe liver function abnormalities, so at the initial design of this study, patients with abnormal liver function were excluded.

at the same time, In a univariate, as well as multivariate analysis that affected patient length of stay, Male patients, patients over 50 years old, an appendix perforation, periappendix abscess, and olonidzole use were all independent risk factors for an increased number of hospital stay, The analysis concluded that the, With increasing age, The patient's immune ability and the aging of the body organs were remarkable, Although a laparoscopic procedure was performed in this study, But the damage to the body still exists, And as you age, Patients had significantly decreased wound healing as well as hourly clinical symptoms, at the same time, Male patients due to the specificity of hormone levels as well as the anatomical location, at the same time, The particularity of the psychological characteristics, It may also result in a relative extension of the patient's hospital stay. Appendicular perforation and periappendix abscess can cause different degrees of diffusion of bacteria in the surrounding tissues after surgery, with a negative impact on the patient's prognosis.

In conclusion, LA combined with malinidazole medication had a significant effect on purulent or gangraous appendicitis, while male patients, patients over 50 years old, appendix perforation, periappendicular abscess, and olonidazole use were all independent risk factors for the extension of hospital days.

References

[1] Huang Chunjun.Effect of two antimicrobial agents after acute appendicitis [J].Chinese Prescription Drugs, vol.15, no.2, pp.53-54, 2017. DOI:10.3969/j.issn.1671-945X.2017.02.034.

[2] Hu Cuncun, Zhao Xianming, Lei Xinyun.Evaluation effect of Alvarado score combined with TCM syndrome type on acute pathological typing of appendicitis [J].Journal of Guangzhou University of Traditional Chinese Medicine, vol.37, no.1, pp.12-18, 2020. DOI:10.13359/j.cnki.gzxbtcm.2020.01.003.

[3] Feng Wei, Zhao Xufeng, Cui Huarui.Progress in the application of hematological indicators in the diagnosis of complicated appendicitis in children [J].Shandong Pharma, vol.60, no.3, pp.105-109, 2020. DOI:10.3969/j.issn.1002-266X.2020.03.029.

[4] Dong Li. Undescending testis with seminoma [J].Journal of Practical Radiology, vol.36, no.2, pp.335-336, 2020. DOI:10.3969/j.issn.1002-1671.2020.02.044.

[5] Chen Qi, Zhou Wei, Huang Hua, et al. Experience of laparoscopic technique in the treatment of cohesive intestinal obstruction in children [J].Chinese Journal of Minimally invasive Surgery, vol.20, no.1, pp.85-87, 2020. DOI:10.3969/j.issn.1009-6604.2020.01.022.

[6] Li Chen, Ji Jing, Yang Jingyi, et al. Analysis of 38 cases of pregnancy combined with acute appendicitis [J].Progress in Modern Obstetrics and Gynecology, vol.29, no.3, pp.208-210, 2020. DOI:10.13283/j.cnki.xdfckjz.2020.03.032.

[7] Ren A Ke, Zhou Xiaoping, Han Mingfeng, et al. Surgical process infection protection in a COVID-19 patient with COVID-19 complicated with appendicitis [J].Chinese Journal of Disinfection, vol.37, no.3, pp.201-203, 2020. DOI:10.11726/j.issn.1001-7658.2020.03.015.

[8] Yu Yujun, He Yu, Wang Chen, et al. Clinical characteristics and surgical efficacy analysis of leukemia patients complicated with acute appendicitis [J].Chinese Journal of General Surgery, vol.35, no.1, pp.69-70, 2020. DOI:10.3760/cma.j.issn.1007-631X.2020.01.021.

[9] Zhao Guodong, Chen Wake, Zhang Wei, et al. One case of the giant peritoneal free body [J].Chinese Journal of General Surgery,vol.35, no.1, pp.80, 2020. DOI:10.3760/cma.j.issn.1007-631X.2020.01.027.

[10] Akinori Sekioka, Koji Fukumoto, Toshiaki Takahashi, et al. Is a nasogastric tube necessary after transumbilical laparoscopic-assisted appendectomy in children with perforated appendicitis?[J].The World Journal of Pediatrics (English edition), vol.15, no.6, pp.615-619, 2019.