

WEDNESDAY, SEPTEMBER 28TH 2011

510. Asthma: improving diagnosis and management for reaching better control

P4917

Including variability as a criteria, increases diagnostic accuracy in elite asthmatic swimmers after mannitol and exercise challenge

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Increased frequency of asthma has been reported among swimmers, but many tests have a low sensitivity to detect asthma among elite athletes. The Aim was to investigate the prevalence of asthma among elite swimmers, to compare sport specific exercise test with Mannitol and explore the tests ability to detect asthma.

Methods: 101 elite swimmers (14-24 years) performed both Mannitol provocation and a sport specific exercise test. Mannitol positivity was defined as either direct FEV₁ PD15 or as β_2 - reversibility $\geq 15\%$ after challenge (=extended criteria). A direct positive exercise test was defined as a drop in FEV₁ of 10% compared to baseline or a difference in FEV of $>15\%$ either spontaneous, variability or with β_2 -agonist, reversibility (=extended criteria).

Results: We found a high prevalence of Mannitol and/or Exercise positivity. For Mannitol, 26 were positive by ordinary criteria and 43 with extended criteria. The corresponding numbers for exercise test were 14 and 24. When including reversibility and variability to define a positive test the sensitivity to detect current asthma with or without exercise induced symptoms increased while the specificity remained unchanged. Direct positivity for Mannitol or Exercise poorly overlapped using ordinary criteria. The conformity was better using the extended criteria.

Conclusion: We found a high prevalence of EIA among elite swimmers. The use of variability and reversibility as additional criteria to define a positive test increased the ability to detect asthma with or without exercise induced symptoms, without lowering the specificity, and should therefore be considered in the interpretation of the tests.

P4918

Asthma severity and duration influence to fetoplacental circulation

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Hemodynamic of fetoplacental circulation in Asthmatic patients is not studied enough yet. Modern data on asthma severity duration and its control influence to fetoplacental circulation are still lack and controversial.

The goal of our study was investigation of fetoplacental circulation with ultrasonic dopplerography. Pregnants with different asthma severity and treatment were studied at 34 week of gestation.

Materials & methods: 73 Asthmatic pregnant were studied (5 - severe persistent, 18 - moderate persistent, 22 - mild persistent & 28 - mild intermittent). 64 females without lung pathology were studied also as a control group (K). ICS were administered to 55 patients. Among them 17 rejected ICS use and were administered SABA with other medications instead. Systolo-diastolic ratio (SD) in uterine (UA), umbilical (UmA) and fetus medial cerebral (ACM) arteries was measured.

Results: SD was increased in UA and ACM within asthmatics, but with no significantly differences. In moderate persistent asthma SD was significantly higher in UA ($2,51 \pm 0,29$) in comparison with mild persistent ($1,91 \pm 0,18$) and with K ($1,95 \pm 0,13$) ($p < 0,05$). In pregnant, who undergone asthma relapse during the first trimester SD in UA ($2,69 \pm 0,12$) differed ($p < 0,05$) in comparison with K. Reliable UA and ACM SD level differences were accepted in patients with moderate persistent asthma, who were administered ICS to ICS free patients ($1,91 \pm 0,15$ to $2,82 \pm 0,59$) and ($4,39 \pm 0,43$ to $5,98 \pm 0,68$) respectively ($p < 0,05$).

Conclusions: Relapse of Asthma in the first trimester of pregnancy, severity of Asthma and absence of basic therapy influence level of the blood flow in UA. Absence of basic therapy leads to increase of blood pressure in ACM of fetus.

P4919

Genetic characterization of the association between asthma and obesity.

Relationship with severity and asthma control

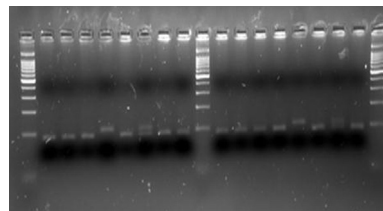
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Introduction: The inflammatory way of the TNF-alfa could be a mutual way of the asthma-obesity phenotype.

Objective: To evaluate if the presence of polymorphisms at the promoter of gene TNF-alfa-308 G/A is related with an asthma-obesity phenotype and determines the severity of the disease measured by the number of exacerbations.

