110. Risk and detection of childhood asthma and allergy

P1127

Late-breaking abstract: Asthma through childhood; do children remit from their disease?

Vegard Hovland[1], Amund Riiser[1], Petter Mowinckel[1], Kai-Håkon Carlsen[1,2,3], Karin Cecilie Lødrup Carlsen[1,3]. *[1]Department of Pediatrics, Oslo University Hospital, Ullevaal, Oslo, Norway; [2]Voksentoppen, Oslo University Hospital, Rikshospitalet, Oslo, Norway; [3]Faculty of Medicine, University of Oslo, Oslo, Norway*

Background and aim: Around 50% of children with early wheeze outgrow their disease according to the literature. In a prospective birth cohort running through puberty, we assessed persistence, remission and relapse of asthma.

Methods: Time-course asthma phenotypes (figure below) were constructed from the 2-10-16 yrs investigations in the Oslo "Environment and Childhood Asthma" study, based on the presence/absence of recurrent (≥2) bronchial obstruction (rBO) 0-2 yrs, and asthma from 2-10 and 10-16 yrs defined as ≥2 of: doctor diagnosis/symptoms/asthma-medication use. Positive bronchial hyperresponsiveness (BHR) at 16 years required a PD20-metacholine <8μmol.

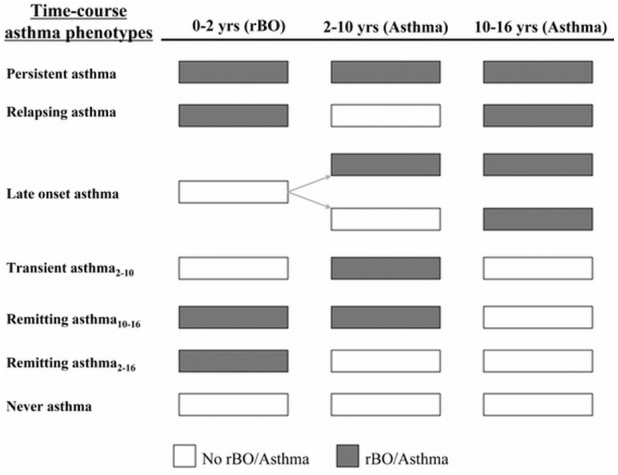

Figure 1

Results: Of the 550 subjects (52% boys) attending all investigations, 228 children had rBO/asthma in at least one time-period, 143 with rBO (figure below). Among rBO children at 16 yrs, 34% had asthma, whereas 51% of those in remission had symptoms, medication use and/or BHR, compared to 27% with never asthma (p<0,001), thus 33% only were without signs of asthma.

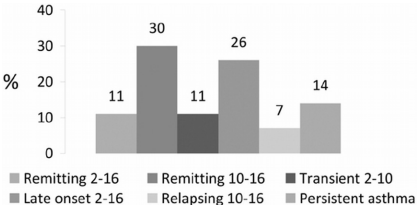

Figure 2. Distribution of time-course asthma phenotypes from birth to 16 years

Conclusion: Only one third of the early wheezers were in true clinical remission by 16 years. Thus early recurrent "wheeze" appears less benign than commonly reported.

P1128

Late-breaking abstract: Maternal genetic asthma predisposition affects pulmonary microRNA profiles in neonatal offspring

Stefan Dehmel[1], Agnieszka Pastula[1], Rabea Imker[1], Nikola Schulz[1], Oliver Eickelberg[1], Adalbert Roscher[2], Susanne Krauss-Etschmann[1,2]. *[1]Comprehensive Pneumology Center, Klinikum der Universitaet Muenchen, Helmholtz Zentrum Muenchen, Muenchen, Germany; [2]Children's Hospital Research Building, Dr. von Hauner Children's Hospital, Ludwig-Maximilians-Universitaet Muenchen, Muenchen, Germany*

Introduction: Exposure-induced deregulation of microRNAs (miRs) during early critical developmental periods has been proposed to contribute to the propagation of asthma risk in later life.

Aim: We asked if maternal genetic asthma predisposition is sufficient to affect pulmonary miR profiles in offspring that do not bear the genetic asthma risk. To address this question, we used female mice with a heterozygous deficiency for Tbx21 as they develop spontaneous airway remodeling and airway hyperreactivity (Finotto et al., Science, 2002; 295:336).

