

Predicting the risk of acute severe colitis (ASC) at diagnosis of ulcerative colitis (UC): external validation

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Background:

Why is ASC so important?

- ASC occurs in 25% of all pts with UC and it's potentially life-threatening
- Colectomy rate in those admitted at least once with ASC is 40%
- A simple prognostic index applied at diagnosis of ulcerative colitis (UC) appears to predict the likelihood of patients developing acute severe colitis (ASC) and therefore those at high risk of colectomy.

Aim of the study

- To evaluate the index in two independent cohorts of patients.

Methods

An episode of ASC was defined by hospital admission with bloody diarrhoea $\geq 6/d$ and 1 or more Truelove & Witts' criteria.

The index, calculated by **the sum of 1 point each for extensive disease, CRP $>10\text{mg/L}$ and haemoglobin $<12.1\text{g/dL}$ (F) or $<13.8\text{g/dL}$ (M) at diagnosis to give a total score of 0/3 to 3/3**, was applied retrospectively to two external validation cohorts (patients diagnosed and followed up for $>3\text{y}$ in Cambridge (UK) and Uppsala (Sweden), excluding presentation with ASC within a month of diagnosis).

Performance characteristics of the prognostic index were verified by discrimination and calibration.

Retrospective
Case control

UC
in Oxford
2007-10
Aged 16 to 89 years

Pts with ASC
at diagnosis
were excluded

Results (1)

Characteristics of development and validation cohorts

Characteristic		Oxford development (n=111)		Cambridge validation (n=96)		Uppsala validation (n=298)	
		No ASC (n=77; 69%)	ASC (n=34; 31%)	No ASC (n=71; 74%)	ASC (n=25; 26%)	No ASC (n=280; 94%)	ASC (n=18; 6%)
Gender	M	35 (45%)	15 (44%)	44 (62%)	15 (60%)	157 (56%)	9 (50%)
	F	42 (55%)	19 (56%)	27 (38%)	10 (40%)	123 (44%)	9 (50%)
Age at diagnosis	Years	33.5 (23.5, 50.8)	36 (23.5, 42.8)	34 (25, 52)	48 (28, 63)	36 (25, 54.3)	30.5 (22.5, 54.8)
Extent	E1	18 (23%)	1 (3%)	18 (25%)	0	111 (40%)	0
	E2	42 (55%)	17 (50%)	44 (62%)	5 (20%)	153 (55%)	3 (17%)
	E3	16 (21%)	16 (47%)	9 (9%)	20 (80%)	16 (6%)	15 (83%)
CRP	mg/L	3.5 (2, 11)	14 (9.25, 43.75)	3 (2, 6)	23 (17, 36)	7.4 (3.2, 10)	19 (11.3, 53)
Hb	g/dL	13.4 (12.5, 14.6)	12 (11.3, 13.9)	13.5 (12.5, 14.4)	11.2 (10.2, 12)	13.9 (13, 14.8)	10.4 (9.7, 11.2)

Results (2)

Oxford (development), Cambridge and Uppsala (external validation) cohorts

Prognostic Score		0	1	2	3
Number of patients					
	Oxford	39	32	29	11
	Cambridge	35	29	14	18
	Uppsala	163	89	32	14
Number with ASC (%)					
	Oxford	4/39 (10%)	6/32 (19%)	16/29 (55%)	8/11 (73%)
	Cambridge	0/35 (0%)	2/29 (7%)	5/14 (36%)	18/18(100%)
	Uppsala	0/163 (0%)	1/89 (1%)	4/32 (12%)	13/14 (93%)
Mean predicted risk					
	Oxford	11%	27%	46%	73%
	Cambridge	13%	23%	47%	72%
	Uppsala	13%	24%	39%	72%
IQR					
	Oxford	8 to 13%	18 to 28%	32 to 52%	61 to 82%
	Cambridge	9 to 16%	18 to 27%	39 to 54%	63 to 78%
	Uppsala	9 to 16%	17 to 27%	25 to 45%	65 to 80%

The mean predicted risk of ASC using the index was similar in the three cohorts: 73%, 72% and 72% (Oxford, Cambridge, Uppsala). Of those who scored 3/3 at diagnosis, 8/11 (O: 73%), 18/18 (C: 100%) and 13/14 (U: 93%) subsequently developed ASC.

Conclusions

Despite geographic and demographic differences among three cohorts, this simple index has been verified as a reliable tool to predict ASC within 3 years from diagnosis. Patients with a score of 3/3 at diagnosis may merit early immunomodulator therapy.