Methods: We included blood samples of 48 asthmatics. To determine the presence of polymorphism -308G/A in the promoter region of TNF-alpha gene, we performed the technique of chain reaction (PCR) followed by the generation of restriction fragments and digestion of the amplified product. The product of digestion was visualized in a gel of 3% agarose. This allowed us to distinguish native allele TNF-1 with 2 fragments of restriction, 87pb and 20 bp and polymorphic allele TNF-2 of 107 bp.

Results: The average age $28 \pm 14,6$ years, 83% men. Genotype distribution was: AA (4%), AG (23%) y GG (73%). No statistically significant differences were found between different alleles and IMC. When we analyzed the evolution of disease considering the number of exacerbations we observed that presence of allele A determines greater number of exacerbations during the year ($p=0.02$).



Conclusions: The presence of the allele A has been associated with a worse prognosis as measured by the number of exacerbations, which could be explained by an increase in promoter activity and TNF secretion.

P4920

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P4921

Prevalence depression – Anxiety and impact on quality of life, asthma control and asthma severity in adult patients with asthma

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We examined the prevalence of depression and anxiety, and impact of depression

and anxiety on quality of life, and treatment response of disease in patients with asthma.

Demographic data, smoking, allergy, atopy, additional diseases, age started asthma, age diagnosed asthma, and body mass index was (BMI) calculated. Hospital-Anxiety Depression Scale (HADS), Asthma Quality of Life Questionnaires (AQLQ) in the subjects were evaluated.

The sample consisted of 414 subjects (73% female) with a mean age of 47.6±13.8 years. Regarding chronic severity, 9.8% were intermittent, 63.2% mild persistent, 24.4% moderate persistent, and 2.6% severe persistent. Furthermore, 44.1% of the subjects were controlled asthma, 47.9% were partly controlled, 8% were uncontrolled. Rates of physician-diagnosed depression and anxiety were 10.4% and 2.9%. Regarding HADS, anxiety score was ≥10 in 37.4% and depression score ≥7 in 50.2% of the subjects. Prevalence of physician-diagnosed depression was significantly higher in women. HADS depression score was significantly higher in women (p<0.05). Regarding AQLQ results, there were negative correlations between scores of symptoms, activity limitations, emotional function, environmental stimuli and severity asthma. AQLQ scores were lower in subjects with physician-diagnosed depression (p=0.000). There were negative correlations between AQLQ scores and HADS depression-anxiety scores (p=0.000).

It suggests that depression and anxiety are associated with worse asthma control and quality of life. Physicians should consider depression and anxiety in patients with worse controlled asthma and quality of life in spite of optimal therapy for asthma.

P4922

Ways of coping with asthma in everyday life: Validation of the Portuguese version

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Background: This study aims to analyze the psychometric properties of Portuguese version of scale Ways of Coping with Asthma in Everyday Life – WCAEL (Aalto et al, 2002), developed to measure coping in everyday life in asthmatic adults.

Methods: Cross-sectional study with 253 patients, both sexes, with asthma diagnosed consecutively from the Allergy & Asthma outpatient clinic (HSJoão/Porto). Exclusion criterion were: psychiatry disease and alcohol/drugs abuse. A subsample of 247 patients were evaluated with the following scales (Portuguese versions): Ways of Coping with Asthma in Everyday Life - WCAEL, Problem Solving Inventory – PSI and Asthma Control Questionnaire – ACQ. A subsample of 40 patients was reassessed after four weeks. These patients also were classified according severity of asthma (GINA, 2006) and the duration of the illness.

Results: The participants were mostly females (78.5%), with a mean (sd) age of 40.6 (15.3) years. The majority (78.7%) had severe persistent asthma and the mean duration of the illness was 20.8 (15.4) years. In the final factor analysis of principal component method (varimax rotation) 4 factors were extracted (explaining 46.3% of total variance). The internal consistency values were moderate ($\alpha=0.56-0.77$). WCAEL showed significant associations with ACQ, as well as good reproducibility over time ($r_s=0.58-0.76$).

Conclusion: This study data support the reliability, construct and criterion validity of the Portuguese version of WCAEL seems a promising scale for assessment of the coping with asthma in everyday life.

