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81. Asthma: assessment and treatment

P500**Airway resistance at maximum inhalation as a marker of asthma and airway hyperresponsiveness in children**

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Background: The goal of this study was to test the hypothesis that the minimal airway resistance achievable during a maximal inspiration (R(min)) is abnormally elevated in subjects with airway hyperresponsiveness.

Methods: The R(min) was measured in 15 nonasthmatic and 20 asthmatic children using forced oscillations at 8 Hz. R(min) and spirometric indices were measured before and after bronchodilation (albuterol) and bronchoconstriction (methacholine). A preliminary study of 40 healthy children first established height dependence of baseline R(min) values.

Results: Asthmatics had a higher baseline R(min) % predicted than nonasthmatic subjects (104 ± 22 vs. $82 \pm 10\%$ predicted, $p = 0.0003$). Sensitivity-specificity analysis using receiver operating characteristic curves indicated that baseline R(min) was able to identify subjects with airway hyperresponsiveness (PC20 < 16 mg/mL) better than most spirometric indices (Area under curve = 0.85, 0.78, and 0.87 for R(min) % predicted, FEV1% predicted, and FEF25-75% predicted, respectively). Also, 76% of the subjects with baseline R(min) < 100% predicted did not have airway hyperresponsiveness while 100% of subjects with R(min) > 145% predicted had hyperresponsive airways, regardless of clinical classification as asthmatic or nonasthmatic.

Conclusions: The relationship of baseline R(min) to asthma and airway hyperresponsiveness likely reflects a causal relation between conditions that stiffen airway walls and hyperresponsiveness in children. In conjunction with symptom history, R(min) could provide a clinically useful tool for assessing asthma and monitoring response to treatment.

P501**Nutritional aspects and asthma. Influence of malnutrition factors on severity of asthma**

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While obesity is a risk factor for asthma that is increasingly studied, malnutrition in asthma is less known.

Objective: To determine if nutritional aspects have an influence on severity of asthma.

Materials and methods: We included 91 asthmatic patients and studied 4 aspects related with asthma: severe persistent asthma or not, obstructive or not, poorly controlled and >1 exacerbation/year or not. Nutritional status was measured by BMI, waist/hip ratio, albumin, prealbumin and bioimpedance. Systemic inflammation by Hb, hematocrit, CRP and Ddimer. Significant was $p < 0.05$.

Results: Average age was 48 years, 21.2% men, 22.2% poorly controlled asthma, 45% had obstruction, 58% severe persistent asthma, 42.6% had >1 exacerbation/year. Older patients had more obstruction, severity, exacerbations and worse ACT. Higher Charlson index was associated with severity, obstruction and exacerbations. Increased CRP was related with obstruction (7.2 ± 10 vs 2.8 ± 3 $p < 0.061$). Neither Ddimer, Hb, nor Hct were different in the aspects of severity. Nutritional values: obstruction was related with the rate of fat-free mass FFMI (17.3 ± 2.4 vs 18.5 ± 2.6 $p < 0.016$). Patients with >1 exacerbation/year had lower percent of muscle mass (37.9 ± 7.9 vs 42.9 ± 8.3 $p < 0.015$). Using a multiple linear regression age and FFMI remained as independent variables related with more obstruction, explaining 18% of the variation/drop produced in the variable FEV1/FVC. For every decreased point of FFMI, FEV1/FVC decreases by 1 point.

Conclusions: Lower percentage of muscle mass is associated with more exacerbations and low FFMI with obstruction in asthma. With more systemic inflammation, malnutrition has greater role, as in asthma with airflow obstruction.

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P502**Asthma control test administered by web-based text messaging (short message service-SMS): Is it comparable with paper form?**

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The Turkish version of Asthma Control Test (ACT) has been validated to determine asthma control. The use of web-based ACT via text messaging (Short Message Service-SMS) might be beneficial in the evaluation of control level of asthmatic patients without outpatient clinic visits.

