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The Role of Serological Markers and Immunoglobulins as a Biomarker for Paediatric Crohn's Disease Activity

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Background:

Serological markers have been used in differentiating Crohn's disease (CD) from Ulcerative Colitis (UC). However, their use as a biomarker for CD clinical activity is uncertain.

Objective:

The aim of this study was to assess the association between Anti-saccharomyces cerevisiae antibody (ASCA) and serum immunoglobulins IgA and IgG and clinical disease activity (CDA) in paediatric CD patients (< 17 years) with time as a covariate.

Methods:

Data were obtained from the Manitoba Longitudinal Pediatric Inflammatory Bowel Disease (IBD) Registry (MALPID) from 2012 to 2016. Pearson correlation was used to determine the correlation between PCDAI, ASCA and immunoglobulins. Cox-regression analysis was used to estimate the hazards ratio (HR) of moderate to severe CDA among the patients with abnormal ASCA and immunoglobulin levels compared to patients having normal levels. The analysis was adjusted for the following a priori covariates: age at diagnosis, sex and BMI.

Results:

A total of 238 data points were available from 74 CD patients. There was no significant correlation between PCDAI and ASCA IgA (r=-0.12, p=0.07), ASCA IgG (r=0.03, p=0.67), IgA (r=0.08, p=0.28) and IgG (r=0.09, p=0.22). The event-rate of moderate to severe CDA was higher among patients with abnormal ASCA IgA (HR:2.46, 95%CI:1.06-5.72). However, there was no association between CDA and ASCA IgG (HR:1.42; 95%CI:0.67-3.04), serum IgA (HR: 0.98; 95%CI:0.28-3.39) and serum IgG (HR:1.8; 95%CI:0.60-5.42). After adjusting for the covariates, the event-rate of moderate to severe disease was higher among patients with abnormal ASCA IgA (aHR:4.32; 95%CI:1.14-126.38) and abnormal IgA (aHR: 5.68; 95%CI:1.42-22.67). In contrast, moderate to severe disease patients did not have a higher risk of abnormal ASCA IgG values (aHR: 2.77; 95%CI:0.77-9.89) and abnormal IgG (aHR:2.63; 95%CI:0.71-9.80).

Conclusion:

Both abnormal ASCA IgA antibodies and IgA are associated with higher event rate of moderate to severe disease among children and young adults with Crohn's disease.