P4923

Asthma and metabolic syndrome

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Objectives: To assess the prevalence of obesity and metabolic syndrome (MS) in patients who attended our hospital with asthma diagnosis.

Materials and methods: Patients older than 16 who attended our hospital, were prospectively evaluated, selecting those who suffered from asthma, classifying their severity in: intermittent, mild persistent, persistent moderate and severe persistent, taking into account spirometric values of FEV1, considering whether the patient was completely controlled, well controlled or poorly controlled. Patients were classified according to body mass index (BMI). All patients underwent a complete physical examination recording and a lung functional test with bronchodilator test. Pearson correlation test and Chi square test were performed. The results were expressed as mean and standard deviation. p <0.05 was considered as significant.

Results: 70 asthmatic patients were studied (82% female) who were classified according to BMI. 71% of our patients had MS, meanwhile this percentage is 25% in general population. The BMI <25 group is significantly younger than the others (p <0.05). The CRP was increased in all groups. The glucose had lower values in the BMI <25 group, with significant difference from the overweight group; glucose and age showed a positive correlation of r = 0.48. The BMI <25 group

showed a higher percentage of mild asthma. Moderate asthma was predominant in the overweight group and severe asthma among the obese. Early onset asthma was higher in the BMI <25 group, which is also the youngest group.

Conclusions: There is a clear association between asthma and metabolic syndrome. To make an early diagnosis of this association will change the outcome of the patient.

P4924

Risk factors associated with poor asthma control and quality of life in severe Spanish asthmatics

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Background: Several risk factors determined asthma control, which is a fundamental objective in patients' management, however it is still insufficient.

Objective: To assess how the lack of asthma control affects quality of life and which are the main factors associated.

Methods: Observational, cross-sectional and multicenter study that included severe asthma patients. We assessed quality of life (QoL) using Mini-AQLQ questionnaire, anxiety and depression using Hospital Anxiety and Depression Scale, and hyperventilation by Nijmegen questionnaire.

Results: 343 patients participated in the study, 67.6% women. Mean age (SD) of asthma uncontrolled patients was slightly higher, especially when analyzed according to Spanish Guidelines for Asthma Management (GEMA) [48.5 (14.7) vs 44.1 (14.1) years, p=0.079]. A higher BMI was observed in uncontrolled patients [28.2 (5.8) kg/m² vs. 25.5 (4.9) kg/m², p=0.006]. Smoking habit was not related to asthma control, while the uncontrolled group showed a significantly higher percentage of sedentary patients (49.7% vs 28.6%, p=0.016). Uncontrolled patients had worse QoL scores [4.4 (1.3) vs 6.1 (1.0), p<0.0001]. Scores on the basis of physicians criteria control and perception of the patient also showed lower QoL in uncontrolled patients [4.2 (1.2) vs 5.7 (1.2) and 3.9 (1.1) vs 5.5 (1.2), p<0.0001 in both cases]. Anxiety, depression and hyperventilation are associated with uncontrolled asthma group (p<0.001 in all cases).

Conclusions: Uncontrolled asthma patients had worse quality of life, showing higher levels of anxiety, depression and hyperventilation.

P4925

Anxiety and depression in patients with asthma

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Aim: To study the existence of anxiety and depression in patients with asthma and chronic bronchitis.

Material and methods: Descriptive epidemiological population-based study (2009 European Health Survey for Spain). Study subjects were selected by means of probabilistic multistage sampling, with the first-stage units being census section, and the second-stage units, main family dwellings. Subjects aged 18 years and over were selected. We identified asthmatic and chronic bronchitis (CB) individuals through a specific questionnaire. We analyzed socio-demographic characteristics and health related variables, including health care services use and concomitant chronic diseases diagnosed such as anxiety and depression.

Results: From 19,598 subjects included in the study, 1,632 were classified as asthmatic (8.32%, CI 95% 7.93-8.71) and 1467 (7.48, CI 95% 7.11-7.85%) as CB. The overall prevalence of anxiety was 7.69% (95% CI: 7.38-8.04) among people with asthma and 6.96% (95% CI: 6.62-7.31) among people with CB, no significant differences between them, although there were differences between each of them with healthy individuals, where the prevalence was 4.38% (95% CI: 4.09-4.67). The overall prevalence of depression was 7.43% (95% CI: 6.18-8.67) among asthmatics and 9.93% (95% CI: 8.30-11.56) in those with CB, no significant differences between them, although there were differences between each of them with healthy individuals, where the prevalence was 4.57% (95% CI 4.28-4.86).

