



Comparing HO and Travis Criteria in Acute Severe Ulcerative Colitis – In a Tertiary Care Centre, South India

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Abstract

Aim: To compare Ho score with Travis score in predicting steroid responsiveness in acute severe ulcerative colitis.

Methods and Material: Our study is a prospective observational study including all patients who got admitted in Institute of medical gastroenterology, Rajiv Gandhi Government General Hospital, Chennai, between January 2019 and December 2019 with acute severe ulcerative colitis as per True love witts score.

Results: Among 64, 55 were male and 9 were female. Mean age of patients is 32 years (range 16-45 years). Day 3 Travis score was high in 16 patients (25%) and low in 48 patients (75%). 48 patients (75%) were steroid responsive and 16 patients (25%) were steroid non-responsive who received second line therapy in the form of anti-TNF agents. All 4 patients with high Ho score on day 3 were steroid non-responders, 6 patients with intermediate Ho score were steroid responsive and 12 patients with intermediate Ho score on day 3 were steroid non-responders. Ho score of ≥ 2.5 has sensitivity of 62.5% and specificity of 100% in predicting steroid responsiveness.

Conclusion: We conclude that in acute severe ulcerative colitis, patients with high Travis or the Ho scores are more likely to be resistant to IV steroids. In anti-TNF era, the risk of surgery in those high risk patients is lower than previously reported.

Keywords: Acute severe ulcerative colitis, Travis score, Ho score, steroid refractory ulcerative colitis.

Introduction

Ulcerative colitis (UC) is a chronic inflammatory bowel disease that is characterized by hematochezia, diarrhea, tenesmus, fever and constitutional symptoms^[1]. About 20% of patients with UC will develop an episode of acute severe ulcerative colitis (ASUC) and 15-25% will have a severe exacerbation that will require admission at some point^{[2]-[4]}.

Case Definition

Acute Severe Ulcerative Colitis

Acute severe ulcerative colitis is commonly diagnosed using Truelove and Witts score (TABLE 1). Intravenous steroids are the mainstay of therapy in acute severe flare. The usual dose regimen is methylprednisolone 20 mg or hydrocortisone 100 mg, both given every 6 to 8 hours IV. The response to intravenous steroids should be best assessed by the third day. Overall, response rates to

corticosteroids reach 65-69%^{[5][6]}. In non-responders, treatment options including ciclosporin, infliximab, tacrolimus or surgery should be considered^[7].

Table 1. Truelove and Witts Score^[8]

	MILD	MODERATE	SEVERE
BLOODY STOOLS	≤4 stools/day	Intermediate between mild and severe	≥ 6 stools/day AND
TEMPERATURE	< 37.5°C		> 37.8°C
HEART RATE	< 90/min		> 90/min
HEMOGLOBIN	> 11.5g/dl		< 10.5g/dl
ESR	< 20 mm/hr		> 30 mm/hr

Steroid Refractory Acute Severe Ulcerative Colitis

A frequency > eight/day, or between three and eight together with a CRP > 45 mg/l on Day 3, predicted colectomy in 85% during that admission: known as the Oxford Travis Criteria^[9], which is most commonly used. There are many other scores to predict steroid non-responsiveness. While original Travis score predicts risk for colectomy, G.T. Ho et al. designed another simple score to detect patients who respond from early second-line therapy^[10].

Table 2: HO Score^[10]:

Variables	Score
Mean stool frequency	
< 4	0
4-6	1
6-9	2
> 9	4
Colonic dilatation > 5.5cm	4
Hypoalbuminemia < 30g/L	1

HO score ranges from 0 to 9. It is classified as low- (score 0–1), intermediate- (score 2–3) and high- risk (score ≥ 4) groups with medical failure rates of 11%, 45% and 85% respectively^[10].

Aim

To compare Ho score with Travis score in predicting steroid responsiveness in acute severe ulcerative colitis

Materials and Methods

A prospective observational study including all patients who got admitted in Institute of medical gastroenterology, Rajiv Gandhi Government General Hospital, Chennai, between January 2019 and December 2019 with acute severe ulcerative colitis as per True love witts score.

Inclusion Criteria

All adults with ulcerative colitis (The diagnosis of UC was confirmed on clinical, radiological and histological criteria) and has acute severe ulcerative colitis according to Truelove Witts score.

Exclusion Criteria

- Patients with toxic megacolon at admission
- Patients who are steroid dependent/intolerant
- Patients with acute flare due to infections
- Patients who do not sign the consent

Steroid responders are those who got discharged from hospital without initiation of further treatment for active UC, either medical or surgical. Steroid non-responders are who required further medical or surgical treatment for active UC as they had not had a sufficient response to IV steroids. Steroid non-responders are then evaluated for active or latent infections including tuberculosis. They were treated with second line drugs (anti-TNF agents) or surgery as indicated.