Methods: Female C57BL/6J Tbx21+/- mice were mated with WT males. Neonatal lungs from male WT offspring of dams with (Tbx21+/-, n=5) and without genetic asthma predisposition (WT, n=3) were removed within 24h after birth and total mRNA including small RNAs was extracted. Duplicate pools of RNAs were subjected to miR expression profiling (ABI, TaqMan® Array microRNA cards). *In silico* target prediction was performed for miRs with a >1.5x change followed by pathway analysis (DIANA-mirpath, TargetScan).

Results: Male WT offspring of Tbx21+/- dams showed an up-regulation of 14 of 750 miRs (1.5-2.1x), while 17 miRs were down-regulated (1.5-4.7x) compared to male WT offspring of dams without genetic asthma predisposition. Pathway analysis showed a significant enrichment of target genes within the WNT pathway (49 of 154 genes). MiRs 27a* and 124 were found to target multiple genes (≥15) in the WNT pathway suggesting a key regulatory function for these miRs in WNT signaling.

Conclusion: These data show that maternal genetic asthma predisposition affects pulmonary miR profiles during an early developmental stage and might therefore influence lung development.

P1129

Revisiting the September asthma epidemic

Conrad Capili, Robert Jacobson, Xujian Li, Young Juhn. *Community Pediatric and Adolescent Medicine, Mayo Clinic, Rochester, MN, United States*

Background: September asthma epidemic has been well documented. Whether a similar pattern of asthma exacerbation is observed in children returning to school from winter and spring break is unknown.

Objective: To assess whether the September asthma epidemic occurs in Olmsted County, Minnesota and determine whether similar asthma epidemics occur after winter and spring break.

Methods: The study included all asthmatic children ages 5-18 who had received medical care at our institution as of March 12, 2008 (n=3092). Asthma status was defined by physician diagnosis in the medical records. We compared the frequency of all asthma-related hospitalizations, ED visits, outpatient visits, and corticosteroid therapies for acute asthma symptoms between August and September of 2008 and 2009. Similarly we compared the frequency of all asthma-related visits or treatments between during and after spring break and between during and after winter break.

Results: The frequency of asthma-related visits and treatments in September of 2008 and 2009 was 2.1% per person-month, which was significantly greater than that in August of 2008 and 2009 (1.1% per person-month) (p=0.003). Similarly, the frequency of asthma-related visits and therapies during the period after spring break of 2008 and 2009 (1.89% per person-month) tended to be greater than that during spring break (0.75% per person-month) (p = 0.063). There was no difference in asthma-related visits or therapies during and after winter break (p=0.59).

Conclusions: The September asthma epidemic does occur in our study setting, but this may not be a September-specific concern. Clinicians should consider a step-up therapy and reinforce medication compliance for asthma exacerbation-prone children returning to school.

P1130

Asthma symptoms in pediatric patients: Differences throughout the seasons

Ellen Koster, Jan Raaijmakers, Susanne Vijverberg, Anke-Hilse Maitland-van der Zee. *Pharmacoepidemiology & Clinical Pharmacology, Utrecht Institute of Pharmaceutical Sciences, Utrecht, Netherlands*

Background: Seasonal variation in asthma has been widely recognized. The aim of this study was to describe seasonal patterns of asthma symptoms and medication use in a cohort of pediatric asthma medication users and to study determinants of seasonal childhood asthma.

Methods: For this study, 602 children participating in the PACMAN (Pharmacogenetics of Asthma medication in Children: Medication with Anti-inflammatory effects)-cohort were included. Parents were asked about their child's respiratory symptoms and rescue medication use over the past year.

Results: There was a decline in asthma symptoms and medication use during the summer period and a peak occurred from autumn to spring. The prevalence of wheeze ranged from 32% in summer to 56% in autumn. The prevalence of respiratory symptoms and medication use was significantly lower during summer (p<0.0001). Oral steroid and antibiotic use and strong parental necessity beliefs were associated with uncontrolled asthma, regardless of seasonality. Allergic rhinitis was associated with an increased risk of uncontrolled asthma during spring (RR: 1.3 95%CI: 1.1-1.6) and summer (RR: 1.2 95%CI: 1.0-1.4). Eczema was associated with a higher risk of uncontrolled asthma during autumn (RR: 1.2 95%CI: 1.0-1.4) and winter (RR: 1.2 95%CI: 1.0-1.4).

