13

A 9-Year Retrospective Study of Hospitalized IBD Patients in Shanghai Rui Jin Hospital

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1. Introduction

Inflammatory bowel disease (IBD), comprising of Crohn's disease (CD) and ulcerative colitis (UC), is a kind of chronic relapsing disorder of unknown etiology, which is characterized clinically of abdominal pain, diarrhea, weight loss, fever, as well as endoscopic, radiologic, histopathologic findings and biochemical changes (e.g. perinuclear anti-neutrophil cytoplasm antibody (p-ANCA), anti-Saccharomyces cerevisiae antibody (ASCA) and IBD-specific p-ANCA markers) (Veluswamy et al., 2010).

IBDs have been shown to be involved with potential factors such as genetic, immunologic, bacterial, and environmental elements; the relative strength of these factors and the importance of their interplay remain largely unknown (Edwards et al., 2008). Differences in incidence rates across age, time, and geographic areas suggest that environmental factors are involved in IBD, while only cigarette smoking and appendectomy have consistently been identified as risk factors (Colombel et al., 2007). Familial aggregation of IBD showed by an epidemiological study first suggested that genetic factors might play an important role in the pathogenesis of IBD. In 2001, the first CD susceptibility gene, NOD2/CARD15 on chromosome 16, was characterized. The gene identification should help us to understand the complex interaction between the environment and the intestinal immune system.

The previous studies of IBD led to a complex overall impression of the disease, with some described patterns in disease prevalence. IBD was considered to be more frequent in the developed countries especially Northern Europe and the United States, usually of colder climates with increased incidence as distance from the equator increases. But now, IBD is increasingly reported in non-classical populations and in developing regions such as Asia, the Mid-East and Africa. More recent data showed significantly higher prevalence in Asians and time trend studies described an increasing trend in the incidence of UC and a similar but lower rise in CD (Goh & Xiao, 2009).

The epidemiological changes that are taking place mirror the experience of Western countries 50 years ago. And the changes seem to occur in parallel with the rapid socioeconomic developments in Asia. It appears that certain racial groups among Asians who are more susceptible to IBD and who will demonstrate a higher frequency of IBD when exposed to putative environment.

In recent years, with the improvement of living standard, the global incidence and prevalence are increasing year by year, which has seriously affected quality of life all over the world.

Because IBDs are chronic, life-long immunologic disorders that frequently require hospitalization or surgery. Such hospitalizations account for a significant portion of the estimated USD 6 billion in healthcare costs annually for IBD in the USA (Cappelman et al., 2008).
With regards to the treatments of IBD, it mainly focuses on two aims, one is to induct the ease of acute outbreak; and another is to maintain the alleviation (Domènech, 2006). The traditional drugs used for IBD mainly include 5-aminosalicylic acid, glucocorticoid, and immune inhibitors. In recent years, with the deeper understandings of IBD immunity mechanism, more biological agents have been introduced in the treatment and they have brought new dawn for IBD patients. The advantages of new biological agents in the treatment of IBD spark the clinical debate between the traditional Set-Up way and the new Set-Down strategy (Baert et al., 2007).
Clinically apparent malnutrition is more frequent among IBD admissions than those of non-IBD admissions. Its association with greater mortality and resource utilization may reflect more severe underlying disease that may lead to both malnutrition and worse outcomes. Nevertheless, diagnosable malnutrition may serve as a clinical marker of poor IBD prognosis in hospitalized patients (Nguyen et al., 2008). Therefore, nutrition support for IBD patients plays an important role in the treatment of IBD (Cao et al., 2005). Many previous studies have focused on different aspects of nutrition support, such as nutritional immunology, nutrition pharmacology and so on. The results of the current meta-analysis and multicenter randomized controlled clinical studies have lead to the conclusions that nutrition support especially the enteral nutrition support may induce illness ease, promote mucosal healings, and help maintaining the long-term stability of the disease.
Numerous studies from Europe and North America have provided a wealth of information regarding the epidemiological and clinical characteristics of IBDs in Caucasians. While large clinical material of IBD in China is still limited. The aim of this study is to systematically provide a relatively intact image of IBD patients in our hospital during the past 9 years, which may also be a valuable reference of the situation in China. The reason why we choosing this period of time is because April 2003 was the start of clinical application of double balloon enteroscopy (DBE) in our hospital, and then was also the start when the diagnostic yield of Crohn's Disease in our hospital significantly increased.

