A NEW RAPID TEST FOR FECAL CALPROTECTIN (FC) PREDICTS MUCOSA HEALING IN ULCERATIVE COLITIS (UC)

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INTRODUCTION

- FC presents better correlation with endoscopic activity than the rest of biomarkers most frequently used in clinical practice (CRP, ESR, leukocytes and platelets).
- However, its use is limited because of the lack of availablity of ELISA in many centres, as well as because of the delay in obtaining the test results and subsequent delay in decision-making.
- Data on " rapid tests" (which gives results in 12 minutes for each individual patient) on predicting mucosa healing (MH) as well as on cut-off levels for FC is scarce.

AIMS

- To asses the accuracy of FC to detect endoscopic activity/MH.
- To test the optimal thresholds of FC concentration for MH.
- To analyze reliability of rapid tests against ELISA.

MATERIAL AND METHODS

- SETTING: Inflammatory Bowel Disease Unit, Bellvitge University Hospital, Barcelona.
- DESIGN: Transversal study.
- PATIENTS: 88 patients diagnosed with ulcerative colitis scheduled for colonoscopy between November 2010 and July 2011.
- Variables:
  - Clinical indexes: Mayo clinical score.
  - Biomarkers : CRP, ESR, leucocytes and platelets.
  - Endoscopic index: Mayo endoscopic subscore.
  - FC determined by both methods: ELISA (Bühlmann®) and quantitative rapid test based on inmunochromatography (Bühlmann QUANTUM BLUE®).

TEST CHARACTERISTICS	BÜHLMANN ELISA®	BÜHLMANN QUANTUM BLUE® (normal / high range)
Technique	ELISA	Inmunochromatography
Duration	3h	12 / 15 minutes
Number of samples	88	1
Amount of sample of feces	50-150 µl	60 µl / 80 µl
Range	10-3500 µg/g	30-300 µg/g / 100-1800 µg/g
Sensibility	< 10 µg/g	< 10 µg/g

RESULTS

Table 1. Epidemiological and clinical characteristics of patients at baseline.

Number of patients	88
Sex (men/women)	61/27 (60,30%/30,70%)
Age (years)	47,57 (+/- 17,26)
Disease duration (years)	12,43 (+/- 11,23)
Known extension of the disease	
Proctitis	9 (10,20%)
Left-sided colitis	35 (39,80%)
Extense colitis	42 (47,70%)
Not known	2 (2,30%)
Treatment	
Oral 5-ASA	65 (73,90%)
Topical 5 ASA	31 (35,60%)
CC : beclametasone/ sistemic/ topical	7 / 4 / 3 (8/ 4,1/3,4%)
IS (AZA, 6MP, MTX, Tacrolimus)	13 (14,60%)
TNF inhibitor	4 (4,50%)

5-ASA, 5-aminosalicylic acid; IMM, immunomodulators; AZA azathioprin; 6MP, 6 mercaptopurine; MTX, metotrexate; CyA, cyclosporine; TNF,tumor necrosis factor.

Table 2. Biological markers, clinical activity, FC and colonoscopy.

Leucocytes (*10E9/L)	7236,87 (+/- 2153,01)
Platelets (*10E9/L)	279980,73 (+/- 102386,60)
CRP (mg/dl)	19,45 (+/- 46,83)
ESR (mm)	13,74 (+/- 14,97)
Calprotectin (µg/g)	1281,12 (+/-1275,87)
Mayo Index	2,61 (+/- 2,67)
Mayo endoscopic subscore	
Mayo 0	18 (20,5%)
Mayo 1	19 (21,60%)
Mayo 2	45 (51,10%)
Mayo 3	6 (6,8%)
Extension of endoscopic activity	
Inactive	23 (26,10%)
Proctitis	13 (14,80%)
Left-sided colitis	16 (18,20%)
Extense colitis	9 (10,20%)
Incomplete assesement	27 (30,70%)