Conclusions: We showed seasonal patterns in asthma symptoms and medication use. We showed associations between allergic rhinitis and asthma control during spring/summer and eczema was associated with uncontrolled asthma during au-

tumn/winter. Seasonality in asthma morbidity and health care use is most likely associated with atopic constitution and viral infections, which are common during fall, winter and spring.

P1131

Air pollution and asthma hospitalizations in children

Amne Iskandar[1], Zorana J. Andersen[2], Klaus Bønnelykke[1], Klaus Andersen[2], Hans Bisgaard[1]. [1]*Copenhagen Prospective Studies on Asthma in Childhood; COPSAC, Health Sciences, University of Copenhagen, Copenhagen University Hospital, Gentofte, Copenhagen, Denmark;* [2]*Institute of Cancer Epidemiology, The Danish Cancer Society, Copenhagen Ø, Strandboulevarden 49, Denmark*

Introduction: Short-term exposure to air pollution can trigger asthma hospitalizations in children, but it is not known which components of air pollution are most important. There is no available evidence on the particular effect of ultrafine particles (UFPs) on admissions for asthma.
Aim: To study whether short-term exposure to increased air pollution levels is associated with hospitalizations for asthma in children.
Hypotheses: 1) The association between asthma admissions and air pollution is stronger with UFPs than PM10, PM2.5, NOx. 2) Infants are more susceptible to the effects of exposure air pollution than older children.
Method: Daily count of hospital admissions for asthma in children aged 0-18 years were extracted from Danish National Patient Registry between 2001 and 2008, from hospitals located within a 15 km radius from the central fixed urban air pollution monitor in Copenhagen. Time-stratified case-crossover design was applied and data analyzed using conditional logistic regression to estimate the effect of air pollution on asthma admissions.
Results: We detected a significant association between asthma hospitalizations in children aged 0-18 years and NOx (Odds ratio: 1.11; 95% CI: 1.05-1.17), PM10 (1.07; 1.03-1.12), and PM2.5 (1.09; 1.04-1.13), and none with UFPs. Infants had higher risk of being hospitalized for asthma than older children, for all pollutants, but were not statistically significantly more susceptible.
Conclusion: We find a significant association between air pollution and asthma hospitalization in children, with infants possibly most susceptible. Gases (NOx and NO2) originating from traffic showed strongest associations, while UFPs showed no effect.

P1132

Comparison of prevalence of childhood asthma in two different African-American communities in Columbus area. A pilot study

Shahid Sheikh[1], Kevin Morris[2], Karen McCoy[1]. [1]*Division of Pulmonary Medicine/Dept of Pediatrics, Ohio State University/Nationwide Children's Hospital, Columbus, OH, United States;* [2]*Division of Respiratory Care, Nationwide Children's Hospital, Columbus, OH, United States*

Asthma prevalence is on the rise and children in minority communities have the highest prevalence.
Objective: Pilot study done at Mission Day School (private elementary school) and at New Salem Baptist Church (urban inner city neighborhood) in Columbus, OH, to understand asthma prevalence in two communities with same racial but different socio-economic status. All children were African Americans.
Methods: Asthma screening was done using validated "Easy Breathing Survey (Hall CB *et al*. J Pediatr 2001;139:267-72)" with 4 questions. A positive response to any of the 4 questions has 94% sensitivity for asthma and specificity [% (95%CI)] of each question between 66% - 86%.
Results: Questionnaire was sent to 105 families at both places. Fifty four families at school and 53 families at church completed the survey. Comparing data from school and church revealed median age 7 and 9 years, M:F 28:26 and 27:26, family history of asthma 24 and 27, known asthma triggers in 16 and 18 children respectively. Nine (16%) children at both sites had previous diagnosis of asthma and among them, 8 at school and all nine at church still had positive responses to survey. Additional 27 children at school and 26 at church responded positively to questions on survey though none of them had a previous diagnosis of asthma and about one third of them at both sites had required acute care for asthma within a year.
Conclusions: Asthma prevalence is high in African American community irrespective of their socio-economic status. In the majority, symptoms are not well controlled. More than half of children at both sites had positive survey suggesting that they might have undiagnosed asthma.