We aimed to compare the paper form of Turkish version of ACT and web-based ACT via text messaging and to evaluate their correlations with The Global Initiative for Asthma (GINA) based-physician's assessment of asthma control.

In this multicenter prospective observational study, 431 asthma patients were randomized into two groups either to fill in the paper form (n:220) or to reply text messages directed from a website to a mobile phone (n:211). Both ACTs (paper and text message) were completed by the patients at first admission, after 10±2 days and 5±1 weeks and asthma control was also assessed by the physicians according to GINA criteria at the outpatients clinics.

The reliability of the Turkish version of ACT was found 0.84 and 0.82 (Cronbach's alpha) and test-retest reliability was 0.85 and 0.80 in the paper and the text messaging groups, respectively. In both groups, ACTs well correlated with the physician's assessment at admission ($r=0.70, p<0.001$ and $r=0.60, p<0.001$ for paper and text messaging groups, respectively).

Both self-administered paper and web-based ACT via text messaging were closely associated with physician's assessment of asthma control. Our study suggest that ACT may reliably be administered through text messaging and provides evaluating of asthma control on a mobile phone but it should also be further tested for using out of outpatient clinic.

P503**Creating and testing a low literacy asthma questionnaire**

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Background: Nearly half of the US population reads at or below the 8th grade level. Recognition of low literacy has resulted in greater attention to developing written materials at lower reading levels. However, less attention has been paid to the development of low literacy questionnaires for research beyond assessing grade reading level.

Objective: To systematically develop a research questionnaire that accurately captures subjects' responses when self-administered.

Methods: Following traditional instrument development steps (comprehensive review of the literature and selection of items using content experts), researchers created a low literacy questionnaire. A standardized guide for recording difficulties encountered by subjects during self-administration was used to evaluate comprehension and ease of completion.

Results: The 39-item Conventional and Alternative Management for Asthma questionnaire was written at a 5.7 grade level and completed by 210 adults (88% female; mean age 48; 76% Black; 20% White; 62% with ≤ high school education). On average, subjects completed the questionnaire in <5 minutes. Three subjects requested the questionnaire be read to them; one was legally blind. Eight (4%) had difficulty with the Likert scale. As many as 31 (15%) asked for clarification on the wording of 15 distinct items. Four (2%) requested help in reading one or two unfamiliar words. Only 1 item elicited no comments.

Conclusions: The use of a standardized debriefing guide allowed for the identification of problematic words, unclear meanings and confusion over scaling despite a deliberate attempt to develop a low literacy tool. These data suggest that a lower reading level is not sufficient to remove the potential for misreporting.

P504**Asthma control test/Questionnaire for assessing asthma control: Systematic review and meta-analysis**

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Background: Currently the cornerstone of asthma management is to achieve and maintain asthma optimal control, but the diagnostic performance of Asthma control test (ACT) and Asthma Control Questionnaire (ACQ) has not systematically been evaluated.

Objective: We explored the diagnostic performance and its comparison between ACT and ACQ.

Methods: Studies concerned with the accuracy of ACT and/or ACQ for assessing asthma control were searched from Pubmed, CENTRAL, Web of Science, Ovid and Embase. The summary estimates of sensitivity, specificity, and diagnostic odds ratios (DORs) at different levels of asthma control were performed by using bivariate random effects model and hierarchical summary receiver operator characteristic (HSROC) model.

Results: Twenty-two studies with 12909 subjects in ACT and 4447 in ACQ were identified. The summary estimates in ACT for assessing controlled, not-well controlled, and uncontrolled asthma were sensitivity (0.81, 0.77 and 0.79), specificity (0.79, 0.78 and 0.73), and DORs (15.56, 12.42 and 10.46), respectively, and those in ACQ were sensitivity (0.93, 0.72 and 0.87), specificity (0.65, 0.83 and 0.66), and DOR (24.92, 11.98 and 12.72), respectively. There were no statistical differences in assessing levels of asthma control between ACT and ACQ by using HSROC areas under the curve (all $P>0.05$). Subgroup and meta-regression implied that age, settings, asthma severity, and the race could influence the diagnostic accuracy.