2. Patients and methods

2.1 Study population and data collection

The data source of this study was from Shanghai Rui Jin Hospital another from May 2002 to December 2010. It covered all hospitalized IBD patients during a period of 9 years from department of gastroenterology, department of surgery and department of pediatrics. The diagnosis of IBD adhered to the criteria of Lennard-Jones (Lennard-Jones, 1989). Rui Jin Hospital is a tertiary level and first-class public hospital, it serves a well-defined catchment population in Shanghai. Over 96% of the medical care is provided by the public hospital system in this district. About 30% of the hospitalized patients were from the nearby provinces and all over China.
The total hospitalization number enrolled in this retrospective study was 769.The following data were collected and analyzed among the patients: the demographic characteristics (mainly included age and gender), the duration of the disease at diagnosis, the inspection methods used for diagnosis, the location of the lesions involved, the lab data of the patients, and the treatments followed by the convinced diagnosis (medical treatments and/or surgical treatments).

The DBE devices used in the study were manufactured by Fujinon (EN 450P5/20, EN 450T5/20; Fujinon Inc, Saitama, Japan).

2.2 Statistical analysis

We adopt the hierarchical analysis method. All the IBD in-patients during the last 9 years were divided into 3 groups according to the time when they were hospitalized: May 2002 to December 2004 as Group 1, January 2005 to December 2007 as Group 2, January 2008 to December 2010 as Group 3. The study made a longitudinal comparison among the 3 groups, and also made a horizontal comparison between the CD group and the UC group according to the statistical results.

Data analysis was performed using SPSS 17.0 statistical software package (SPSS Inc., Chicago, USA). Continuous variables were summarized using means and standard deviations, while categorical variables were expressed as proportions. Variables were compared with the chi-square test. P value <0.05 was judged of statistical difference, while <0.01 was judged of significantly statistical difference.

3. Results

3.1 Demographic characteristics

Overall, a total number of 769 hospitalized IBD patients were included in this study. Among them, 536 patients suffered CD (69.7%) and 233 patients suffered UC (30.3%), the percentage of CD was significantly higher than that of UC. Mean ages at diagnosis were 36.8±15.4 years old (range 2-88 years) in CD and 44.9±17.3 years old (range 3-83 years) in UC patients. The gender ratio (male/female) was 1.60 in CD and 1.28 in UC, there existed no statistical difference between these two groups (p>0.05). The mean duration of CD at first hospitalization was 5.6±4.7 years (1-70 years), of UC was 5.8±3.8 years (1-25 years).

Group	**CD** (n=536)		**UC** (n=233)		**Sum.**
	Num. (male: female)	Mean age	Num. (male: female)	Mean age	
Group 1 (2002-2004)	76 (46:30)	42.6±15.2	69 (35:34)	50.0±16.4	145
Group 2 (2005-2007)	186 (119:67)	39.5±15.1	71 (42:29)	46.9±14.7	257
Group 3 (2008-2010)	274 (166:108)	33.4±14.9	93 (54:39)	39.5±18.5	367
Total	536 (331:205)	36.8±15.4	233 (131:102)	44.9±17.3	769

Table 1. Comparison of demographic characteristics among 3 groups

For each stratified period, the results were showed in Table 1. As we could see, the diagnosed numbers of both CD and UC increased with the year, while the ages at diagnosis were decreased. Number of male patients was more than that of female patients in both diseases in each group.

3.2 Diagnostic modalities

With the development and clinical applications of novel techniques for small bowel inspection, such as double balloon enteroscopy (DBE), multisliced CT enterography (MSCTE) and capsule endoscopy (CE), the diagnostic yield of IBD significantly increased in our hospital during the past decade.

Group	MSCTE		Enteroscopy		CE	
	CD (%)	UC (%)	CD (%)	UC (%)	CD (%)	UC (%)
1	4/76 (5.3)	7/69 (10.1)	74/76 (97.4)	66/69 (95.7)	7/76 (9.2)	0/69
2	67/186 (36.1)	6/71 (8.5)	168/186 (90.3)	65/71 (91.5)	22/186 (11.8)	1/71 (1.4)
3	210/274 (76.6)	23/93 (24.7)	266/274 (97.1)	88/93 (94.6)	35/274 (12.8)	2/93 (2.2)

Table 2. Panorama of diagnostic modalities applied in IBD during 2002-2010

The panorama of diagnostic modalities applications was summarized in Table 2. Enteroscopy (in the current study, both colonoscopy and DBE were included) was still the major diagnostic modality in IBD identification. Application of MSCTE became quite common both in CD and UC during year of 2008-2010 (Group 3), the total percentages of patients accepted MSCTE examines raised up to 63.5% (233/367) in all IBDs. Meanwhile, it was revealed that the use of CE was still limited in our hospital.