P1133

Prevalence and risk factors of asthma in urban Canadian aboriginal children

Ming Ye[1], Ambikaipakan Senthilselvan[2]. [1]*Public Health Sciences, University of Alberta, Edmonton, AB, Canada*

Several studies have investigated the prevalence and risk factors of asthma in school-age children, adolescents and adults in Canadian Aboriginal population. However, only a few studies have investigated asthma morbidity in young Aboriginal children. The objective of the study was to determine the prevalence and risk factors of asthma in urban Aboriginal children aged 0 to 6 years. The data from 14,170 children who participated in the 2006 Canadian Aboriginal Children Survey were considered for this study. Children living in the First Nations reserves were excluded from the survey. Designed weights were used to adjust for overlap with other surveys, non-response and post-stratification. Asthma prevalence for children with North American Indian, Métis, Inuit and Multiple ancestries were 10.0%, 8.5%, 6.6% and 9.7%, respectively. Asthma prevalence was greater in boys than girls (11.4% vs. 7.3%). In the multivariate analysis, low birth weight, respiratory allergy, ear infection and daycare attendance were risk factors for asthma. Breastfeeding, having more healthcare access and playing more frequently outside were protective factors for asthma. The influence of respiratory allergy on asthma was modified by ear infection and parental education. Relationship between daycare attendance and asthma varied with parental education levels. The relationship of frequently playing outside with asthma varied between children living in houses and other dwellings. In conclusion, Inuit children who live mainly in the Northern Canadian Territories had the lowest prevalence of asthma and risk factors of asthma for young Aboriginal children living off-reserve were similar to those reported for non-Aboriginal Canadian children.

P1134

Nocturnal dry cough in early childhood is a risk for the development of asthma

Ilse Boudewijn[1], Olga Savenije[1], Marjan Kerkhof[1], Gerard Koppelman[2], Henriette Smit[3], Alet Wijga[4], Dirkje Postma[5]. [1]*Department of Epidemiology, University Medical Center Groningen, University of Groningen, Groningen, Netherlands;* [2]*Department of Pediatric Pulmonology and Pediatric Allergology, University Medical Center Groningen, University of Groningen, Groningen, Netherlands;* [3]*Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, Utrecht, Netherlands;* [4]*Centre for Prevention and Health Services Research, National Institute for Public Health and the Environment, Bilthoven, Utrecht, Netherlands;* [5]*Department of Pulmonology, University Medical Center Groningen, University of Groningen, Groningen, Netherlands*

Background: Wheeze in young children is an established predictor of the development of asthma later in life. Cough frequently occurs in childhood as well. So far, little is known about the role of nocturnal dry cough (NDC) in the development of asthma.
Objective: The aim of this study was to investigate the association of NDC at ages 1-7 years, in the presence or absence of wheeze, with doctor-diagnosed asthma at 8 years of age.
Methods: Data from the Prevalence and Incidence of Asthma and Mite Allergy (PIAMA) birth cohort were used, which consists of 3963 children born in The Netherlands. Children were followed from birth up to 8 years of age. Presence of NDC without having a cold, wheeze, and a doctor's diagnosis of asthma ever with symptoms of asthma in the past 12 months (DDA) was reported yearly by the parents.
Results: The prevalence of NDC at age 1 to 7 years varied from 15.0% at age 7, to 23.3% at age 5. NDC without wheeze was significantly associated with DDA at age 8, except for the age of 1 year (range of Odds Ratios (OR) at age 2 to age 7: 1.82 (age 5) to 7.65 (age 7), range of p-values <0.001-<0.048). NDC combined with wheeze showed the most strong association with DDA at age 8 (range of OR at age 1 to age 7: 3.96 (age 1) to 35.96 (age 7), all p-values < 0.000). Wheeze without NDC was also strongly associated with DDA at age 8 (range of OR at age 1 to age 7: 2.06 (age 1) to 29.12 (age 7), range of p-values <0.001-<0.003).
Conclusion: These results show that NDC in early childhood is an independent risk factor for the development of asthma. The presence of NDC even increases the risk for asthma in children with wheeze.