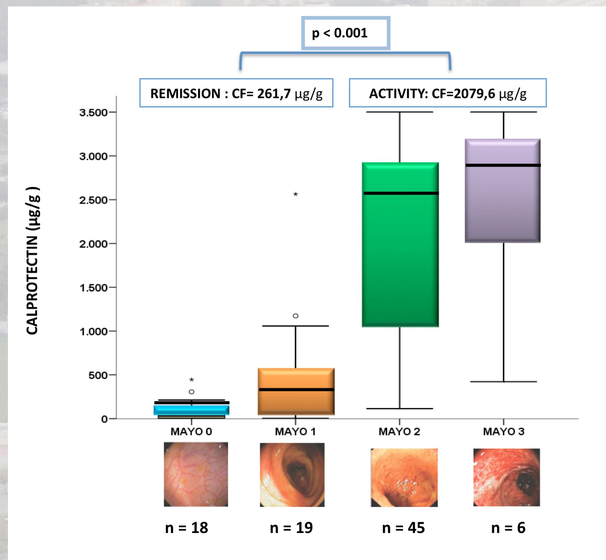
Table 3. Pearson correlation of endocopic activity and FC with FC, clinical activity and biological markers.

	FC ELISA	Clinical activity	CRP	ESR	Leucocytes	Platelets
Endoscopic activity	**0,76 (p<0,001)**	**0,71 (p<0,001)**	0,355 (p=0,001)	0,338 (p=0,004)	0,259 (p=0,18)	0,362 (p=0,001)
FC ELISA	-	0,65 (p<0,001)	0,442 (p<0,001)	0,351 (p<0,001)	0,229 (p=0,042)	0,328 (p=003)

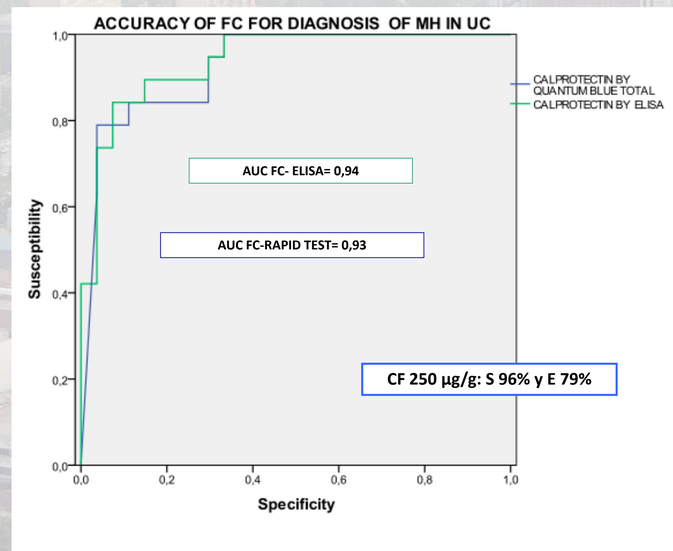
MULTIVARIATED ANALYSIS

	B	E.T.	Wald	p	Exp (B)	CI 95% EXP(B)	
						Inferior	Superior
Calpro (250µg/g)	4,031	1,043	14,942	**0,000**	56,317	7,295	434,786
Clinical activity	0,675	0,234	8,310	**0,004**	1,963	1,241	3,106
CRP	0,046	0,054	0,730	0,393	1,047	0,942	1,165
Constant	- 3,998	1,116	12,837	0,000	0,018		

FC LEVELS AND MAYO ENDOSCOPIC SUBSCORE



FC ACCURACY TO PREDICT ENDOSCOPIC ACTIVITY



FC, CLINIC and CRP ACCURACY TO PREDICT ENDOSCOPIC ACTIVITY

	Se %	Sp %	PPV %	NPV %	Global value	p
Calpro ELISA 250µg/g	**92.5**	63.3	77.5	**86.4**	86.7	<0.001
Calpro QB 250µg/g	**93.6**	77.8	84.6	**90.3**	80	<0.001
Clinical activity	76.5	81.1	84.8	71.4	78.4	<0.001
CRP	46.9	88.2	85.2	53.6	63.8	0.001

Pearson correlation ELISA- rapid test (Quantum Blue®)= 0,86

Interclass correlation coefficient= 0,82 -> excellent correlation

(Fleiss, 1986)

CONCLUSIONS

- Fecal calprotectin is an accurate biomarker of endoscopic activity/mucosa healing.
- A 250 µg/g cut-off level of FC offers a high sensitivity and specificity to predict MH .
- The good correlation between ELISA and the new rapid quantitative test enables us to it in order to take fast and adequated decisions.

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