And we also analyzed the number of patient undertaken more than one single inspection: double inspections and all 3 inspections in different time groups (Tab. 3). In our hospital, the costs of each inspection method were: RMB 300 for colonoscopy, RMB 2,600 for antegrade/retrograde DBE, RMB 1,100 for MSCTE and RMB 2,800 for CE. Though a combination of different inspections may help increasing diagnostic yield, the high expense restricted its clinical application.

Inspection	Group 1		Group 2		Group 3	
	CD (%) (n=76)	UC (%) (n=69)	CD (%) (n=186)	UC (%) (n=71)	CD (%) (n=274)	UC (%) (n=93)
Double	12(15.8)	3(4.3)	31(16.7)	2(2.8)	103(37.6)	17(18.3)
Triple	4(5.3)	0	0	0	0	0

Table 3. Trends of modality combination during the year of 2002-2010

Figure 1 showed the trends of application of enteroscopy, MSCTE, and CE in CD patients during 2002 to 2010. Figure 2 showed the situation in UC. In the histograms, intuitive situation could be observed. During the year of 2008 to 2010, MSCTE became a screening method for CD patients, the application ratio was up to 76.6%.

3.3 Anatomic extent

In this study, we adopted a special scoring method to evaluate the anatomic extent. We scored 1 when the lesion only involved rectosigmoid colon, ileocecal or one segment of small intestine; scored 2 when the lesion extended up to left-sided colon, and scored 3 when

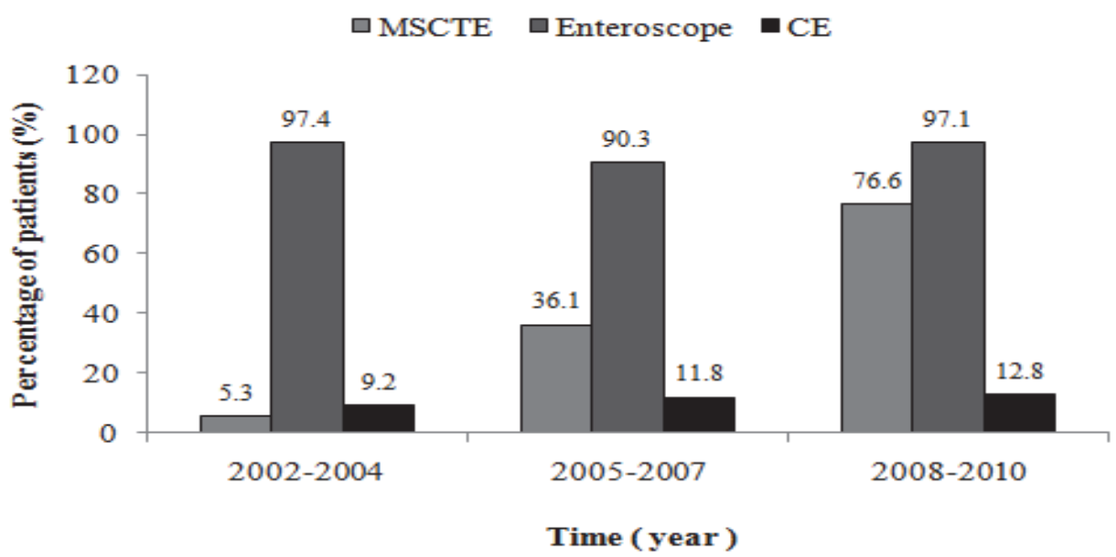

Fig. 1. Application of MSCTE, enteroscope, and CE in CD patients during the retrospective 9 years