Conclusion: The diagnostic performance between ACT and ACQ is not different, but clinicians need to consider the impact of the potential factors when establishing asthma control levels to promote therapies in a real-world setting.

P505**Air-trapping and decreased diffusion capacity in patients with severe asthma**

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Introduction: Patients with severe asthma tend to have impaired lung function despite the high-intensity treatment.

Aims: The aim of the study was to assess the lung function parameters in patients with severe asthma compared with nonsevere disease.

Methods: In the recent research we have studied data of pulmonary function tests (spirometry, bodyplethysmography, diffusion capacity) in 31 patients with severe and in 23 patients with nonsevere asthma. To compare two groups of patients we used the Mann-Whitney U-test and Chi-squared test. Data are presented as median (interquartile range).

Results: Patients with severe asthma compared with those with nonsevere disease had lower VC, pre- and postbronchodilator FVC, pre- and postbronchodilator FEV₁. However, FEV₁/FVC was comparable in both groups. The presence of nonreversible airway obstruction was revealed in 77% patients with severe asthma and in 43% with nonsevere asthma ($p=0.011$). TLC was similar in patients with severe and nonsevere asthma, but RV and RV/TLC was significantly higher in severe asthma group (RV: 192.6 (160.2-249.5) vs 163.8 (143.9-174.7) % pred, $p=0.018$; RV/TLC: 145.0 (132.1-161.6) vs 119.1 (112.5-135.4) % pred, $p=0.001$). These findings indicate the presence of more prominent air trapping in patients with severe asthma. The study revealed the decreased DLCO in severe asthma group (73.1 (57.0-81.1) vs 85.1 (78.4-94.4) % pred, $p=0.008$).

Conclusion: The presence of persistent airflow limitation, air trapping and decreased diffusion capacity are important features of lung function impairment in patients with severe asthma, suggesting that these patients have more considerable airway remodelling and structural changes of lung parenchyma.

P506**Influence of anxiety on the quality of life of people with bronchial asthma (BA)**

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Background: The prevalence of anxiety in BA patients is considerably higher than in healthy people. It is little known how negative emotions can influence the quality of life (QL) of BA patients with cold airway hyperresponsiveness (CAHR) in winter.

Aim: To study the influence of anxiety on the QL of BA patients in the cold season of the year.

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Methods: 111 BA patients were studied in winter. They were divided into two groups: with anxiety (68) and without it (43). To estimate QL a questionnaires SF-36 and AQLQ were used. "Hospital Anxiety and Depression Scale" was applied to find out anxiety. CAHR was estimated by the results of 3-minute isocapnic hyperventilation with cold air.

Results: In the group of patients with anxiety in comparison with the patients without it there was a decrease of QL in domains PF (52.7 ± 3.1 and 65.0 ± 4.4 , $p < 0.05$), VT (45.3 ± 2.3 and 59.2 ± 2.8 , $p < 0.001$), SF (48.3 ± 3.0 and 64.6 ± 3.5 , $p < 0.001$) and MH (56.6 ± 2.3 and 71.2 ± 2.7 , $p < 0.001$) by SF-36, and in domains "Environment" (3.4 ± 0.2 and 4.5 ± 0.2 , $p < 0.001$) and "General QoL" (3.3 ± 0.1 and 3.9 ± 0.1 , $p < 0.01$) by AQLQ. The direct correlation was found out between FEV₁ and "Environment" in the group without anxiety ($r = 0.41$, $p < 0.01$), whereas patients with anxiety did not have it. Hence, anxiety but not lung dysfunction is a dominating factor of QL decline in the latter case. The QL of patients with CAHR and anxiety gets considerably worse. The decline of QL of these patients in all domains except "Emotion" was revealed by AQLQ. The most significant worsening was obtained in domain "Environment".

Conclusion: Anxiety in BA patients has a negative influence on QL mainly on the psychosocial status. CAHR in winter also affects physical aspects of QL.