P1135

Recurrent wheeze in children with Down syndrome: Is it asthma?

Michel Weijerman[1], Paul Brand[2], Marceline van Furth[3], Chantal Broers[3], Reinout Gemke[3]. [1]*Paediatrics, Rijnland Ziekenhuis, Leiderdorp, Netherlands;* [2]*Princess Amalia Children's Clinic, Isala Klinieken, Zwolle, Netherlands;* [3]*Paediatrics, VU Medical Centre, Amsterdam, Netherlands*

Background: Clinical experience shows that wheeze is common in children with Down syndrome (DS), but that treatment with anti-asthmatic drugs is usually disappointing.
Aim: To compare the prevalence of current wheeze in children with DS, their siblings, and general population controls.
Methods: This was a case control study in which the International Study of Asthma and Allergy in Childhood questionnaire for respiratory symptoms was completed by parents for 130 children with DS and 167 of their siblings, and for 119 age and sex matched control subjects from the general population.
Results: Both wheeze ever and wheeze during the last 12 months was more commonly reported in DS than in their siblings or controls. The relative risk (RR) of current wheeze in DS was 2.8 (95% CI 1.42-5.51) compared to siblings, and 2.75 (95% CI 1.28-5.88) compared to controls. Children with DS were less likely to have received a doctor's diagnosis of asthma (3.1%) than siblings (4.2%) or controls (6.7%, p=0.04). During 4-yr follow-up, the diagnosis of asthma was confirmed in none of the 24 DS children with current wheeze, and atopy was found in none of them. Chronic rhinitis occurred more frequently in children with DS (40%) than in their siblings (17.3%); eczema did not (14.6 vs 19.2%).
Conclusion: Wheeze is common in children with DS. This is likely to be related to factors specific for DS, and probably unrelated to asthma.

P1136

Early childhood infections with rotavirus and norovirus are associated with risk of developing asthma

Monique Mommers[1], Melanie Ogunyena[1], John Penders[1,2], Johan Reimerink[3], Foekje Stelma[4], Marion Koopmans[3], Carel Thijs[1]. *[1]Department of Epidemiology, School for Public Health and Primary Care (CAPHRI), Maastricht University, Maastricht, Netherlands; [2]Department of Medical Microbiology, School for Public Health and Primary Care (CAPHRI), University Hospital, Maastricht, Netherlands; [3]The Laboratory for Infectious Diseases and Screening, National Institute of Public Health and the Environment (RIVM), Bilthoven, Netherlands; [4]Department of Medical Microbiology, University Medical Centre (UMC), St Radboud, Nijmegen, Netherlands*

Background: The role of early infections in asthma aetiology is not fully understood. Most research has focussed on respiratory infections and, although gastroenteritis has been associated with increased asthma risk, gastrointestinal viruses have thus far received little attention.
Aim: To investigate whether infection with gastrointestinal viruses during infancy is associated with the development of childhood asthma and related atopic manifestations.
Methods: In 591 children from the KOALA Birth Cohort Study, IgG seropositivity for rotavirus and norovirus (GGII.4 and GGI.1) was determined at age 1 year. Gastrointestinal symptoms during the 1st year were assessed by repeated questionnaires. Associations with childhood asthma at 6-7 years, wheeze and eczema until age 6-7 years, atopic dermatitis at age 2 years and specific IgE at age 2 years and 6-7 years were analysed using multivariable logistic regression and GEE.
Results: Children seropositive for rotavirus at age 1 year had an increased risk for subsequent asthma (adjusted odds ratio 2.36; 95% Confidence Interval 1.00–5.62) and wheeze (1.90; 1.33-2.71), with the highest risk observed in children with rotavirus infection with intestinal symptoms (4.56; 2.78–7.48). Norovirus GGII.4 seropositivity at age 1 year was associated with decreased asthma risk (0.26; 0.08–0.85), and GGI.1 seropositivity was associated with decreased risk of wheeze until age 6-7 years (0.65; 0.42–1.00).
Conclusion: Early life rotavirus and norovirus infections are associated with wheeze and asthma development. Symptomatic rotavirus infection might reveal an underlying general susceptibility to wheeze and asthma or may be causal factor if viremia occurs.