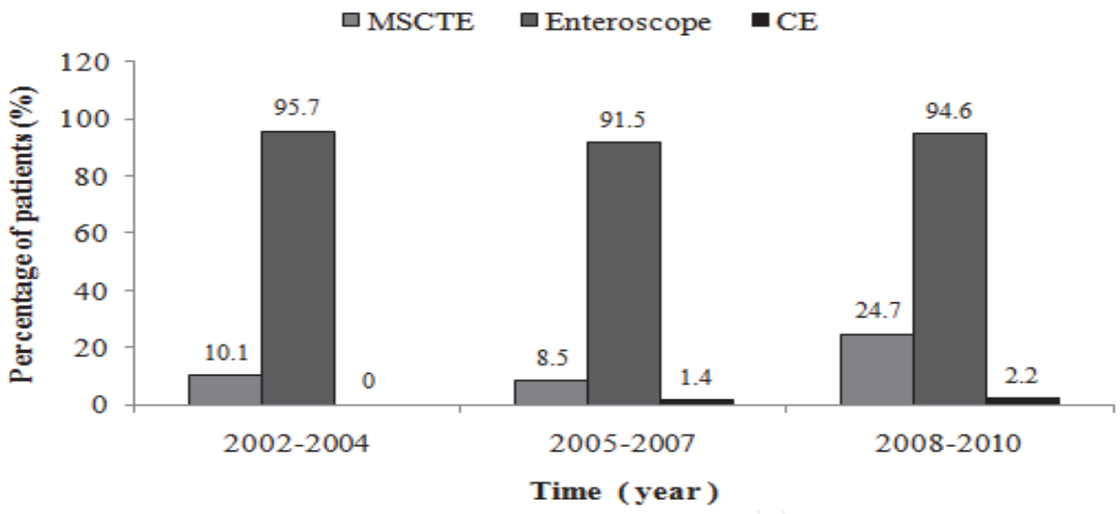

Fig. 2. Application of MSCTE, enteroscope, and CE in UC patients during the retrospective 9 years

the lesion extensively involved the whole length of the colon and/or multiple segments of the small intestine. Then the number of patients of each scoring group was summarized, respectively (Tab. 4).

As we can see, in Group of Score 1, CD was significantly more than UC ($p=0.000<0.001$), which indicated that the anatomic extent of CD is relatively limited comparing with that of UC. While in Group of Score 3, the situation was just the opposite ($p=0.000<0.001$), UC was more likely to involve extensively.

Score	**CD** (%)	**UC** (%)	X^2	P value
1	393 (73.3)	137 (58.8)	15.991	0.000
2	85 (15.9)	44 (18.9)	1.065	0.302
3	58 (10.8)	52 (22.3)	17.511	0.000
Total number	536	233		

Table 4. Comparison of anatomic extent in CD and UC

3.4 Laboratory index

Although there are a lot of laboratory parameters believed to have certain relations with the severity of IBDs, the accurate role of each item remains controversial. In the present study, we observed 3 laboratory indexes with more confirming evidence of the clinical value. They are PLT, ESR (erythrocyte sedimentation rate) and CRP (C reactive protein). The criteria of each index were judged according to that of our hospital. PLT concentration higher than $300*10^9$/L, ESR level exceeded 30mm/s, CRP over 0.8mg/L were judged of abnormal.

Primarily research and clinical experience have presented that patients with IBD suffer higher risk of colonic cancer comparing with normal population, thus IBD patients should under the surveillance of tumor marker in order to provide information of the possibility of advancing cancer. Therefore, we also evaluated 3 tumor markers (CEA, CA-125 and CA-199) in all the patients.

According to the results (Tab. 5), we had a rough impression that both ESR level and CRP level were higher in CD than in UC in Group 2 and Group 3. While other lab index showed no obvious difference between CD and UC in all 3 groups.

Lab Index	**Group 1**		**Group 2**		**Group 3**	
	CD (%) (n=76)	**UC** (%) (n=69)	**CD** (%) (n=186)	**UC** (%) (n=71)	**CD** (%) (n=274)	**UC** (%) (n=93)
PLT (>300*10⁹/L)	26 (34.2)	24 (34.8)	96 (51.6)	36 (50.7)	164(59.9)	29 (31.2)
ESR (>30 mm/s)	28 (36.8)	19 (27.5)	142(76.3)	38 (53.5)	143(52.2)	34 (36.6)
CRP (>0.8 mg/L)	12 (15.8)	12 (17.4)	161(86.6)	33 (46.5)	163(59.5)	21 (22.6)
CEA (>5 ng/ml)	8 (10.5)	0	12 (6.5)	2 (2.8)	6 (2.2)	0
CA-125 (>35 U/ml)	9 (11.8)	0	71 (38.1)	31 (43.7)	33 (12.0)	7 (7.5)
CA-199 (>35 U/ml)	0	6 (8.7)	11 (5.9)	8 (11.3)	7 (2.6)	6 (6.5)

Table 5. Comparison of lab index abnormalities between CD and UC in 3 groups

3.5 Clinical manifestation

Patients with IBD usually manifest similar clinical features, but each individual may have his own characteristic. And for CD and UC, the patterns of clinical manifestation are different in some aspect. The major clinical manifestations observed in the study

included abdominal mass, abdominal pain, mucous stool, hematochezia, fever (higher than 39°C), small bowel obstruction (SBO), anal fistula, weight loss, surgical intervention and parental manifestations (PM). Parental manifestations mainly included uveitis, episcleritis, stomatitis, erythema nodosum**,** pyoderma gangrenosum, peripheral arthritis and etc.