Statistical Analysis

Data analysis was done using SPSS 16.0 version. Data were presented as mean and standard deviation if the variables are continuous in nature and as percentages if the variables are categorical in nature. Chi-square test was done to find out the association between the categorical variables. ROC analysis was done and Youden index was used to identify the cut off values at which HO score has high sensitivity and specificity in predicting steroid resistance. Kappa test was done to assess the agreement between HO score and TRAVIS score.

Results

A total of 64 patients admitted in the study period had acute severe ulcerative colitis according to Truelove Witts score. Among 64, 55 were male and 9 were female. Mean age of patients is 32 years (range 16-45 years). Majority of the patients had left sided colitis (63%), followed by pancolitis (34%), then proctitis (3%). Day 3 Travis score was high in 16 patients and low in 48 patients. Day 3 Ho score was high in 4 patients, intermediate in 18 patients, low in 42 patients.

Table 3: Patient Characteristics on Admission

Variables	Mean	Standard Deviation	Minimum	Maximum
FEVER (F)	98.34	.72	98.00	101.00
PULSE RATE (per min)	98.00	13.35	78.00	137.00
Hemoglobin at admission (g/dl)	8.64	1.11	5.00	10.00
Albumin at admission (g/dl)	2.90	.43	1.80	3.50
Number of stools on day3	7.69	2.27	5.00	12.00
CRP (mg/l) ON DAY3	36.39	13.73	15.00	89.00

FIGURE 2: DISEASE EXTENSION

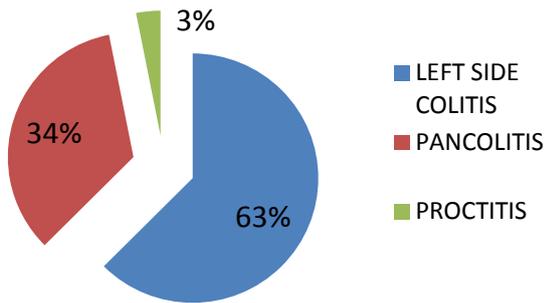
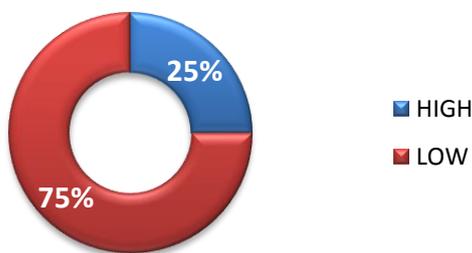
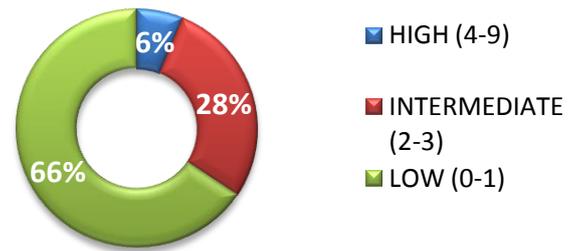


FIGURE 3: DAY 3 TRAVIS SCORE



Among 64, 48 patients (75%) were steroid responsive and 16 patients (25%) were steroid non-responsive who received second line therapy in the form of anti-TNF agents. Out of 64 patients, only 6 patients underwent surgery and the others were successfully treated with medical therapy.

FIGURE 4: DAY 3 HO SCORE



Among 16 patients with high Travis score, 4 had high Ho score, 12 had intermediate Ho score and none had low Ho score. Out of remaining 48 patients with low Travis score, 6 had intermediate Ho score and 42 had low Ho score.

FIGURE 5: COMPARISON BETWEEN TRAVIS AND HO SCORE

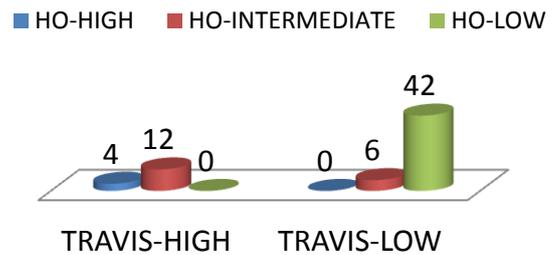
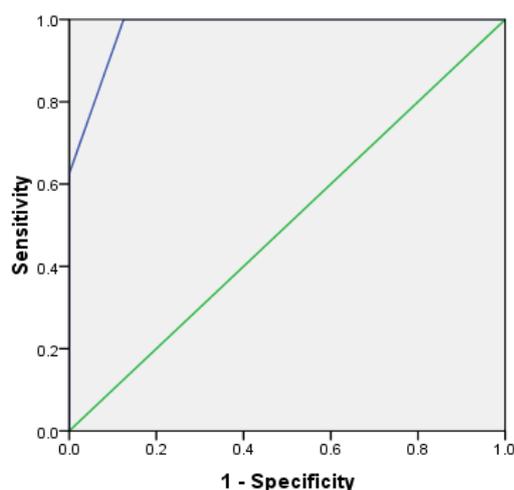