Conclusions: Patients with asthma and CB have higher rates of anxiety and depression than healthy individuals. Doctors involved in the management of these processes should take account of these results to improve control of their patients.

P4926

Increased prevalence of airway hyperresponsiveness in severely obese women: Preliminary results

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The reductions in lung volumes observed in obese individuals are associated with a reduction in peripheral airway diameter, a phenomenon that may perturb smooth muscle function, potentially increasing airway hyperresponsiveness (AHR). We hypothesized that severe obesity could be associated with increased AHR.

WEDNESDAY, SEPTEMBER 28TH 2011

Severely obese (BMI \geq 35, n=119) women with and without physician-asthma diagnosis at any time (32 [27%], 11 diagnosed in childhood), healthy women (37, 30 without AHR, with BMI<25) underwent pulmonary function testing (tidal ventilation monitoring, spirometry, plethysmography, fractional exhaled NO, methacholine challenge) and overnight ambulatory polygraphy. No, possible (compatible symptoms, whatever the presence of AHR), probable (AHR, suggestive symptoms, Asthma Control Questionnaire <0.75) and confirmed asthma (AHR, suggestive symptoms, Questionnaire >0.75) were established in obese women. An additional group of asthmatic women (BMI < 25, n=14) underwent pulmonary function tests to allow comparison with confirmed obese asthmatic patients. Preliminary descriptive results. Among obese women, 54 (45%) exhibited AHR (PD20 \leq 2400 μ g) and 47% a decrease in FRC (<lower normal limit). Obese women as compared to healthy women were also characterised by increased Raw. After functional testing, 60 obese women were classified as having no asthma, 39 as possible, 10 as probable and 10 as confirmed asthma, suggesting an increased prevalence of asthma (20 with probable and confirmed asthma: 16.8%). In conclusion, this cross-sectional study suggests a twofold increase in prevalence of both AHR and asthma in severely obese women. The analyses of the determinants of AHR and asthma are under way.

P4927

WITHDRAWN

P4928**Effect of BMI on asthma control, asthma severity and quality of life in adult patients with asthma**

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We examined effects of body mass index (BMI) on quality of life, asthma severity and treatment response of disease in patients with asthma. Demographic data, occupation and education status, symptoms, smoking, allergy, atopy, additional diseases, age started asthma, age diagnosed asthma, and drugs of subjects were recorded, and body mass index was (BMI) calculated. Hospital-Anxiety Depression Scale (HADS), Asthma Quality of Life Questionnaires (AQLQ) in the subjects were evaluated.

The sample consisted of 414 subjects (73% female) with a mean age of 47.6 \pm 13.8 years. Regarding chronic severity, 9.8% were intermittent, 63.2% mild persistent, 24.4% moderate persistent, and 2.6% severe persistent. Furthermore, 44.1% of the subjects were controlled asthma, 47.9% partly controlled, 8% uncontrolled. Patients were considered to be obese if their BMI was \geq 30 kg/m². BMI was mean 26.62 \pm 5.37 kg/m² in men and 28.88 \pm 6.21 kg/m² in women (p<0.05). There was no correlation between BMI and severity of asthma, asthma control. There was a positive correlation between BMI and age started asthma (p<0.05). Regarding AQLQ results, there were negative correlations between scores of symptoms, activity limitations, emotional function, environmental stimuli and severity asthma (p<0.05). There were negative correlations between only environmental stimuli, activity limitations and BMI (p<0.05). There was no correlations between BMI and HADS depression-anxiety scores, physician-diagnosed depression-anxiety. Our findings suggest that obesity is associated with poor asthma-specific quality of life. BMI control was important as well as optimal asthma therapy in patients with asthma for optimal asthma control.

P4929**Controlled asthma in atopic and non atopic patients: Is needed a different approach?**

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Background: Allergy is a significant trigger for asthmatic exacerbation. Currently, the control of asthma is mainly based on the absence of symptoms and airway obstruction

Aim: To evaluate the difference in atopic (AT) and non atopic (N-AT) patients with controlled asthma on the risk of exacerbation and step up therapy.