The result turned out that the ratios of SBO ($p=0.000<0.01$), anal fistula ($p=0.000<0.01$) and weight loss ($p=0.008<0.01$) in CD were significantly higher than in UC, abdominal pain ($p=0.036<0.05$), surgical intervention ($p=0.025<0.05$) and parental manifestations ($p=0.043<0.05$) also occurred more in CD patients. On the other hand, UC patients were much more common with mucous stool ($p=0.000<0.01$) and hematochezia ($p=0.000<0.01$) (Tab. 6).

Clinical manifestation	**CD** (n=536) (%)	**UC** (n=233) (%)	X^2	P value
Abdominal pain	436 (81.34)	177 (75.9)	4.399	0.036
Abdominal mass	17 (3.17)	3 (1.29)	2.276	0.131
Mucous stool	103 (19.22)	133 (57.08)	109.468	0.000
Hematochezia	175 (32.65)	191 (80.93)	158.415	0.000
Fever	143 (26.68)	59 (25.32)	0.154	0.694
SBO	56 (10.45)	5 (2.15)	15.326	0.000
Anal fistula	45 (8.39)	1 (0.43)	18.326	0.000
Weight loss	210 (39.18)	68 (29.18)	7.028	0.008
Surgery	51 (9.51)	11 (4.72)	5.035	0.025
PM	29 (5.41)	5 (2.15)	4.096	0.043

Table 6. The clinical manifestation observed in all 769 IBD patients

3.6 Medical treatment

At the moment, medical treatment of IBD mainly included four kinds of pharmaceuticals: 5-aminosalicylic acid (5-ASA) or sulfasalazine, corticoids, immunosuppressant (we use azathioprine in our hospital), and tumor necrosis factor monocolonal antibody.

5-ASA or sulfasalazine was a base-line agent wildly used in mild IBD patients or used for maintenance therapy. For those IBD patients of active stage, we prescripted 4g/day of this kind of medicine. And the maintenance dosage dropped to 2g/day. Short-term intravenous or oral corticosteroid treatment was used in moderate-to-severe IBD patients. Methylprednisolone given intravenously usually start from the dosage of 40-60mg/day, and 7-10 days later, we changed to corticoids via oral route. The whole treatment course with corticoids was usually tapered within 12-25 weeks. Azathioprine was used as a second-line agent for corticosteroid-dependent or corticosteroid-refractory individuals. It was also used as the replacement therapy during the course of corticosteroid tapering. As for Infliximab, it only began to be used in CD and UC since 2008 and 2009 respectively. Infliximab was listed in China in September 2007, and was mainly used in IBD patients suffered from fistula or in those with corticosteroid- and/or immunosuppressant-refractory.

