



# Rapid test Quantum Blue<sup>®</sup> faecal calprotectin as predictor of relapse in patients under maintenance treatment with Infliximab<sup>®</sup>

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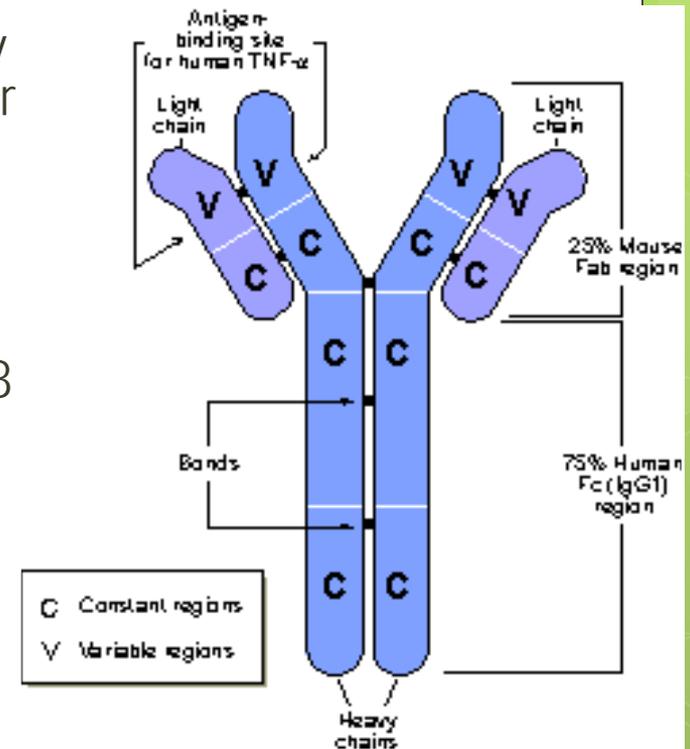
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# Background

- Inflammatory bowel disease is a group of chronic diseases of gastroenterology tract.
- The main diseases are Crohn's disease and ulcerative colitis.
- In inflammatory bowel disease (IBD), predicting relapse by measuring non-invasive biomarkers could allow early treatment adaptation.
- Few data exists about the usefulness of close monitoring of calprotectin to predict relapse.

# Background

- Infliximab is a chimeric IgG1 monoclonal antibody comprised of 75 percent human and 25 percent murine sequences, which has a high specificity for, and affinity to, tumor necrosis factor (TNF)- $\alpha$ .
- Infliximab is administered through IV with an induction schedule comprising doses at weeks 0, 2 and 6. Maintenance doses are given every 4-8 weeks.
- Infliximab is available for treatment of patients with moderately-to-severely active inflammatory bowel disease (Crohn's disease and ulcerative colitis).
- Infliximab is also indicated for the treatment of rheumatoid arthritis, psoriatic arthritis, and ankylosing spondylitis.



# AIM

- The AIM of the study was to evaluate the predictive value of rapid test for faecal calprotectin levels for flares in patients with IBD under maintenance treatment with Infliximab®.

# Methods

- A prospective study was designed. Inclusion criteria were IBD patients (Crohn's disease (CD) and ulcerative colitis (UC)) in clinical remission under a stable 5mg/kg Infliximab<sup>®</sup> therapy.
- Rapid test for fresh faecal calprotectin in a lateral flow immunoassay was measured the day of the infusion, received in gastroenterology office.
- Clinical examination was performed two months after the infusion. Relapse was defined as a Harvey-Bradshaw score >4 in CD patients and as a Mayo score >2 in UC patients.
- U-Mann Whitney test, Chi square test, Odds Ratio, ROC analysis and Logistic regression were performed in IBM<sup>®</sup> SPSS 20.

# Calprotectin test

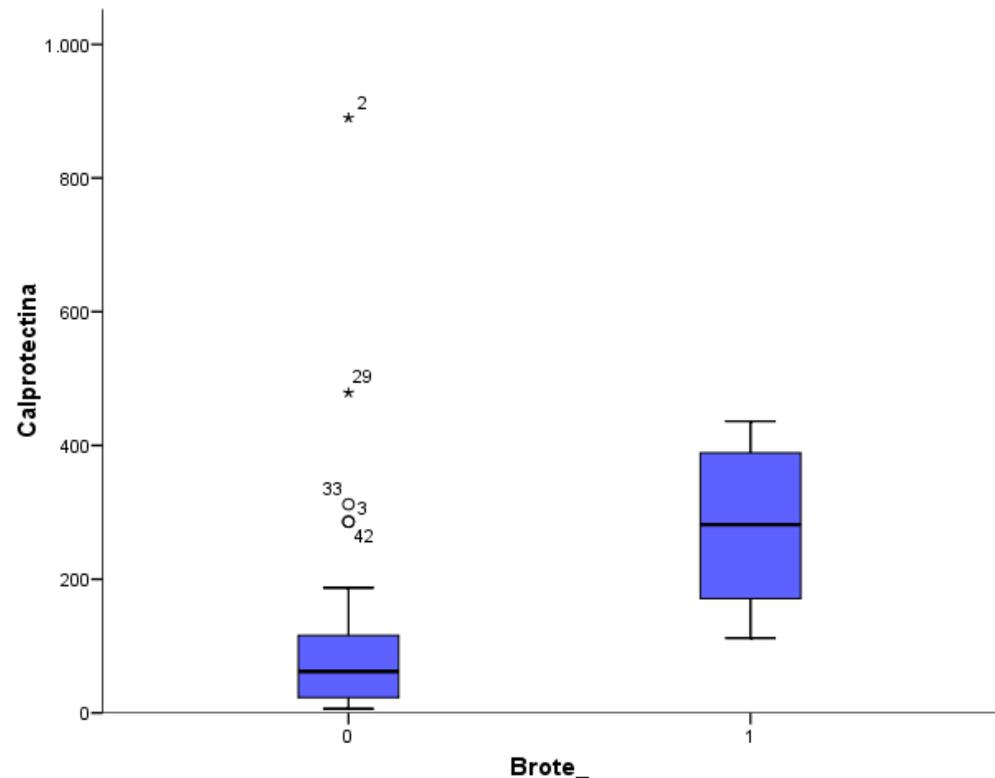
- **Calprotectin** is a 36-kDa calcium and zinc binding protein that accounts for about 60% of total proteins in the cytosol fraction in neutrophil granulocytes
- **Quantitative Lateral Flow Assay:** The test is designed for the selective measurement of Calprotectin antigen by sandwich immunoassay designed for quantitative determination of hetero-dimeric Calprotectin in human stool samples. The 2° mAbs are conjugated to Colloid Gold particles for quantifying signal intensity of calprotectin.
- **The Quantum Blue® Reader** is a Lateral Flow Reader designed to analyze colorimetric tests by reflectometry. A clear digital reading in  $\mu\text{g/g}$  means no subjectivity in the analysis. The fast and precise scanning allows the detection of quantitative results in 15 minutes (excluding extraction time).

