Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/jptcp.v31i3.5282

CLINICAL PROFILE OF PATIENTS WITH ACUTE SEVERE ULCERATIVE COLITIS IN NORTH INDIA

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Abstract:
Background: Ulcerative colitis (UC) is an idiopathic inflammatory disease predominantly involving colo-rectum. About 1/5th of UC patients presents in the form of acute severe ulcerative colitis (ASUC) which carries a significant morbidity and mortality. It is diagnosed on the basis of Truelove and Witts criteria.
Materials and Methods: A total of 30 consecutive patients diagnosed to have ASUC according to Truelove & Witts criteria were enrolled in study. Their clinical and laboratory parameters were determined which included CBC, RFT, LFT, ESR, CRP – quantitative, albumin and stool for clostridium difficile. Study duration was 15 months, from November 2022 to January 2024.
Results: Mean age of the patients was 38.83 ± 13.35 years. 19/30 (63.3%) were males and 11/30 (36.6%) were females. Among the 30 total patients, 20 (66.6%) had preexisting ulcerative colitis and 10 (33.3%) had new onset disease with first presentation as ASUC. Most common cause of flare was poor compliance to medical treatment (n=17/20; 85%) followed by NSAID use (n=2/20; 10%) and supra added clostridium difficile infection (n=1/20; 5%). When Truelove & Witts criteria was applied, along with >6 bowel movements with visible blood most common additional feature was raised ESR (> 30 mm/hour), seen in 24 (80%) patients. It was followed by tachycardia (pulse rate >90/minute), seen in 20 (66.6%) patients. Anaemia i.e. hemoglobin < 10.5 g% was present in 16 (53.3%) patients and fever (> 100.04°F) was present in 8 (26.6%) patients.
Most common clinical features were pain abdomen (n=25; 83.3%), followed by stool urgency (n=18; 60%) and tenesmus (n=7; 23.3%). Thrombocytosis was seen in (n=4; 13.3%) patients and hypoalbuminemia was seen in (n=11; 36.6%) patients.

Keywords: UC (Ulcerative colitis), ASUC (Acute Severe Ulcerative Colitis), Truelove & Witts diagnostic criteria, thrombocytosis.

Introduction:

Ulcerative colitis (UC) is a chronic idiopathic inflammatory disease of the colon. It usually follows relapsing and remitting course. It affects variable length of colon, with rectum being the most

commonly affected segment. Involvement of rectum in the form of inflammation leads to development of rectal symptoms like urgency and tenesmus.

Acute severe ulcerative colitis (ASUC) is a medical emergency in which patients present with complaints of bloody diarrhea along with systemic signs of inflammation and/or blood loss. ASUC is diagnosed on the basis of Truelove and Witts severity Index (Table 1).[1] Patient is said to have ASUC if he has more than 6 stools with visible blood per day alongwith any of the following features: Anaemia (hemoglobin < 10.5 g%), ESR > 30 mm/hour, Fever > 37.8°C and/or Heart rate > 90 per minute.

ASUC can be the first presentation of ulcerative colitis in up to 20% of patients and 15% of the diagnosed ulcerative colitis patients develop ASUC once in their lifetime. Most common causes for severe flare of UC are poor compliance to medications, supra-added infections like *Clostridium difficile*, CMV, sub-optimal treatment of underlying disease or use of over the counter drugs like NSAIDS (Non-steroidal anti-inflammatory drugs).[2]

ASUC should be promptly diagnosed to start immediate goal directed treatment. The mainstay treatment for the management of ASUC is the use of intravenous corticosteroids. Corticosteroids are successful in inducing remission in upto 70% of patients.[3] Delay in initiation of treatment can lead to complications in including but not limiting to severe hemorrhage, toxic megacolon, or gut perforation. Before the introduction of corticosteroids, mortality in ASUC used to be upto 75%, which reduced to 7% with use of steroids. In specialist centers, mortality in ASUC has reduced to <1%. Previous research on clinical profile of ASUC patients is scant, and this study is first of its kind in this region.

Table 1: Truelove and Witts Severity Index for Ulcerative Colitis:[1]

Parameter	Mild	Moderate	Severe
Bowel movements (Per day)	<4	4-6	>6
Blood in stools	No more than small amounts of blood	Between mild and severe	Visible blood
Pyrexia (> 37.8°C or > 100.04°F)	No	No	Yes
Pulse rate (> 90 bpm)	No	No	Yes
Anemia (HB<10.5 g%)	No	No	Yes
ESR (> 30 mm/Hour)	No	No	Yes

Aims:

To determine the clinical profile of patients with ASUC.