P507

Prediction of deterioration of bronchial asthma (BA) control after six months of basic anti-inflammatory therapy

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Background: Now it is accepted that the assessment of asthma control should include not only clinical manifestations, but also control of the expected future risk to the patients.

Aim: To develop the way of prediction of uncontrolled BA after 6 months of basic anti-inflammatory therapy.

Methods: 84 patients with uncontrolled BA were examined. At the first examination the test of isocapnic hyperventilation with cold air (IHCA) was conducted; the collection of the exhaled breath condensate before and after the IHCA with the identification of hydrogen peroxide (H₂O₂) was done. In 24 weeks of basic therapy there was the second clinical examination where the control level over BA symptoms was determined. Depending on the obtained data the patients retrospectively were divided into two groups: the 1st group included 48 patients with the partial or total BA control, the 2nd group consisted of 36 patients with uncontrolled BA.

Results: It was established that high airway hyperresponsiveness and the degree of oxidative stress intensity are independent predictors of BA control. On this basis and with the help of discriminant analysis we made a discriminant equation that allows to predict an uncontrolled course of the disease: $D = -0.502 \times \text{FEV}_1$ (after IHCA) + $8.062 \times \text{H}_2\text{O}_2$ (after IHCA). The boundary value of the discriminant function is 23.07. If $D > 23.07$, an uncontrolled course of the disease after 6 months of basic therapy can be predicted with 91% probability.

Conclusion: The application of the developed method gives a possibility of a differentiated approach to the choice of BA basic therapy taking into account the risk of uncontrolled course of the disease.

P508

Interrelations of rhinitis, rhinosinusitis and bronchial asthma, associated with stressful life events

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One of the causes of ineffective treatment of bronchial asthma (BA) is comorbid pathology, which is a combination of BA with rhinitis.

Aim: To study the characteristics and order of nasal pathology development in persons with BA associated with psychological stresses.

173 patients with BA allocated to 2 groups were studied. The first group included 56 patients in whom the first episode of the disease were associated with stressful life events. The second group included 117 patients in whom the disease was not linked to psychological factors.

Results: Nasal pathology was diagnosed only in 25 of 56 (44.6%) patients in the first group and in 106 of 117 (90.6%) in the second one, $p = 0.0000$. Allergic rhinitis was observed in only 6 (10.7%) patients in the first group and in the majority of cases (93 (79.5%) in the second group, $p = 0.0000$, while rhinosinusitis was most frequent in the first group (19 of 56 (33.9%) versus the second one (12 of 117 (10.3%), $p = 0.0000$). The order nasal pathology formation differed markedly between the two groups. So, nasal symptoms preceded the onset of asthma symptoms in the first group considerably rare (7 of 25 (28%) than in the second group (83 of 106 (78.5%), $p = 0.0000$). On the contrary, nasal pathology development against the background of the current asthma was more frequent in the first group (11 of 25 (44%) than in the second one (8 of 106 (7.5%), $p = 0.0000$).

Conclusion: Bronchial asthma, the development of which is closely associated with psychological triggers, is not related to nasal pathology in more than half the cases with frequent secondary involvement of the upper airways and predominance of rhinosinusitis over allergic rhinitis.

P509

Mycobiota of the pharynx in patients with persistent bronchial asthma who constantly applying the inhaled corticosteroids

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Aim: To investigate fungal colonization the pharyngeal mucosa in patients with persistent asthma, who constantly applying the inhaled corticosteroids (iGCS).

Methods: There were examined 30 patients with bronchial asthma (13 men and 17 women, mean age 51.8 years) using iGCS at high and moderate doses of at least year. Mycological study of mucous pharynx (posterior wall of the pharynx, tongue root) for finding of Candida was performed on the Sabourau agar medium. Fungi growing was carried out at 28-30C for 48 hours. To study the adhesive there was used the model of a nitrocellulose film with immobilized hemoglobin.