# Results

- 43 patients were recruited (mean age 46 years  $\pm$ 11.9), 53.5% were female, 62.8% had CD and 37.2% UC. After two months, 81.4% patients remained in clinical remission and 19.6% presented a relapse.

# Median calprotectin levels

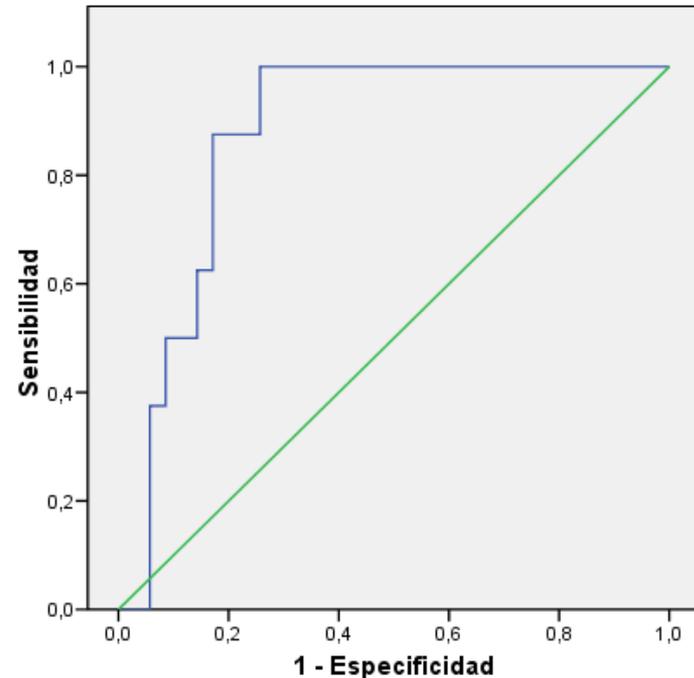
- In patients in remission median calprotectin levels were 115.6 mg/kg of faeces. Patients who flared had significantly higher calprotectin levels at the moment of flare (median calprotectin levels of 278.9 mg/kg). (U-MW  $p < 0.001$ )



# ROC curve Flare Vs Remission

ROC analysis (flare vs remission) suggested that a calprotectin level of **110.5 mg/kg** indicated as the best cut-off point showed high sensitivity (100%) and high specificity (74.3%) to model flare. Area under the curve was 0.875 with good accuracy ( $p=0.001$  SE: 0.053 CI 95%: 0.772-0.978).

Curva COR



Área bajo la curva

Variables resultado de contraste: Calprotectina

Área	Error típ.(a)	Sig. asintótica(b)	Intervalo de confianza asintótico al 95%	
			Límite superior	Límite inferior
,875	,053	,001	,772	,978

a Bajo el supuesto no paramétrico

b Hipótesis nula: área verdadera = 0,5

# Regression analysis

- For a value of calprotectin over 110.5 mg/Kg an OR= 1.889 ( $p < 0.001$ ; CI 95%:1.207-2.957) was obtained.
- Logistic regression analysis showed a 0.6% increased risk per unit of calprotectin ( $p = 0.047$ ) in a model adjusted for age and sex.

**Variables en la ecuación**

		B	E.T.	Wald	gl	Sig.	Exp(B)	I.C. 95% para EXP(B)	
								Inferior	Superior
Paso 1 <sup>a</sup>	Calprotectina	,006	,003	3,956	1	,047	1,006	1,000	1,012
	Edad	,010	,049	,045	1	,833	1,010	,918	1,111
	Sexo(1)	-1,411	1,219	1,340	1	,247	,244	,022	2,659
	Constante	-2,466	2,322	1,128	1	,288	,085		

a. Variable(s) introducida(s) en el paso 1: Calprotectina, Edad, Sexo.

# Conclusions

- In IBD patients under infliximab maintenance therapy calprotectin levels highly correlate with prediction of a relapse.
- Remission is associated with low levels.

Thank you

