# Anti-Laminaribioside and anti-Chitobioside Antibodies as Predictors of Crohn's Disease

Eran Israeli[1,2], Itamar Grotto[2], Miri Blank[3], Liat Anafi[3], Eran Goldin[1] and Yehuda Shoenfeld[3]

Gastroenterology Department, Division of Medicine, Hebrew University-Hadassah Medical Center, Jerusalem, Israel[1],  IDF Medical Corps[2] and Department of Medicine 'B',
Center for Autoimmune Diseases, Sheba Medical Center, Tel-Hashomer, Sackler Faculty of Medicine, Tel-Aviv University, Israel[3]

## Abstract

Background: Anti *Saccharomyces cerevisiae* mannan antibodies (ASCA) are associated with Crohn's disease (CD). We have previously shown that ASCA were present in the sera of patients many years before clinical diagnosis, with an increase of antibody levels as the time to diagnosis was approached. Novel anti-glycan antibodies, anti-laminaribioside -IgG (ALCA) and anti-chitobioside- IgA (ACCA), were found to be specific for CD. A combined panel of these antibodies improved sensitivity and specificity for diagnosis of CD in established patients. We assessed the onset and development of the aforementioned antibodies before diagnosis of CD.

Methods: Utilizing the Israeli Defense Force (IDF) Serum Repository, we identified sera samples from 28 persons obtained an average of 64 ± 55 months before onset of CD, as well as 52 sera from controls matched for gender, age and day of recruitment. Sera were tested for gASCA-IgG, ALCA and ACCA.

Results: 12/28 (43%) of the study group were positive when combining a positive gASCA or ALCA vs. 1/52 (2%) among matched controls (p<0.001). ACCA was positive in 12/28 (43%) of the study group but also in 24/52 (46%) of matched controls. The average level of all three antibodies in sera obtained from patients after CD diagnosis was higher then in sera obtained from patients before CD diagnosis (the study group). This difference reached statistical significance only for gASCA (107.6±73 U vs. 54.5±53 U respectively, p=0.04).

Conclusions: A panel combining gASCA and ALCA has an improved sensitivity for predicting CD.

References:
1) Israeli E et al. Anti-*Saccharomyces cerevisiae* and antineutrophil cytoplasmic antibodies as predictors of inflammatory bowel disease. *Gut* 2005;54:1232-6.
2) Altstock RT, et. al. *Gastroenterology* 2005;128;A-303

## Background

- We have previously shown that Anti *Saccharomyces cerevisiae* mannan antibodies (ASCA) were present in Crohn's disease (CD) patients years before the clinical onset of disease.

- 10/32 of CD patients (31.3%) were ASCA positive before clinical diagnosis as compared with 0/95 in controls. Overall, the mean interval between ASCA detection and diagnosis was 38 months (range 20-77 months).

- Novel anti-glycan antibodies, anti-laminaribioside -IgG (ALCA) and anti-chitobioside- IgA (ACCA), were found to be specific for CD. A combined panel of these antibodies improved sensitivity and specificity for diagnosis of CD in **established** patients.

## Aims

**Assess the onset and development of ALCA and ACCA <u>before</u> diagnosis of CD and examine whether a combined panel of Ab's would improve prediction of CD**

## Methods

- Utilizing the Israeli Defense Force (IDF) Serum Repository, we identified sera samples from 28 persons obtained an average of 64 ± 55 months before onset of CD, as well as 52 sera from controls matched for gender, age and day of recruitment.

-  Sera were tested for gASCA-IgG, ALCA and ACCA.

- Sera were obtained between -189 months to -4 months before clinical diagnosis of CD (average of 64±27 months).