Table 4: Patient Variables, Disease Characteristics, Treatment Response Comparison between 2 Scores

Variables		Travis Day3		Ho Score Day 3		
		High	Low	High	Inter Mediate	Low
Sex	Male	100.0%	81.2%	100.0%	94.4%	81.0%
	Female	0	18.8%	0	5.6%	19.0%
Age Group	<=20	0	6.2%	0	0	7.1%
	21-30	37.5%	37.5%	25.0%	44.4%	35.7%
	31-40	62.5%	45.8%	75.0%	55.6%	45.2%
	41- 50	0	10.4%	0	0	11.9%
Disease Extent	Left Side Colitis	75.0%	58.3%	75.0%	61.1%	61.9%
	Pancolitis	25.0%	29.2%	25.0%	27.8%	28.6%
	Extensive Colitis	0	8.3%	0	5.6%	7.1%
	Proctitis	0	4.2%	0	5.6%	2.4%
Endosco Severity	Moderate	43.8%	89.6%	100.0%	38.9%	92.9%
	Severe	56.2%	10.4%	0	61.1%	7.1%
Steroid Response	Yes	0	100.0%	0	33.3%	100.0%
	No	100.0%	0	100.0%	66.7%	0
Anti Tnf 2 nd Line	Yes	100.0%	0	100.0%	66.7%	0
	No	0	100.0%	0	33.3%	100.0%
Surgery	Yes	37.5%	0	50.0%	22.2%	0
	No	62.5%	100.0%	50.0%	77.8%	100.0%
Mortality	Yes	6.2%	0	0	5.6%	0
	No	93.8%	100.0%	100.0%	94.4%	100.0%

All 4 patients with high Ho score on day 3 were steroid non-responders, 6 patients with intermediate Ho score were steroid responsive and 12 patients with intermediate Ho score on day 3 were steroid non-responders. Based on ROC analysis the cut off value of Ho score to predict steroid response was found to be 2.5. Youden index was used to estimate the cut off value. Ho score of ≥ 2.5 has sensitivity of 62.5% and specificity of 100% in predicting steroid responsiveness.

Figure 6: ROC Curve



Discussion

All patients with high Travis score or Ho score were steroid non-responders. In this study, 16 out of 64 did not respond to steroids and required second-line drugs. They were treated with anti-TNF drugs (Infliximab/ Adalimumab). Among 16 who didn't respond to steroids, 6 patients didn't respond to second-line drugs either and required surgery. The steroid resistance rate in our study is 25%, which is slightly lower than previous studies (40%)^{[11][12]}.

Seah *et al.* proposes that using the Travis or Ho scores form part of optimal management in acute severe ulcerative colitis^[13]. We find that both scores are able to identify patients who are at high risk of being refractory to IV steroids requiring second-line drugs or colectomy. In our study the Ho intermediate category does not provide any prognostic benefit over and above the Travis score, potentially making the Travis score more useful clinically due to its simplicity.

Interestingly a recent review by Travis *et al.* has proposed a more complex treatment algorithm for patients with acute severe ulcerative colitis which incorporates albumin and AXR on day one as predictors of colectomy^[14]. Thus we decided to compare Travis with Ho score in predicting steroid responsiveness in patients with acute severe ulcerative colitis. In our study we found that though both studies predict steroid responsiveness with high sensitivity, Travis is easier to follow in daily practice. Further studies that include serological, biomarker and genetic data are warranted to improve the diagnostic accuracy of scoring systems in acute severe ulcerative colitis.

Conclusions

Acute severe colitis is medical emergency. Prompt diagnosis of etiology and aggressive multidisciplinary treatment is associated with low mortality. Travis is simple score that predicts steroid non-responders more accurately. In acute severe ulcerative colitis, patients with high Travis or the Ho scores are more likely to be resistant to IV steroids. In anti-TNF era, the risk of surgery in those high risk patients is lower than previously reported.

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