Results: Fungi of the Candida genus were isolated from the mucosa in 23 patients (76.6%): C.albicans - 22 cases (of which in one case, there was marked the combination of C.albicans and Geotrichum candidum), C.tropicalis - 1 case. In 73.9% of the cases intensity of the pharynx colonization by yeastlike fungi was high and was 10³, 10⁵ CFU/ml.

It has been stated that 16 out of 22 isolated Candida albicans cultures (72.7%) have less vivid ability to form tube germination and pseudomitsely in comparison with clinical cultures, isolated from the pharynx of patient with the diagnose pharyngomikozе, the adhesive activity of these cultures showed at the middle level and made 15-32%. 8 out of 22 patients (27.3%) have cultures with a high ability for germination tubes formation and adhesive activity at the level of 35-45%, which corresponded to the level of clinical cultures with high virulence. The causes of differences in the activity of the fungus Candida in asthmatic patients receiving iGCS, require further study.

P510

Omalizumab in severe adult atopic dermatitis associated to mild asthma treated with omalizumab

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Omalizumab is an established add-on therapy efficacious in allergic severe asthma. Its role in treatment of asthma and atopic dermatitis with high IgE levels is not well known. However Isolated case report show the efficacy of anti-IgE in recalcitrant atopic dermatitis, a skin disorder characterized by elevated levels of IgE and significant morbidity.

Aim: We report 5 adult patients 2 male and 3 women, mean age 34.6 (range 19-48yrs), with chronic severe atopic dermatitis and mild to moderate bronchial asthma. For atopic dermatitis they were treated with oral steroids (prednisone mean 17.5 mg die range 10 to 25 mg) and immunosuppressive therapy as Cyclosporine (5mg/die) or Methotrexate (7.5 mg/wks). The patients started treatment with Omalizumab 375 mg every two weeks. Pretreatment IgE levels ranged from 282-5390 IU/mL (mean 2501 IU/mL).

Results: After 16 weeks, the serum IgE level decreased mean 1146 IU/mL, (range 147 to 3088) and a significant clinical improvement was registered in all patients with reduction of skin lesions and pruritic score (from 9 indicating severe itching to 3). The patients discontinued immunosuppressive treatment after two months and oral steroids after 6 months. After 1 year follow-up of Omalizumab therapy, the IgE levels were 620 IU/mL (range 140 to 1000) and no adverse events were documented. Moreover, the patients did no refer any asthmatic exacerbations at 1 year follow-up.

Conclusions: Anti IgE Omalizumab is effective in improving atopic dermatitis unresponsive to conventional therapy in patients with concomitant asthma after few weeks of treatment and is able to decrease steroid and immunosuppressive therapy without any interference on asthma control.

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The effect of smoking on the levels of cysteinyl leukotriene in exhaled breath condensate in asthmatics

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Aim: Cysteinyl leukotrienes are the most important mediators in pathogenesis of asthma. The aim of this study was to assess the impact of smoking on the levels of LTD4 and LTE4 in exhaled breath condensate (EBC).

Methods: Thirty smoker (Group I) and 29 nonsmoker (Group II) asthmatics and 29 healthy control (Group III) were included in the study. EBC (EcoScreen, Jager) was collected from all of the participants and pulmonary function tests (PFT) were performed too. All of the asthma cases were stabil according to asthma control questionnaire. Levels of LTD4 and LTE4 were measured in EBC with ELISA.

Results: The levels of LTD4 and LTE4 were shown in Table 1. When we compared the groups according to PFTs we determined statistically significant difference between Group I and III in FEV1/FVC, MMEF and MMEF%. There was a

significant negative correlation between LTE4 levels and FEV1/FVC in Group I.

Leukotriene levels of the study groups

	Group I	Group II	Group III	p
LTE4 (pg/mL)	79.20±13.16	76.95±14.82	68.21±20.95	0.024
LTD4 (pg/mL)	66.52±39.10	46.74±34.75	45.02±26.99	0.027

*There was a significant difference between the Group I and Group III, Group II and Group III ($p < 0.05$), however, there was no significant difference between other pairwise comparisons ($p > 0.05$).