Methods: 98 asthmatic pts with ACT (Asthma Control Test) >20 were enrolled in a 3yrs controlled randomized trial. Pts were divided in 2 groups: Group A (ICS) receiving a continuous treatment with inhaled beclomethasone MDI100mcg twice/die +inhaled salbutamol as needed; Group B (control) treated with inhaled salbutamol as needed. Step up therapy was performed as recommended by guidelines. Prick tests for the most common allergens were performed at the enrolment. Primary endpoint were: exacerbations/3mths, ACTscore, and drug as needed

Results: 80 pts (A39,B41) concluded the study; atopic pts were in A 29 (74%), in B 27 (66%). In Group A no significant difference was reported for exacerbations (AT4.2, N-AT3.9) and ACT (AT19.8, N-AT20.4), whereas in Group B slight significant differences reported for exacerbations (AT4.8*, N-AT3.9) and ACT (AT18.6*, N-AT20.1). Interestingly, analyzing data in multisensitized (\geq 3 classes of allergens) and lowsensitized (<3 classes of allergens) AT pts, a significant difference (*) was reported in both groups: exacerbations in A (multis. (16pts) 4.8*, N-AT3.9), in B (multis. (15pts) 5.6*, N-AT3.98); ACT in A (multis. 19.1, N-AT20.4), in B (multis. 17.5*, N-AT20.1)

Conclusion: Pts with controlled asthma and atopy show a protective effect on exacerbations during a long term treatment with low dosage ICS. Moreover, multisensitized pts with controlled asthma report a high risk of exacerbation than non atopic.

P4930**Asthma at treated patients correlations between treatment, level of control and exacerbations in a pneumology department**

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Introduction: Uncontrolled bronchial asthma (BA) is a serious problem, altering the quality of life, and consuming a lot of resources.

Aim: Evaluation of the factors related to lack of control.

Material and method: Between October 2007 and Mars 2009 we evaluated 584 consecutive patients at V.Babes Hospital, Timisoara, Romania, known and treated for BA, and collected general data, medical history, disease onset, spirometry, treatment duration, treatment, asthma control test (ACT), level of control GINA 2007. The association of variables was analyzed by calculating the odds ratio (OR) together with confidence intervals (CI) in a univariate analysis. The significant independent variables were utilized to create models of multivariate logistical analysis in order to identify the most important predictors.

Results: 584 patients, 162 males (27.74%), 422 females (72.26%), mean age 45.38 17.48 years (14-85), 14% smokers, ACT <19 (36.2%), 20-24 (48.8%), 25 (15%), 43.1% exacerbations, 78.46% patients with inhaled corticosteroids (ICS) in combination or in monotherapy, 63.4% with normal spirometry, 52.5% with allergy, 31.3% occupational exposure, 4 predictors for uncontrolled BA: exacerbations OR 4,11, CI 3,30-7,48, p <0,001, occupational exposure OR 2,29, CI 1,23-4,26, p =0,009, altered lung function on spirometry OR =1,18, CI 1,02-1,36, p=0,021 (obstruction OR 3,78 CI 1,76-7,78, p =0,0001), duration of disease (months) OR=1,02, CI 1,00-1,03, p=0,021.

Conclusions: Despite treatment with ICS, more than 1/3 (36, 2%) of patients had uncontrolled asthma. Exacerbation and occupational exposure are the most powerful predictors.

P4931**Phenotypic differences between asymptomatic airway hyperresponsiveness and remission of asthma**

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Background: The present study aimed to illustrate differences in characteristics and perception of dyspnea between young atopic adults who have no history of asthma (*never-asthmatics*) with or without asymptomatic airway hyperresponsiveness (AHR) and those who had childhood asthma and consider themselves to be grown out of the disease (*past-asthmatics*).

Methods: Blood parameters, lung function and methacholine PC₂₀ were measured in 88 *never-asthmatics* and 24 *past-asthmatics*. A perception score of dyspnea at 20% fall in FEV₁ (PS₂₀) was obtained by interpolation of the two last points on the perception (modified Borg scale)/fall in FEV₁ curve during methacholine challenge.