P1137

Maternal asthma phenotypes and children's allergy status

Maria Vakharlovskaya, Olga Lavrova, Maria Petrova. *Laboratory of Inherited Lung Disorders, St.Petersburg Pavlov State Medical University, St. Petersburg, Russian Federation*

Background: Asthma is a complex heterogeneous disease comprising a number of discrete phenotypes. Allergy status in children tends to differ according to asthmatic phenotype of parents, particularly mothers. Mother's asthmatic phenotype stipulates for differences in structure and time of allergy onset in children.
Purpose: To study the influence of maternal asthma phenotype on children's allergy status.
Methods: We evaluated the allergy status in children from birth to 7 years of age born from 117 asthmatic mothers with regard to their asthma phenotypes; 88 (75.2%) mothers had early onset asthma phenotype (defined as asthma developing before 16 years of age), 29 (24.8%) – late onset phenotype.
Results: The prevalence of allergic asthma and other allergic forms (allergic rhinitis and atopic dermatitis) in children by 7 years of life differed ($p<0.001$, binomial test) depending on the onset asthma phenotypes of mothers. Children born from mothers with early onset asthma phenotypes will be at higher asthma and others allergic forms risk (OR=3,04 [CI: 1.013-9.132]).
Conclusions: Maternal asthma phenotype influences the onset and structure of allergy in children. Understanding of underlying asthma genesis is needed for protective measures and prognosis of the diseases in children.

P1138

Maternal stress during pregnancy and childhood asthma: The KOALA birth cohort study

Ischa Kummeling[1,2], Monique Mommers[1], John Penders[1,3], Caroline Bastiaenen[1], Carel Thijs[1]. *[1]CAPHRI School of Public Health and Primary Care, Department of Epidemiology, Maastricht University, Maastricht, Netherlands; [2]Clinical Trials Unit, Medical Research Council, London, United Kingdom; [3]Department of Medical Microbiology, Maastricht University Medical Center, Maastricht, Netherlands*

Introduction: Asthma is among the most common chronic diseases in children. The development of the immune system into an asthmatic makeup may begin in utero and maternal stress can drive immune responses. Increase in chronic stress of women has paralleled the rising prevalence of asthma.
Aim: To investigate whether maternal perceived stress during pregnancy increases the risk of developing asthma in childhood.
Methods: Within the KOALA Birth Cohort Study, The Netherlands, maternal perceived stress was ascertained by using the 10-item version of Cohen's Perceived Stress Scale at 14 and 30 weeks of pregnancy.
Associations with parentally reported wheeze and asthma (n = 1783), total and specific IgE (n = 360) and lung function (standardized FEV1 and FVC; n =417) at age 6-7 years were analyzed using multivariable regression analyses. Asthma was defined as ever doctor-diagnosed asthma with clinical symptoms and/or the use of prophylactic asthma medication in the last 12 months.
Results: Maternal perceived stress was not associated with asthma at age 6-7 years (stress in first trimester: adjusted OR 0.74; CI95% 0.36-1.51; third trimester: 0.82, 0.43-1.59; or both trimesters: 0.90; 0.43-1.87). Maternal stress was also not associated with allergic sensitization (first trimester: 0.50; 0.19-1.30; third trimester: 0.70; 0.28-1.72; or both trimesters: 0.39; 0.12-1.24). No statistically significant associations were found between perceived stress and FEV1 and FVC, nor between the level of stress (low, medium, high tertile) in the first or third trimesters and any outcome.
Conclusions: This study did not find evidence for an effect of maternal stress in pregnancy on asthma development at age 6-7 years.

P1139

WITHDRAWN

P1140

Electronic auscultation of the lungs in children with asthma

Elena Stezhkina, Tatiana Filimonova, Galina Sharowskaya, Andrey Dmitriev. *Pulmonology Department, Medical University Hospital Riasan, Riasan, Russian Federation Pulmonology Department, Medical University Hospital Riasan, Riasan, Russian Federation Pulmonology Department, Medical University Hospital Riasan, Riasan, Russian Federation Pulmonology Department, Medical University Hospital Riasan, Riasan, Russian Federation*