Conclusion: LTD4 levels were significantly higher in smoking asthma group than the other groups. This result suggest that LTD4 receptor specific blocker agents might be useful in smoking asthma patients and clinical studies are required in this issue.

P512

Role of viral pathogens in infectious exacerbations of bronchial asthma in adults

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Purpose - to investigate the spectrum and frequency of viral pathogens in patients with infectious exacerbation of bronchial asthma (BA) which treated in a pulmonology department.

The study included patients only if they voluntarily consent to the research, objectives and scope of planned inspections. This work was funded from the state budget.

Virology were performed in all patients fence biomaterial: a smear or swab from the nasal cavity.

Laboratory diagnosis of viral infection was performed by real-time PCR (PCR-FRT) and a rapid chromatographic immunoassay analysis. PCR was performed in adenoviruses (HAdV), bokavirus (hBoV), rhinovirus (HRV), coronaviruses (hCoV), RS-virus (hRCV), metapneumovirus (hMpV). The method of immunochromatographic test detected antigens of influenza viruses A and B, respiratory adenovirus (hAdV) and RS-virus (hRCV).

For the purpose of the study was carried out screening all patients which were sent to hospital State Institution "National Institute of tuberculosis and pulmonology behalf F.G. Yanovsky, AMS of Ukraine" with the diagnosis of exacerbation of bronchial asthma from Dec 2010 to Sep 2011 a total of 52 patients observed, which revealed 21 viral pathogens by PCR, 6 viral pathogens by the rapid immunochromatographic test and 2 (hRCV) by both methods.

Viral pathogens detected in the (48,1±6,9)% of patients with exacerbation of asthma. The greatest etiological importance by the results of virological studies were: rhinoviruses – 68,0%, influenza virus A and B – 12,0%, RS-virus – 8,0%, metapneumovirus – 8,0%, adenovirus – 4,0%, respiratory corona virus - 4,0% of cases.

P513

What is missing in the asthma control test? The relationship between compliance, inhaler technique and level of control

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Introduction: Asthma control test as many other validated questionnaires are used to assess level of control. However, they do not identify factors that may lead to poor control such as medication compliance and inhaler technique. In this study level of asthma control was assessed by using asthma control test (ACT) and simultaneously the accuracy of compliance with preventer medications and inhaler technique were evaluated. The main objective of the study is to find out the relationship between compliance and inhaler technique with the level of asthma control.

Methodology: Prospective 3 months study (1st February – 31st May 2011) was conducted in a university hospital in Oman. Asthmatic adult patients on preventer inhaled medications were included. ACT was used to assess level of asthma control. Inhaler technique was evaluated using a standardized checklist. Compliance was assessed using a pre designed scoring system.

Results: 218 patients were assessed. Poor control was found in 126 (58%) patients, of whom 74 (59%) had poor compliance and 34 (27%) had poor inhaler technique. There was no significant difference in the level of control between patients with good and partial compliance (60% vs 59%).

Only 35 (16%) patients had good level of control and good compliance and good inhaler technique.

Conclusion: Since compliance and inhaler technique have a direct effect on the level of control, they should be part of all asthma assessment tools.

P514

Clinical characteristics of severe asthma subphenotypes

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The natural history and clinical subphenotypes of severe asthma are poorly understood particularly among patients that have difficult to control asthma and no other co-morbidities.

To describe the differences in the clinical characteristics of severe asthma subphenotypes on the basis of age at onset of disease.

Cross-sectional clinical study was carried out in 40 patients (age 18 years) with severe asthma. In the retrospective collected data were included the demographics information and assessments of lung function (ie, spirometry and body box plethysmography). For lung function were determined airway resistance (Raw), thoracic gas volume, vital capacity, total lung capacity (TLC), and residual volume (RV). The flow-volume relationships were evaluated with FEV1; FVC and FEV1/FVC ratio.