To determine laboratory parameters including pathological and biochemical markers of inflammation in ASUC.

Methods:

A prospective study was conducted in Gastroenterology OPD/ IPD in MMIMSR, Mullana from November 2022 to January 2024.

Following patients were included in the study:

1. Age above 18 years.
2. Fulfilling the Truelove and Witts diagnostic criteria for ASUC. (Table 1)

Patients who refused to give consent for study were excluded.

Patients were enrolled in the study after informed consent. Detailed history was taken and physical examination was done, and clinical parameters including pulse rate and temperature were noted in all patients. Ongoing treatment, past treatment and family history were noted. Routine investigations of the patients including CBC, RFT, LFT, ESR, CRP – quantitative, albumin and stool for clostridium difficile, which are required for treatment of ASUC were also noted. Ethical clearance was taken from

the Institutional Ethical Committee. Results and observations were tabulated. Mean and standard deviation were calculated and analyzed.

Results:

A total of 30 patients were included in the study. Out of these 19 (63.3%) were males and 11 (36.6%) were females. Mean age of the patients was 38.83 ± 13.35 years. Among the 30 patients, 20 (66.6%) had preexisting ulcerative colitis and 10 (33.3%) had new onset disease with first presentation as ASUC. In patients with pre-existing UC mean duration of disease was 3.93 ± 2.08 years and most common cause of flare was poor compliance to medical treatment (n=17/20; 85%) followed by NSAID use (n=2/20; 10%) and supra added clostridium difficile infection (n=1/20; 5%). Apart from bloody diarrhea, which was seen in all patients, most common clinical features in our study were pain abdomen (n=25; 83.3%), followed by stool urgency (n=18; 60%) and tenesmus (n=7; 23.3%). Among additional laboratory parameters thrombocytosis was seen in (n=4; 13.3%) patients and hypoalbuminemia was seen in (n=11; 36.6%) patients. (Table 2)

When Truelove & Witts criteria was applied, along with >6 bowel movements with visible blood most common additional feature was raised ESR (> 30 mm/hour), seen in 24 (80%) patients. It was followed by tachycardia (pulse rate >90/minute), seen in 20 (66.6%) patients. Anaemia i.e. hemoglobin < 10.5 g% was present in 16 (53.3%) patients and fever (> 100.04°F) was present in 8 (26.6%) patients. Although only one of the above four features along with increased bowel movements is required for the diagnosis of ASUC. In our study all four features were present in 7 (23.3%) patients. (Table 3)

Table 2: Clinical and demographic profile of patients:

Clinical and demographic profile	**Value**
Total patients	N = 30
Male/Female	19/11
Mean age	38.83 ± 13.35 years
New onset UC	n = 10/30
Previously known UC	n = 20/30
Mean duration of disease in old cases (n=20)	3.93 ± 2.08 years
Cause of flare in old cases (n=20)	Poor compliance (n=17/20; 85%) NSAID use (n=2/20; 10%) C difficle infection (n=1/20; 5%)
Pain abdomen	n = 25/30 (83.3%)
Stool urgency	n = 18/30 (60%)
Tenesmus	n = 7/30 (23.3%)
Thrombocytosis (>450 x 10^9/L)	n = 4 (13.3%)
Hypoalbuminemia (<3.5 mg/dl)	n = 11 (36.6%)

Table 3: Truelove & Witts criteria among patients:

Features in Truelove and Witts criteria	**Number of patients i.e. n (%)**
Tachycardia	20 (66.6%)
Fever	8 (26.6%)
Anaemia	16 (53.3%)
Raised ESR	24 (80%)
Number of patients with multiple positive features apart from >6 bloody stools	
All four features present	7 (23.3%)
Three features present	3 (10%)
Two features present	11 (36.6%)

One feature present	9 (30%)

Discussion:

Inflammatory bowel disease used to be a disease of industrialized and developed world with highest prevalence rate in North America. It is still more common in Western world as compared to Indian subcontinent.[4] The first Indian case series of UC was published in 1965.[5] In one of the largest population based screening study for ulcerative colitis from India incidence of UC was found to be 6.02 per 100,000 per year and a crude prevalence rate was 44.3 per 100,000 inhabitants.[6] Hospital admission rate of UC in India range from 9.4-12% per 10,000 admissions.[7] Most of the admissions in UC are because of severe flare of disease.

