

CORRESPONDENCE

Re: Body mass index and allergic sensitization in children with asthma or type 1 diabetes

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Evaluating a birth cohort of children followed until the age of 8 years, Murray et al. [1] showed that high body mass index (BMI) increased the risk of current wheeze at ages 3, 5 and 8 years, but at the age of eight, the risk was significantly greater in girls than boys [1]. However, although high BMI also increased the risk of late-onset eczema only in girls, the age-related change in the sex pattern of incidence of asthma and eczema did not appear to be related to changes in the pattern of atopy [1]. Indeed, in asthmatic children, gender does not seem to affect the relationships between atopic sensitization and clinical or pulmonary function parameters [2]. As also discussed in the related Editorial [3], some pathogenic issues remain debated, including the role of hormones, adipokines and cytokines released by the fat tissue and the relationship between fat excess and respiratory function and/or allergic sensitization.

Obesity is associated with a low-grade systemic inflammation, increased production of IL-6, leptin and TNF- α and a reduced secretion of IL-10 [4]. This results in a decreased regulatory T cell function, with lower immunological tolerance to antigens and allergens [4]. However, while high BMI may precede the onset of Th2-mediated diseases [1, 5], there is no evidence of association between and the development of Th1-mediated diseases, such as type 1 diabetes mellitus (T1DM) [5, 6].

Although allergic sensitization may be present also in children with Th1-mediated diseases [7], no reports have been published directly comparing children of both genders with Th2- or Th1-mediated disorders. The aim of our study was, therefore, to evaluate whether BMI could be different in asthmatic and in T1DM boys and girls, with or without atopy.

Firstly the BMI was calculated as weight (kg)/height² (m²) and then expressed as a continuous variable, in standard deviation score units (z-score), computed for each subject, according to the LMS method [8] and using Cacciari's standards as reference population [9]. Allergic sensitization was evaluated by skin prick test and confirmed by serum allergen specific IgE measurement

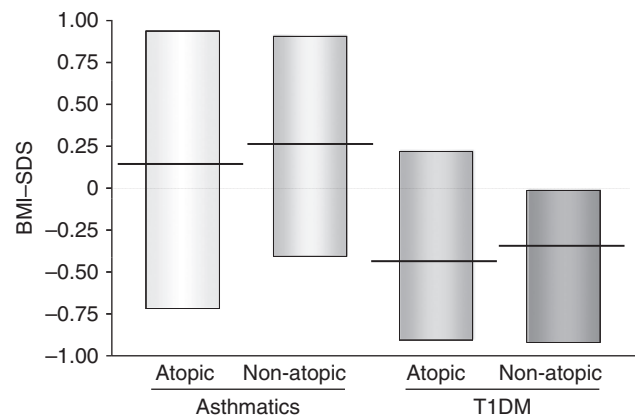


Fig. 1. Body mass index (BMI) z-score in asthmatic and diabetics with or without atopy. BMI expressed in standard deviation score units (z-score), computed for each subject, according to the LMS method [8] and using Cacciari's standards as reference population [9] was reported on the ordinate whereas the four patient groups are shown in the abscissa. Horizontal lines represent median values and boxes represent the lower and upper quartiles.

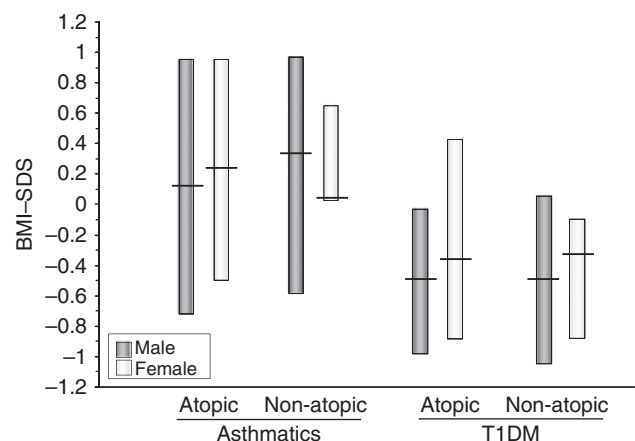


Fig. 2. Body mass index (BMI) z-score in male and female asthmatic and diabetics with or without atopy. BMI expressed in standard deviation score units (z-score), computed for each subject, according to the LMS method [8] and using Cacciari's standards as reference population [9] was reported on the ordinate whereas the four female and male patient groups are shown in the abscissa. Horizontal lines represent median values and boxes represent the lower and upper quartiles.

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[7]. Mann–Whitney *U*-test or Kruskal–Wallis test followed by Dunn's test as *post hoc* test were performed when appropriate. Comparisons in the frequency of qualitative variables were made by χ^2 -test or the Fisher's Exact test in case of expected frequencies < 5.

Two-hundred and two children with mild asthma, 149 males and 53 females, median age 11.2 years (LQ–UQ:9.5–12.6), and 82 children with T1DM, 45 males and 37 females, median age 11.9 years (LQ–UQ:10.0–13.7), were enrolled. In the asthma group, 166 children (82.2%) were atopic and 36 were non-atopic, while in T1DM group, 33 (40.2%) were atopic and 49 were non-atopic. No T1DM child had current asthma, while 33 had current allergic rhinitis. BMI-SDS was significantly higher in asthmatic than in diabetic children ($P < 0.0001$), also when the atopic and non-atopic subgroups were evaluated separately ($P < 0.05$, each comparison) (Fig. 1). In addition, no statistically significant differences in BMI-SDS values were detected within the four patient subgroups, when males and females were compared (Fig. 2).

These findings, showing no effect of gender on allergic sensitization in both asthmatic and T1DM children, sub-

stantiate the data from Murray et al. [1]. This is relevant considering the differences in the study design, clinical characteristics of the children evaluated and geographic location, which possibly include different allergen exposure and dietetic habit. Of interest also is the elevated BMI-SDS and overweight frequency detected in the asthmatic, as compared with the T1DM population, that confirms a previous finding in adult patients with asthma and another Th1-mediated disease, i.e. systemic lupus erythematosus [10]. The relative importance of the type of diet prescribed to T1DM patients on body weight, but also the possible association between atopy and BMI in T1DM (no overweight diabetic children without atopy was detected) and the hypothetical protective effect of diabetes on asthma occurrence (no diabetic children had current asthma), deserve further studies.

Acknowledgements

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