16 patients with late-onset asthma (40%) had clinical significant compromised lung function whether they had asthma of short duration or long duration, suggesting that significant compromise in lung function occurred at or very soon after the initial diagnosis of asthma had been made. They had more resistance to airflow (Raw, % predicted 307.5 20 vs 285.3 23.0 respectively $p < 0.24$); larger lung volumes (total lung capacity; TLC, % predicted 107.1±2.6 vs 103.8±2.3 respectively $p < 0.62$; and residual volume: RV, % predicted 202.3±10.3 vs 190.1±8.7 respectively $p < 0.37$) compared to early-onset asthma. Late-onset asthma also was characterized by a reduced FEV1/FVC and a history of more frequent sinopulmonary infections.

Late-onset severe asthma may be associated with a greater degree of airway inflammation and/or more exuberant repair processes, resulting in rapid remodeling of distal part airway, compared to early-onset asthma.

P515

Illness perceptions and medication beliefs: Key determinants of adherence to maintenance medication in chronic asthma

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Outcome in asthma is determined not only by pulmonary function or other biomedical characteristics. Illness perceptions and medication beliefs are crucial in predicting outcomes of asthma management. Illness perceptions pertain to patients' subjective beliefs and emotional responses to their asthma. Medication beliefs tap idiosyncratic views on (asthma) medication. Both influence coping and thereby outcome.

I'll review recent studies on this topic, with a range of respondents and care-providers, with patients with varying degree of asthma severity and in different settings of medical care. Examples of how to assess illness perceptions and medication beliefs will be presented and discussed.

All studies report substantial effects of illness perceptions and medication beliefs on various categories of outcomes. These findings emphasize the clinical relevance of addressing patients' beliefs about their illness and its medical management, and suggest that this may improve outcome of asthma care. Examples of recent high-quality intervention studies on this topic will be presented, with a view to how to improve quality of care, and thereby quality of life of patients with asthma. In the era of shared decision making and patient empowerment it appears that addressing and incorporating illness perceptions and medication beliefs into regular clinical care is a must.

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Pattern of breathing and respiratory rhythm variability in patients with different level of bronchial asthma control

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Background: It is unknown how the loss of bronchial asthma (BA) control effects on the control of breathing.

Aim: To study relationship between the level of BA control and pattern of breathing and respiratory rhythm variability.

Methods: 97 BA patients and 21 healthy people were examined. BA patients were divided on two groups: 15 patients with controlled BA (CBA) and 82 patients with uncontrolled BA (UBA). The pattern of quiet breathing and respiratory rhythm variability were studied by spirointervalometry. Quiet breathing was registered through the mouth during 15 minutes.

Results: In the group of healthy people compared with the asthmatics the inspiratory time (1.76±0.1 and 1.54±0.03 sec., respectively, $p=0.04$) and the effective inspiratory time (0.40±0.009 and 0.38±0.004, $p=0.029$) were significantly longer and the effective expiratory time (0.60±0.009 and 0.62±0.005, $p=0.036$) was shorter. In the UBA group in comparison with the CBA group there were short-

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ening of the quiet expiration (2.53 ± 0.007 and 2.91 ± 0.18 sec., $p=0.02$), reduction of effective expiratory time (0.61 ± 0.006 and 0.64 ± 0.012 , $p=0.013$) and increase of effective inspiratory time (1.53 ± 0.032 and 0.36 ± 0.012 , $p=0.014$). The respiratory rhythm variability in CBA was significantly less than in UBA: mean-square discrepancy of respiratory rate was 0.60 ± 0.03 and 0.82 ± 0.127 ($p=0.019$).

Conclusion: The obtained data suggested the peculiarities of the control of breathing in BA patients leading to changes in time structure of breathing pattern and respiratory rhythm variability especially in patients with uncontrolled disease.

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Anamnesis and clinical peculiarities of severe bronchial asthma in children

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Aim: To study anamnesis and clinical data on severe/moderate severe atopic bronchial asthma with different level of control, determine the main risk factors of the formation of BA non-controlled course in infants.