Mean age of patients of UC in our study was 38.8 years, which is close to Indian as well as western literature.[6,8] There has been slight male predominance in UC in previous studies and is reflected on our study also.[8] In our study 19 (63.3%) were males and 11 (36.6%) were females. In one Asian population study, the mean age was found to be 45.7 years and male sex constituted >50% of the population.[9] Most of the industrialized countries have shown a bimodal age distribution with first peak incidence seen in third decade and another peak in sixth-seventh decade, but studies from Asia have witnessed predominantly a unimodal age distribution.[10]

All patients of ASUC had chronic bloody diarrhea and other most common symptom was pain abdomen followed by stool urgency, seen in 83.3 % and 60 % of patients, respectively. Another Indian study on UC found slightly lower frequency of these symptoms i.e. 66.6% and 44.4% for pain abdomen and stool urgency respectively.[11] Our study had slightly higher frequency because we studied only ASUC patients which is the severe form of disease. Frequency of tenesmus was comparable in both the studies.

A hospital-based registration data from India found that mean duration of disease prior to admission was 2.7 years.[7] In our study mean duration of disease in known cases of ulcerative colitis was 3.93 years. There are various factors which increase the risk of subsequent flares after the first attack which are, presence of fever or weight loss at the time of diagnosis, a flare within 2 years of diagnosis and active disease in the preceding year.[12]

Fifteen to twenty-five percent of patients with ulcerative colitis experience an acute severe flare during the course of disease, either as an initial presentation or later on.[13] It is often believed that UC runs a mild course in Indian subcontinent.[14] This has been refuted by an Indian study which found that even up to 65% of the patients can have severe disease.[7] Sood et al also used Truelove & Witts criteria for diagnosis of severe UC like we did. It constitutes one essential feature of chronic bloody diarrhea with stool frequency of >6 per day and four other variables i.e. Anaemia (hemoglobin < 10.5 g%), ESR > 30 mm/hour, Fever > 37.8°C and/or Heart rate > 90 per minute; out of which even one positive is sufficient to label the patient as ASUC. The risk of progression of disease requiring a second line therapy depends upon the number of variables present at the time of admission. There is 50% risk for colectomy when ≥3 additional criteria are present.[15] In our study 10/30 (33.3%) patients had three or more additional criteria. With the advent of newer therapies, biologics like Anti-TNF agents risk of colectomy has decreased, and mortality has reduced to <1% at specialist centers. In our study raised ESR was most common variable, and fever was least common variable in Truelove & Witts criteria.

There are various causes of relapse in UC patients like poor compliance to medical management, NSAIDS, supra-added infections etc.[16] In our study most common cause of relapse was poor compliance to medications seen in 17(85%) known cases of UC. Other causes of relapse were NSAID use and supra-added infection in the form of clostridium difficile. NSAIDS increase the mucosal permeability and supra-added infections sets in the mucosal inflammation which is prerequisite for aggravation of colitis.

Normal platelet count ranges between 150 – 450 x 10^9/L.[17] Thrombocytosis is a surrogate marker of inflammation. So, platelet count > 450 x 10^9/L suggests on going inflammation.

Voudoukis et al have shown a significant relation between CRP, SCCAI and platelet count.[18] Thrombocytosis has also been linked to inflammation progression and risk of thromboembolic event.[19]

Hypoalbuminemia is a marker of inflammation. It is also seen in nutritional deficiencies or because of loss from diseased gut mucosa. All these features are seen in a pro-inflammatory disease like ASUC. In our study hypoalbuminemia was seen in 11 (36.6%) patients. Baseline low albumin level has been linked with high likelihood of colectomy.[20]

Conclusion:
There was slight male predominance in ASUC with poor compliance as most common reason of relapse associated with pain abdomen as most common clinical feature after bloody diarrhea. In Truelove and Witts criteria raised ESR was most common feature, followed by tachycardia. Thrombocytosis and hypoalbuminemia were also seen in ASUC that can act as surrogate markers to predict disease severity.

Limitation:
There are various limitations of the study. Fecal calprotectin was not done, although it is not the part of Truelove and Witts criteria, but it could have served as adjunctive index to predict disease severity. Smoking history was not taken as most of the patients in this region are reluctant in disclosing their habits. The sample size was limited. Also, longer duration and follow up studies are required to better determine the parameters in ASUC.

Conflict of interest: Nil

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