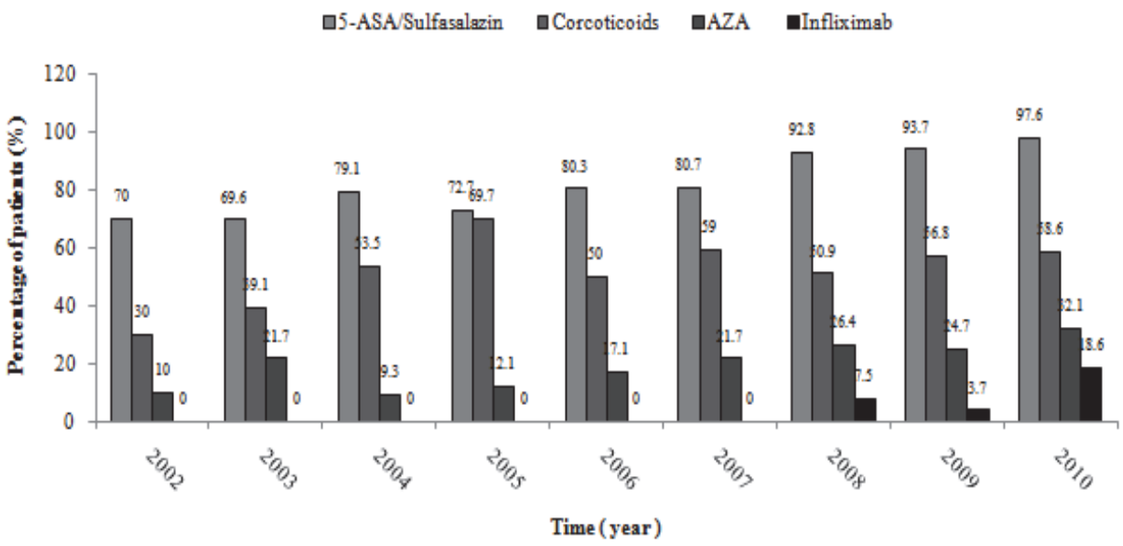

Fig. 3. Medical treatments for CD during 2002-2010

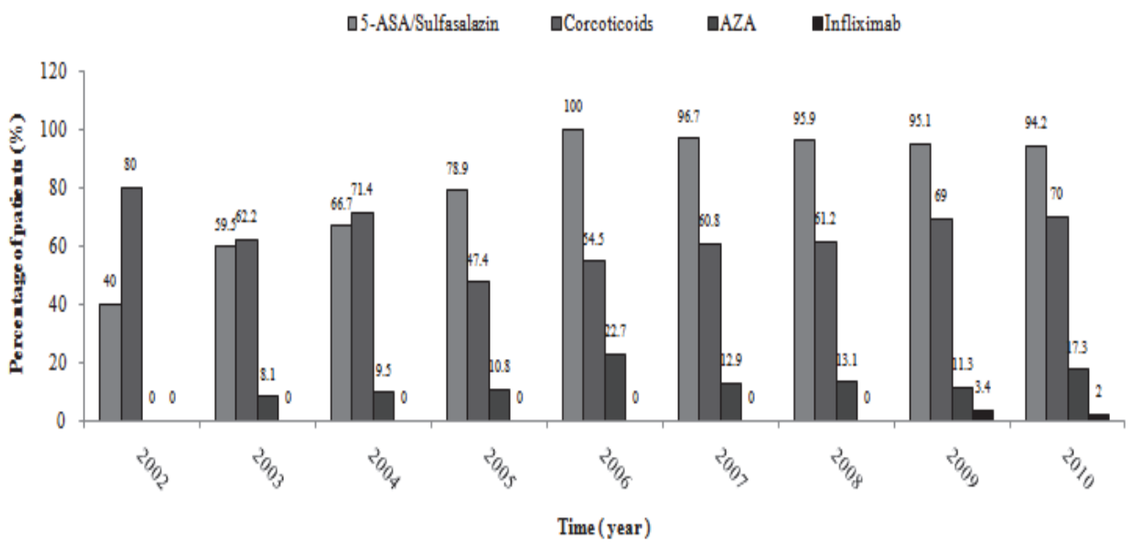

Fig. 4. Medical treatments for UC during 2002-2010

The overview situation of the usage of four pharmaceuticals stated above in CD patients from 2002 to 2010 was shown in Figure 3. As we could see, 5-ASA/ sulfasalazine was always a base-line agent used in most patients (range from 70% to 97.6%). The percentages of patients using corticoids became rather stable since the year of 2006, about half of the hospitalized CD patients had the records of using corticoids. The same trend of AZA could be observed since the year of 2007. And that of UC was listed in Figure 4. 5-ASA/sulfasalazine also played an important role in treating UC, 94.2% to 100% patients were given the agent during 2006-2010. Since 2006 to 2010, the corticoids were also applied to more than half of UC patients; the data was a little bit higher than that of CD patients (63.1% vs 55.06%). The application of AZA was a little bit lower than that in CD. In 2010,

Infliximab is more commonly used in CD patients (especially complicated with fistula) than in UC patients.

An interesting phenomenon could be observed was the change of corticoids using in both diseases. From the year of 2002 to 2005, the trends of corticoids application were just in the opposite directions in CD and UC. In CD, it turned out to be a raising curve; while in UC, the ratio dropped from 80% to 47.4%. But after that, since the year of 2006, in both diseases the use of corticoids became stable.

3.7 Repeated-hospitalization

Within all the 769 patients, 195 individuals had experiences of repeated-hospitalization (25.36%). 148 were CD and 47 were UC, accounted for the total number of each group 27.61% (148/536) and 20.17% (41/233), respectively. In CD cohort, 80 were male (54.1%) and 68 were female (45.9%). As for UC, 29 were male (61.7%) and 18 were female (38.3%).

The times of repeated-hospitalization ranged from 2 to 22. Detailed information was listed in Table 7. The reasons for repeated-hospitalization mainly included intestinal obstruction, severe GI bleeding, high temperature (>39°C) difficult to control, fistula, etc.

Times	2	3	4	5	>=6	Sum.
N	109	35	15	18	18*	195

* Within these 18 patients, 8 were hospitalized for 6 times, 3 for 7 times, 1 for 8 times, 2 for 9 times, 2 for 14 times, 1 for 15 times and 1 for 22 times.

Table 7. Overview of repeated-hospitalization

The interval between every 2 hospitalizations ranged from 0-94 months. And the mean interval of UC was longer than that of CD (Tab. 8).