Materials and methods: We have examined 100 infants, severe/moderate severe atopic BA patients, inhabitants of Krasnoyarsk territory in average ages of 10.9 ± 1.1 . We have studied allergy anamnesis, carried out physical and specific allergy examination, estimated the results of instrumental research. In order to determine the level of controlling the disease we had estimated the results of "Test on controlling asthma". We have formed 2 groups: with controlled BA ($n=50$) and non-controlled BA ($n=50$).

Results: Living under unfavorable living conditions (wooden homes with damp, mould, stove heating, overcrowding) had been marked in 34% cases in group with non-controlled BA course and in 28% in group with controlled BA ($p=0.0012$). One or two smoking parents had been marked in 36% cases in controlled BA course and in 48% in non-controlled BA ($p=0.007$). Analysis of family structure revealed that 48% children of group of good control and 74% of group of absence of control live in sole-parent families ($p<0.001$).

Conclusions: We have determined anamnesis predictors of non-controlled BA course in children: living in home with stove heating with damp in living area, smoking inside and presence of domestic animals. When estimating social status of the families in BA children with non-controlled course we have stated frequent occurrence of sole-parent families with low income.

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Complementary and alternative therapy in bronchial asthma – A study from India

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Introduction: Various complementary and alternative therapies (CAT) are being studied in Asthma management, with reports of varying effects. CAT includes a variety of breathing and relaxation exercises including Yoga, diaphragmatic breathing, progressive relaxation etc. If these can facilitate easy disease control, they can be utilized in bringing down the cost of Asthma treatment, a major issue in resource limited countries like ours.

Aim: 1. Compare the effect of 2 CATs i.e. Buteyko Breathing Technique (BBT) and Diaphragmatic Breathing Exercises (DBE) in asthma treatment
2. Compare the effect of each to conventional treatment alone.

Materials & methods: Prospective, case-control study conducted in an allergy clinic at Alappuzha. Patients with persistent asthma aged 25-65 years were randomly grouped into 3.

A – Receiving conventional therapy alone

B – Above+BBT

C – Above+DBE

Disease control assessed by spirometry, Mini Asthma Quality of Life Questionnaire, Asthma Control Test and β -agonist use during first week of study and end of third month.

Statistical analysis by 2 way ANOVA technique

Result: Total of 30 patients, 10 in each group studied. No significant difference in FEV1 among 3 groups; statistically significant improvement in quality of life (QOL) among groups B & C, with reduction in β -agonist use.

Conclusion: CAT can be useful in improving QOL among asthmatics.

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Depressive symptoms in asthma patients

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Background: Asthma is a chronic disease with worldwide prevalence of 1-18%. Co-morbid depression (prevalence of around 10%) in patients with asthma affects quality of life and treatment outcomes.

Objectives: To examine the prevalence of depression and its association with asthma control in patients with asthma versus healthy controls.

Methods: Two groups of subjects were recruited: 1) patients with asthma and no other chronic condition ($n = 114$) - all of them performed spirometry and answered two questionnaires: ACQ and CES-D20; 2) healthy controls (matched for age, sex, BMI, education and smoking history) ($n = 208$) without asthma or other chronic disease - they answered only the CES-D20 questionnaire.

Results: The difference between the mean Total CES-D group scores is not significant ($p=0.073$). 51.9% of the control group had <15 p, while 30.7% of the asthmatics had the same result. In the asthma group, 10.5% had major depression, but 58.8% had mild-moderate depression. Total CES-D score correlates well with smoking status ($r=-.574$, $p<0.001$). Total CES-D score did not correlate with mean ACQ score, FEV1, education and sex. The mean ACQ score correlates well with CES-D question11 ($r=-.431$, $p<0.001$). There is statistically significant difference between mean ACQ score in asthmatics with major depression and the rest of the asthmatics.

Conclusions: In this study healthy people tend to have major depression or no depression at all, while asthmatic patients have predominantly mild-moderate depression. Asthmatics with major depression have worse asthma control. This study confirms earlier results concerning prevalence of depression in asthma patients, but questions the higher prevalence in asthma patients compared to healthy controls.