WEDNESDAY, SEPTEMBER 28TH 2011

Results: Thirty-one of 88 *never-asthmatics* and eighteen of 24 *past-asthmatics* exhibited AHR (PC₂₀ was <8 mg/ml). Higher levels of specific IgE to house dust mite in *past-asthmatics* were observed than *never-asthmatics* with and without AHR. Mean values of FEV₁ and FEF₂₅₋₇₅ (%predicted) were significantly lower in *past-asthmatics* than *never-asthmatics* without AHR, and the values in *never-asthmatics* with AHR were intermediate between *never-asthmatics* without AHR and *past-asthmatics*. PC₂₀ were not significantly different between *past-asthmatics* and *never-asthmatics* with AHR. Of particular interest was that PS₂₀ was significantly lower in *never-asthmatics* with AHR compared with *past-asthmatics*.

Conclusion: The present findings suggest the possibilities that presence or absence of past history of outgrow of childhood asthma might be associated with airway narrowing, sensitization to house-dust mite and perception of dyspnea in young asymptomatic adults with atopy and AHR.

P4932**Evaluation of asthma knowledge and quality of life in adult patients with asthma**

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Asthma is a chronic illness that affects the everyday life of patients who suffer from it and is a cause of quality of life impairment (QoL). Patients with asthma were studied in order to establish the level of knowledge concerning asthma and the degree quality of life impairment due to asthma. The purpose is to evaluate the quantitative relationships between the level of knowledge and quality of life in adult Asthmatics. Through 2010 year, 242 subjects were recruited from visiting the Allergy Outpatients. Patients from 18 year of age to 51 year old were eligible. Patients completed the asthma knowledge questionnaire and asthma-related quality of life questionnaire (SGRQ) at second physician visit, after the education information. The level of Knowledge Asthma was measured using the questionnaire of the asthma knowledge. Response options were presented as true/false. Each question had a score of one (maximum score of 24). Mean asthma knowledge score in the population was equal to 11.71. Total scores ranged from 25% to 75%. The asthma knowledge score was correlated significantly with the symptoms domain (R=-0.45, p<0.001), the activity domain (R=-0.20, p=0.002), the impact domain (R=-0.29, p<0.001) and the SGRQ total score (R=-0.29, p<0.001). A negative value of Spearman's rank correlation coefficient means that the patients who obtained high scores in the asthma knowledge questionnaire had a tendency to obtain low scores in the second variable, and vice versa. This study shows that level of knowledge asthma correlate with domains of asthma-related quality of life by SGRQ. The results suggest that it is necessary asthma knowledge to achieve long-term effectiveness of asthma control and QoL.

P4933**Adult-onset asthma: Risk factors**

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To determine the risk factors for the development of asthma in patients older than 12 years.

Methods: An observational, transversal, multicentric, case-control study was led from May to October 2009 in Spain. Patients over 12 years old, diagnosed of asthma in the last 12 months that went to a neumologist or allergist clinic for any reason were chosen as cases. Each case had at least a non-asthmatic control chosen in the first 7 days after inclusion. Bivariate and multivariate analysis was made.

Results: After exclusion criteria, 247 cases and 671 controls were included in the study. Mean age was 28.3±8.2, 54.9% women. No significant differences were found by BMI (p=0.4965) or smoking habits (p=0.1327). Age was a protective factor (OR 0.969; CI95% 0.948-0.991), and so was educational level (OR 0.685; CI95% 0.546-0.856). Other risk factors were animals hypersensitivity (OR 2.581; CI95% 1.515-4.399), other allergens hypersensitivity (OR 1.984; CI95% 1.306-3.015), rhinitis (OR 1.878; CI95% 1.263-2.794), exposure to irritant substances (OR 1.733; CI95% 1.075-2.793), NSAID hypersensitivity/intolerance (OR 2.305; CI95% 1.066-4.983) and familiar history of asthma (OR 1.543; CI95% 1.073-2.220).

Conclusions: This study demonstrates that higher age and superior educational level behave as protective factors, while animals hypersensitivity, other allergens hypersensitivity, rhinitis, exposure to irritant substances, NSAID hypersensitivity/intolerance and familiar history of asthma were risk factors for the development of adult-onset asthma. Further studies should be made in order to prevent this disease.