	Mean interval (m)	Range (m)
CD (n=148)	6.29±10.71	0-92
UC (n=47)	10.04±15.39	0-94
Total (n=195)	6.94±12.13	0-94

Table 8. Overview of intervals between every 2 hospitalizations

4. Discussion

Significant changes have been observed in the epidemiology of IBD in the last two decades. Traditionally, the incidence of IBD was higher in the developed, industrialized countries; as for CD it ranged from $0.7/10^5$ to $11.6/10^5$ and for UC from $2.0/10^5$ to $14.3/10^5$. In contrast, nowadays it became more prevalent in the previously low incidence areas such as developing countries. In particular, the incidence and prevalence of IBD increased significantly in the Asia-Pacific region in recent years. Several recent studies confirmed that, in Asia, the prevalence of CD is $3.6/10^5$ to $7.7/10^5$, and of UC is $4.0/10^5$ to $44.3/10^5$; the morbidity of CD ranges from $0.5/10^5$ to $1/10^5$, of CD the data is between $1/10^5$ and $2/10^5$ (Leong et al., 2004; Al-Ghamdi et al., 2004). In China, it is inferred that the prevalence may be $1.4/10^5$ for CD, and $11.6/10^5$ for UC. The difference of clinical epidemiology, diagnosis and treatment between Asia-Pacific IBDs and that of western countries may be contributed

to the diversities of environment, genetic background and medical systems. Lakatos et al reported , the incidence of UC in developing countries is similar to that observed in North America and Western Europe, while the incidence of CD is still relatively low, suggesting that the environmental factors may act faster or differently in UC than in CD (Lakatos L & Lakatos PL, 2007).

As stated before, Rui Jin Hospital affiliated to Shanghai Jiao Tong University is a tertiary level and first-class hospital, which is one of the largest public hospitals in China. This retrospective study enrolled all 769 hospitalized IBD patients from three departments in our hospital from May 2002 to December 2010. Thus, we can take it into granted that the current study, for the first time, systematically provide a relatively intact image of IBD patients in Shanghai during the past 9 years, which is also a valuable reference of the whole situation in China.

Grossly, our study revealed that the prevalence of IBD in Shanghai gradually increased during the observing 9 years. The potential explanations for the increasing trend may be at least partially contributed to the popularity of western life style and diet habits in recent years. As we can see, with the development of economic, literature, as well as tourism, international interactions are more frequent, therefore the gap of environment, diet habit, and life style becomes lessen. The phenomenon that changes of life style and diet habit paralleling with the change of IBD prevalence also indicates the importance of environment mechanism in IBD.

A second reason that may also contributed to the increasing of diagnostic yield of IBD is the improvement of inspection methods. As mentioned before, since 2003 when the DBE, MSCTE and CE became more and more popular in clinical application in our hospital, the diagnostic ratio of IBD also increased obviously. CE is a painless procedure that enables visualization of the entire small bowel and is highly acceptable to both doctors and patients. The disadvantages and limitations of this diagnostic modality include disability to control the direction, the random nature of the images, and the lack of a facility for sampling. The high cost of CE in China also precludes its use as a first-line diagnostic modality for small bowel disease. DBE was regarded as a revolutionary development for the diagnosis of small bowel diseases (Zhong et al., 2007). The entire small bowel could be visualized, usually with a combination of antegrade and retrograde approaches. DBE is used as a gold standard diagnostic modality for small bowel disease. MSCTE serves as a screening method now days in our hospital, when the relatively low cost of this modality taken into account. We failed to take enteroclysis into account, since we conducted it only in little amount of patients.

Nevertheless, differ from other previous studies; our team reported a significantly higher prevalence of CD than that of UC. Among the total of 769 IBD patients enrolled in this study, 536 (69.7%) were suffered from CD and 233 (30.3%) were suffered from UC. Mean age at diagnosis in UC patients was older than in CD, duration of each disease didn't show much difference. Male patients were more than female patients in both diseases in each time-stratifying group. The main reason could be that CD involved small bowel easily, and the three novel inspection techniques mentioned above largely developed the blind spots in small bowel. And that may also give a reasonable explanation why it was the diagnostic yield of CD not the UC rose significantly.

We chose several relatively special serologic targets in this retrospective study in IBD. The

laboratory indexes observed included: the number of PLT, the level of CRP and ESR, tumor markers (CEA, CA-125, CA-199). In our study, there existed no obvious differences of the CRP and/or ESR between UC group and CD group. Both markers were higher in CD than in UC. As for tumor indicators, CA-125 and CA-199 seemed to have some abnormal tendency comparing with normal population. But further and detailed research is necessary before getting more convinced conclusions.

