

of life is excellent, we should be advised that food allergic people are a new group at risk for vitamin C deficiency. It underlines the importance of nutritional follow-up in food allergic people.

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Obesity and asthma in the Portuguese National Health Survey

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Key words: asthma; body mass index; obesity.

In addition to increasing mortality from all causes, obesity carries with it the associated problems of the rising rates of its comorbidities,

and a possible relationship between asthma and obesity has been suggested

(1). Epidemiological data, elegantly reviewed by Ford (2) supports the hypothesis that obesity is a risk factor for asthma. Recently, obesity has been suggested as a pro-inflammatory state (3) but the mechanisms relating these two conditions are still questionable (4). The aim of our study was to evaluate the association between obesity and asthma in a representative sample of the Portuguese adult population.

Data for this study were drawn from the Portuguese third National Health Survey (National Health Observatory, National Institute of Health – Dr Ricardo Jorge, Ministry of Health) carried out in 1998–1999, in collaboration with Ministry of Health staff, particularly Carlos Dias and Maria João Branco. The study sample included all subjects older than 18 years ($n = 39\,640$), who participated in the National Health Survey. This

probabilistic sample was considered representative of the main regions of mainland Portugal. The survey response rate was 82%. Trained interviewers conducted face-to-face interviews in each household and inquired participants on social and demographic characteristics, smoking status, daily physical activity, weight and height [those anthropometric measures were self-reported and body mass index (BMI) was then calculated; individuals with BMI ≥ 30 kg/m² were considered obese]. Information on asthma was based on the following question: 'During the year before the interview, have you had asthma?'. Separate logistic regression models were fitted for male and female to estimate the magnitude of the association between obesity and asthma, adjusting for age, smoking habits, education, income, physical activity, and area of residence. Statistics were performed using SPSS 12.0 (SPSS Inc., Chicago, IL, USA).

The study sample comprised 20 977 women (52.9%) and 18 663 men, with mean ages of 50.3 (± 18.88) and 47.7 (± 18.51) years respectively; BMI was significantly lower in women than in men (25.1 ± 4.53 kg/m² vs 25.6 ± 3.83 , $P < 0.001$). There was a lower proportion of smokers among women compared with men (8.2% vs 30.5%, $P < 0.001$), and the prevalence of asthma was 5.5% in women and 6.2% in men.

Asthma prevalence was slightly higher among those underweight (BMI < 18.5 kg/m²) than in the other weight categories in both genders (Table 1). However, in logistic regression models, neither in women or men,

Table 1. Body mass index (BMI) and asthma in 39 640 adults participating in the Portuguese National Health Survey

	Women ($n = 20\,977$)						Men ($n = 18\,663$)					
	No asthma (%)	Asthma (%)	P^*	OR	CI 95%	$P^\dagger$	No asthma (%)	Asthma (%)	P^*	OR	CI 95%	$P^\dagger$
BMI (kg/m ²)												
< 18.5	92.6	7.4		1.43	0.99–2.06		92.7	2.1		1.46	0.89–2.40	
18.5–24.9	94.8	5.2		1.00	(reference)		94.0	43.2		1.00	(reference)	
25.0–29.9	94.5	5.5		1.05	0.88–1.26		93.7	43.0		1.04	0.89–1.21	
≥ 30.0	94.3	5.7	0.048	1.14	0.90–1.44	0.287	93.6	11.6	0.627	1.06	0.84–1.35	0.561

Data are presented as percentage or OR relative to reference where indicated.

*Chi-squared test.

$^\dagger P$ -trend, adjusted for smoking habits, age, physical activity, income, education and area of residence.

increased BMI was associated with significant odds ratio for having asthma during last year, even after adjusting for confounders (Table 1).

Although the results from several prospective studies (5, 6) suggest that obesity antedates asthma in the present study, obesity was not related to asthma occurrence. These 'inconsistencies' recommend to consider further research in order to elucidate the mechanisms underlying the epidemiology of obesity and asthma, and the specific role of moderating variables such as the race, genetic predisposition, common inflammatory pathways, social, economical and environmental conditions, physical activity or food habits.

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Lower serum concentration of dehydroepiandrosterone sulphate in patients suffering from chronic idiopathic urticaria

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Key words: chronic urticaria; dehydroepiandrosterone.

As the hormonal profile of patients with chronic idiopathic urticaria (CIU) is poorly characterized, it is interesting to evaluate the behaviour of circulating hormones in urticaria patients, in order to relate the urticarial processes to possible hormonal alterations. Adrenal androgens, dehydroepiandrosterone (DHEA) and its sulphate derivate, DHEA-S, have been suggested to be involved in and important to immune and inflammatory responses (1, 2).

Previously, we examined the behaviour of circulating DHEA-S in female CIU patients (3), assuming that women were more frequently affected by this disease and develop some autoimmune diseases more often than males. Despite of an interesting observation proving significantly lower concentration of circulating DHEA-S in female patients

than in healthy controls (3), we did not answer the question whether the decline in DHEA-S concentration was a phenomenon generally accompanying CIU. Therefore, the present study examined serum concentration of DHEA-S in both symptomatic and non-symptomatic male population suffering from CIU.

The study group consisted of 31 males (mean age 39 ± 11 years) with CIU. The patients were divided into two groups: I – 13 non-symptomatic patients, treated with anti-histamine drugs, and II – 18 symptomatic patients, untreated. The control group consisted of 36 healthy males (mean age 36 ± 12.5 years). Serum DHEA-S concentration was measured by electrochemiluminescence immunoassay 'ECLIA' (Roche Diagnostics, Mannheim, Germany).

The unpaired Student's *t*-test was used to compare results from urticaria patients (as a whole) and the controls. Analysis of variance (one-way ANOVA) was used to screen differences among the three groups, followed by the appropriate *post hoc* test.

In male CIU patients, serum concentration of DHEA-S was significantly lower than in healthy men (259.7 ± 131 and 373.5 ± 126 µg/dl; mean $\pm$ SD; $P = 0.001$) (Fig. 1). DHEA-S concentration was similar in symptomatic patients and non-symptomatic, treated CIU patients. Both patient groups showed significantly lower DHEA-S values with respect to controls.

The present findings demonstrate that statistically, serum concentration of DHEA-S is significantly lower in male

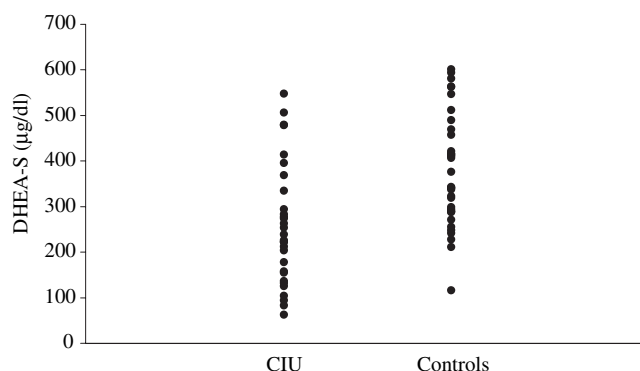


Figure 1. Individual serum concentration of DHEA-S in CIU male patients in comparison to healthy subjects.