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Fecal calprotectin as biomarker of inflammation in different gastrointestinal disorders in Latin-American children

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Objective and type of study: Fecal calprotectin (FC) is a granulocytes' cytosolic protein and a stable biomarker at the intestinal level. It is a useful tool for some inflammatory entities, which could be used as a non-invasive approach to pediatric gastrointestinal disorders (GD). Few studies have explored pediatric GD in Latin-American samples. The objective of the present study was to describe the levels of FC in children diagnosed with multiple GD in a Latin-American country. The study is descriptive and retrospective.

Method: A review of the clinical records (from 2012 to 2019) of patients who consulted a Colombian gastroenterology ambulatory health center of gastroenterology, hepatology and pediatric nutrition (GASTRONUTRIPED) was conducted. Sociodemographic data, nutritional status, gastrointestinal diagnosis and FC values (processed by immunoassay) were obtained. FC values were classified according to the NICE guidelines: negative < 50, low 51-100 µg/g, moderate 101-200 µg/g and severe > 200 µg/g. Statistical analyses were conducted with STATA 13. Continuous variables were described by central tendency and dispersion statistics analyses and proportions were used to characterize the categorical variables. A Chi-squared test and the Fisher's exact test were used to compare the distribution of the categorical variables; the continuous variables were analyzed by a Kruskal-Wallis test (non-parametric method).

Results: 217 patients, Median = 20 months and an interquartile range (IQR) of 50. More than half (n=114, 52.53%) had malnutrition, 43.32% (n=94) were eutrophic. 72.35% presented at least one gastrointestinal disorder. The most common was food allergy (46.84%, n=106), followed by post-enteritis syndrome (5.07%, n=11). Functional constipation (FCo) was the most frequent functional disorder (22.12%, n=48). The FC median was 98 µg/g (IQR 245 µg/g). Most of the patients (69.59%) presented negative FC values; 21.2% low; 17.05% moderate and 31.34% severe. The FC median in food allergies cases was 149 µg/g (IQR 145.5 µg/g), 58.4 µg/g for FCo (IQR 101.2 µg/g) and 198 µg/g for post-enteritis syndrome (IQR 195 µg/g). Statistical significant differences were found between the FC levels and the specific GD (p = 0.0363). Figure 1.

Conclusions: FC usefulness for gastrointestinal disorders is widely recognized. However, its use on other pathologies remains uncertain making the interpretation difficult. In the present study, higher levels of FC were observed for some GD such as food allergies, gluten related disorders, post-enteritis syndrome, functional diarrhea and chronic abdominal pain. Further studies are needed in order to standardize normalcy-levels and cut-off points for multiple digestive disorders.
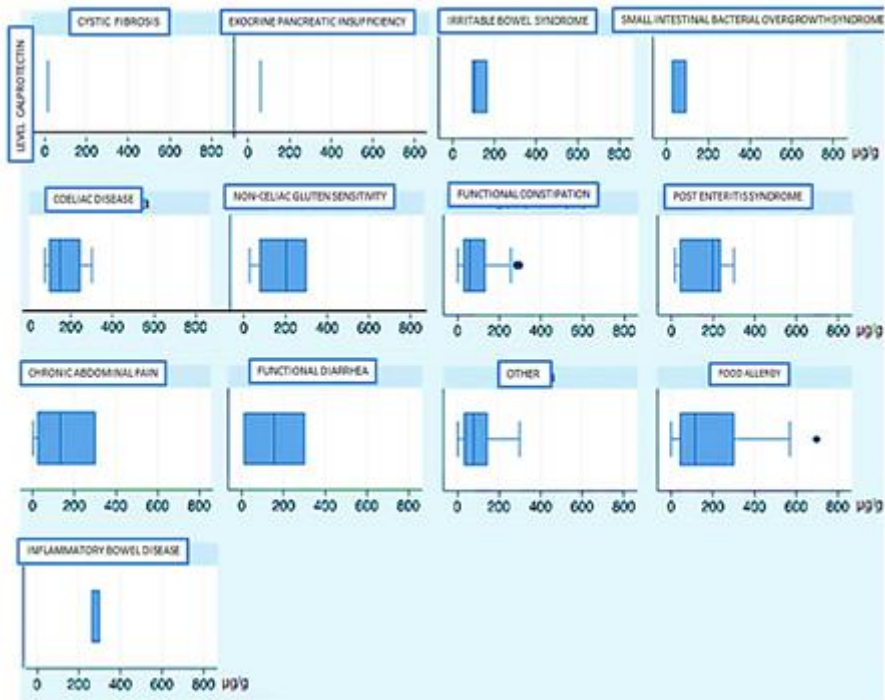
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