With the invention and development of immunomodulators and biologics, obvious changes have been introduced into IBD treatment in the past decade. Infliximab, a chimeric monoclonal antibody against tumor necrosis factor alpha, was first approved for the treatment of CD in 1998 (Hanauer et al., 2002; Sands et al., 2004; Targan et al., 1997); subsequently, three other biologic agents (Adalimumab, Certolizumab and Natalizumab) became available for induction and maintenance of remission in CD (Colombel et al., 2007; Feagan et al., 2008; Sandborn et al., 2007). Infliximab is the only biologic agent approved for the treatment of UC after demonstrating success in the ACT I and ACT II trials. In China, Infliximab was not listed until September 2007. We are now using it in more IBD patients in 2011, but since the clinical data of this year is not included within the current study, we have little to discuss here.

As for immunosuppressive agents (such as azathioprine, methotrexate, and 6-mercaptopurine), many studies during the last ten years have focused on their application in the treatment of both UC and CD (Ananthakrishnan et al., 2010; Cosnes et al., 2005). Azathioprine was used as a second-line agent for corticosteroid-dependent or corticosteroid-refractory individuals. And in our experience, it was more used as the replacement therapy during the course of corticosteroid tapering. Patient was usually asked to start using AZA two weeks before corticosteroid tapering at the dosage of 10 mg/day.

The goals of IBD therapies can be summarized as: inducing remission, preventing complications, improving life quality, and reducing hospitalization as well as surgical rates (Bai & Peng, 2010). Thus, predicting of disease outcome is of great importance. Chow and his team reported that thrombocytosis in IBD patients at diagnosis predicted corticosteroid-dependency, structuring phenotype of CD and presence of anaemia in UC predicted subsequent course of corticosteroid refractoriness (Chow et al., 2009). In the further research, we will convince the conclusion by collecting and analyzing the related data.

With regard to relapsing, for hospitalized IBD patients, repeated-hospitalization may be looked on as an indicator. In our current study, about 1/5 patients suffered relapse within a mean interval about 7 months. The patients hospitalized for more than 6 times were mostly for treatment with Inflixmab. As for the predictive factors of relapse, is the defect of this retrospective study. We will do more detailed work in our future research.

There are several limitations in our current study. First, we could not eliminate the possibility of referral bias. For the hospitalized IBD patients were in moderate-severe situations, which means patients suffer mild IBD may be cared by outpatient department. So the conclusion of this study maybe more reliable in reflecting the situation of moderate-severe patients. Second, the important marker of disease activity, CDAI, was not captured in this study, that would be the part included in our further study. Last but not least, data of some patients were not intact. The nutrition support, especially the enteral nutrition support, may induce illness ease, promote mucosal healings, and help maintaining the long-term stability of the disease. The lack of this part is also a pity. Nutrition therapy in patients with IBD is probably both undervalued and underused. Maybe we could try to make up for it in our future prospective study.

5. Conclusion

At present, large clinical material in IBD is still limited in Chinese population. This study, for the first time, systematically provided a relatively intact image of hospitalized IBD patients in Shanghai. The result is also a valuable reference of the whole situation in China.
In summary, in this 9-year retrospective study, an increasing prevalence of IBD in Shanghai was observed, which is synchronized with that in the western countries. The changes of life style and diet habits, the improvement of diagnostic modalities may play important role in it. We have more options, such as biologics, for IBD treatment besides the traditional medicine of 5-ASA, corticosteroids and immunosuppressants. The combination and adjustment of medicine are of great significance in inducing remission and maintaining the long-term stability of the disease. To choose appropriate diagnostic modality for patients, to establish effective surveillance indexes, and to develop individualized treatment program will contribute much to pharmacoeconomics.

6. References

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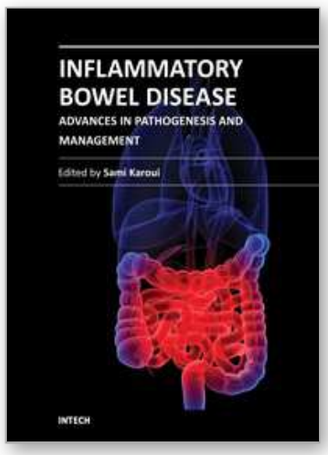

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This book is dedicated to inflammatory bowel disease, and the authors discuss the advances in the pathogenesis of inflammatory bowel disease, as well as several new parameters involved in the etiopathogeny of Crohn's disease and ulcerative colitis, such as intestinal barrier dysfunction and the roles of TH 17 cells and IL 17 in the immune response in inflammatory bowel disease. The book also focuses on several relevant clinical points, such as pregnancy during inflammatory bowel disease and the health-related quality of life as an end point of the different treatments of the diseases. Finally, advances in management of patients with inflammatory bowel disease are discussed, especially in a complete review of the recent literature.

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