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CARBOHYDRATE CROSS REACTION DETERMINANTS (CCD) IN AEROALLERGEN AND FOOD SPECIFIC IgE PANEL IN VENEZUELAN POPULATION

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Background/Objectives: One factor that could affect IgE reactivity results is the presence of carbohydrate cross-reactive determinants (CCD). These CCD can induce IgE production, without clinical relevance. The identification of anti-CCD IgE antibodies allows identifying those samples that could generate false positive reactions. Our objective was to determine the prevalence of CCD in aeroallergen and food-specific IgE panel.

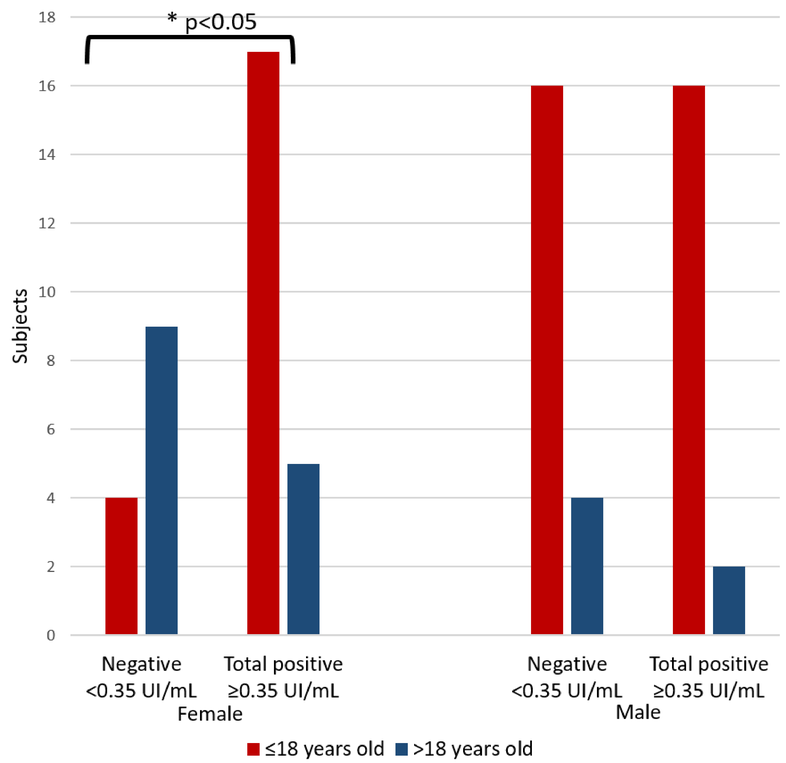
Methods: A descriptive, prospective, cross-sectional study was carried out in Venezuelan subjects, without distinction of sex or age, between January and April 2023. Total IgE levels were obtained by enzyme-linked immunosorbent assay (ELISA). Specific IgE was determined by a commercial multiple allergen-specific IgE assay, taking in account ≥0.35 IU/mL as a positive value. The statistic used was Chi-square with Yates' correction.

Table 1. Serum levels of total and specific IgE by age group.

Parameter	≤18 years	> 18 years
Female, n	21	14
Male, n	32	6
Total serum IgE (UI/mL), mean	210.9	150.3
Anti-CCD IgE (UI/mL), mean	4.68	1.169
Anti-Dog epithelium IgE (UI/mL), mean	15.31	6.31
Anti-Cat epithellium IgE (UI/mL), mean	6.63	3.81
Anti-D. farinae IgE (UI/mL), mean	45.92	34.89
Anti-D. pteronyssinus IgE (UI/mL), mean	40.7	23.88
Anti-Pork IgE (UI/mL), mean	1.219	0.55
Anti-Crab IgE (UI/mL), mean	11.75	1.53
Anti-Oats IgE (UI/mL), mean	0.99	0.26
Anti-Cocoa IgE (UI/mL), mean	0.6	0.25

Results: 73 Venezuelan subjects were included, 48% were female and 52% were male. The mean age was 17.5 years, 73% of the subjects were under 18 years old. The mean concentration of total IgE was 177.7 UI/mL. On the specific IgE panel, the most predominats allergens were dog epithelium for aeroallergens and pork for food allergens (Table 1).

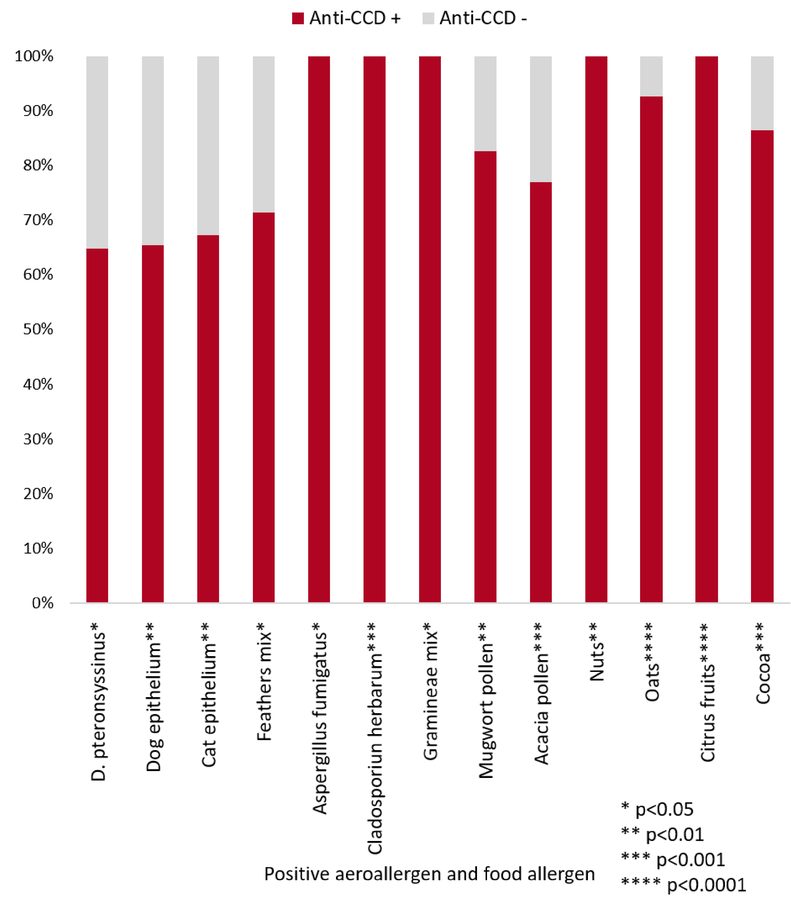
Figure 1. Positivity of anti-CCD IgE by age and sex.



A prevalence of anti-CCD IgE was found in 55% of the tested sera. The overall mean was 3.71 IU/mL. Separating by age groups, anti-CCD IgE was positive in 62% of subjects ≤18 years and positive in 35% of those >18 years. Statistical differences were found in women ≤18 years and positive anti-CCD IgE. (Figure 1)

Regarding the presence of anti-CCD IgE and allergen-specific IgE, a positive correlation was observed for multiple aeroallergens and food allergens. (Figure 2)

Figure 2. Positivity of anti-CCD IgE and specific IgE for food and aero-allergen.



Conclusions: Owing to the high presence of anti-CCD IgE in our population and sociocultural factors, it is necessary to develop new CCD-specific inhibitors and to conduct larger-scale studies in order to overcome the diagnostic difficulties of allergic diseases.