- Sera for established CD patients were obtained between 1 and 28 months after clinical diagnosis
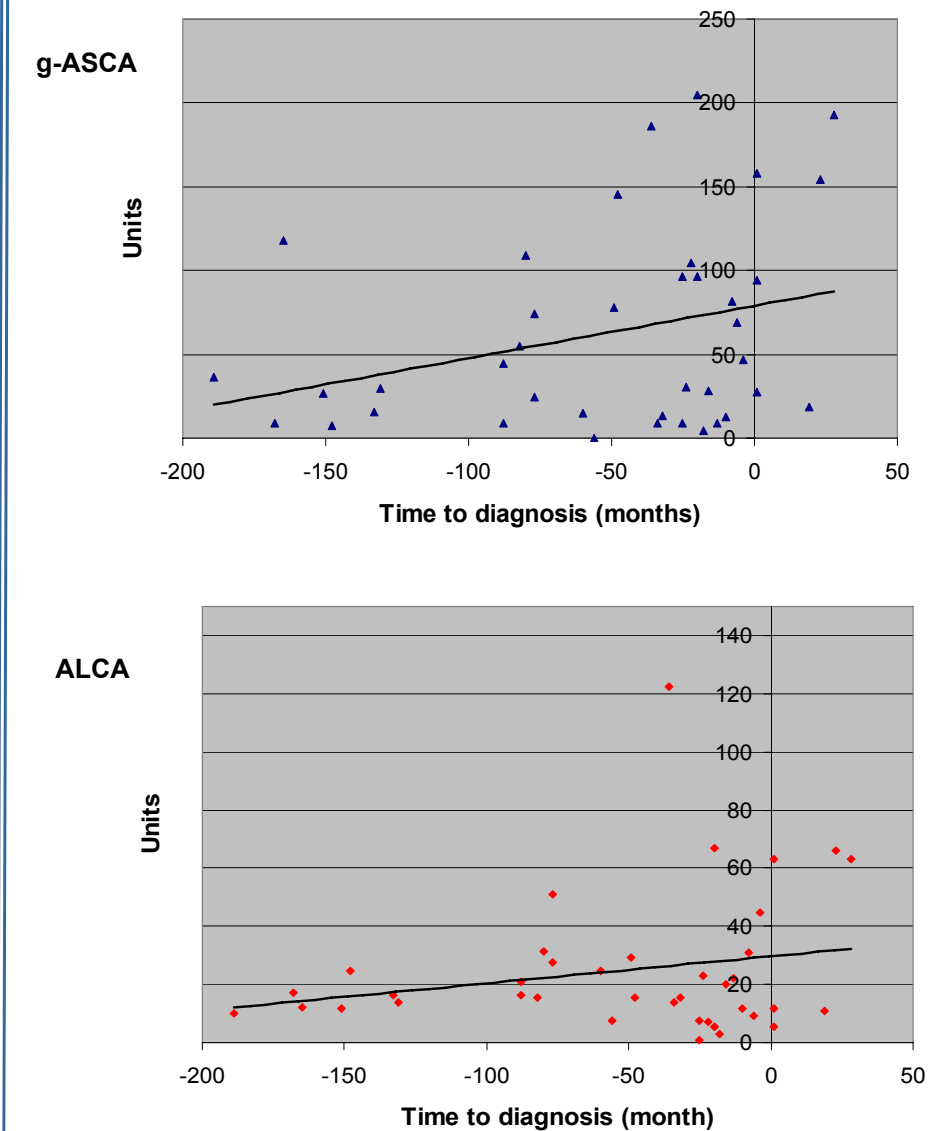
## Results

- 12/28 (43%) of the study group were positive when combining a positive gASCA or ALCA vs. 1/52 (2%) among matched controls (p<0.001).

- ACCA was positive in 12/28 (43%) of the study group but also in 24/52 (46%) of matched controls.

- The average level of all three antibodies in sera obtained from patients after CD diagnosis was higher then in sera obtained from patients before CD diagnosis (the study group).

- This difference reached statistical significance only for gASCA (107.6±73 U vs. 54.5±53 U respectively, p=0.04).

Table 1:  Mean titre of antibodies before and after diagnosis of Crohn's disease

| Titre of Ab (U) | g-ASCA | ALCA | ACCA |
|---|---|---|---|
| Before CD diagnosis | 54.5 ± 53 | 23.0 ± 22 | 71.7 ± 42 |
| After CD diagnosis | 107.6 ± 73 | 36.7 ± 30 | 96.9 ± 48 |
| P | 0.04 | 0.19 | 0.20 |



Graph 1:  antibody titres for individual patients

## Conclusions:

- A panel combining gASCA and ALCA has an improved sensitivity for predicting CD <u>before</u> appearance of clinical symptoms

- As the clinical diagnosis of CD is approached, there is a mean rise in titres for all three antibodies, although it was statistically significant only for  g-ASCA.