Aim: The aim of this study was to determine the quantitative characteristics of sounds by electronic auscultation in children with asthma.
Materials and methods: 112 children with moderate and severe persistent asthma and 41 healthy child, the control group, aged 7-18 years were included in this study. Sound phenomens recorded on the chest with an electret microphone SAFA (Korea) twice: at admission and on the third day of treatment. Data processing was carried out using Audacity 1.3 audio editing and Adobe Audition 1.5.
Results: The asthmatic children respirophonogram's curve didn't show a smooth amplitude decrease in frequencies over 300-1200 Hz, had the persistence of the peaks in the range of more than 1100 Hz, the sawtooth shape of the curve. Sound characteristics do not depend on sex, age, level of physical development of children.
After treatment we noted the decrease of the respirofonogram's curve in amplitude at frequencies exceeding 500 Hz, with preservation of low-amplitude peaks in the range of high frequency (1200 Hz). Thus, the air flow becomes less turbulent and severity of bronchial obstruction is reduced. Correlations between the parameters of respiratory sounds and spirometry and peak flow not revealed.
Conclusion: Quantitative characteristic respiratory sounds by the electronic auscultation allows to objectively establish the presence of obstruction in children.

P1141

Component-resolved allergy diagnostics identify phenotypes in problematic severe childhood asthma

Björn Nordlund[1], Jon Konradsen[1], Inger Kull[4], Magnus Borres[2], Annica Önell[2], Hans Grönlund[3], Gunilla Hedlin[1]. *[1]Women's and Children's Health, Karolinska Institutet, Stockholm, Sweden; [2]Phadia, Uppsala, Uppsala, Sweden; [3]Centre for Allergy Research, Karolinska Institutet, Stockholm, Sweden; [4]Department of Clinical Science and Education, Södersjukhuset, Karolinska Institutet, Stockholm, Sweden*

Aim To analyse clinical phenotypes of problematic severe childhood asthma in relation to component-resolved allergy diagnostics.
Methods This cross-sectional study included 56 children with problematic severe asthma, insufficiently controlled despite 800µg daily inhaled corticosteroids (budesonide or equivalents). IgE antibodies against 131 individual allergen components from inhalant and food sources were analysed using immunosolid-phase allergen chips. Airway inflammation (FeNO), lung function (FEV_1) and bronchial hyperresponsiveness (methacholine challenge) were assessed in all subjects, and Health-Related-Quality-of-Life (HR-QoL) questionnaires and asthma control tests were completed.
Results IgE antibodies were detected in 80% (n=45) of children tested. Airway inflammation was greater in these children (FeNO, mean 31 ppb vs 16 ppb, p=0.039) and lung function was reduced (FEV1%, mean 79 vs 92, p=0.05) compared to children without detectable IgE (n=11, 20%). However, HR-QoL and asthma control test scores, and bronchial hyperresponsiveness, did not differ between these groups. Children (36%, n=20) with specific IgE to >3 (median value) mould/indoor components were more sensitized to specific food components (mean 5.9 vs 2.2, p=0.026) compared to 45% (n=25) of children with specific IgE to fewer mould/indoor components. Also, children with IgE to >3 mould/indoor components showed increased bronchial hyperresponsiveness (methacholine, dose-response slope, 101% vs 31%, p=0.027) and lower HR-QoL scores (5.1 versus 5.7, p=0.011).
Conclusions Polysensitization to indoor and mould allergens based on component-resolved diagnostics identifies a more severe subgroup of childhood asthma.

P1142

Iodine subsidy as a factor in prevention of bronchial asthma (BA) in infants

Evgeniya Truntsova, Dina Bezrukova. *Department of Hospital Pediatrics, Astrakhan State Medical Academy, Astrakhan, Russian Federation*

Object: to evaluate the effectiveness of the prevention of the atopic diseases and BA in babies with the use of the iodine drugs.
Methods: Evaluation of the health state of the babies having got the iodine with maternal milk in the lactation period from 3 to 6 months (n=117) were studied. 118 babies without iodine donation was the control group. Evaluation of the health state according to the anamnesis, examination, laboratory data and hereditary predisposition to allergic diseases was carried. The indices of median iodurea in babies were studied.
Results: Breast feeding mothers got the potassium iodide at a dose of 200 mcg per day. This dose corresponds with the norms recommended by the WHO for the groups with higher risk of iodine deficiency. Excretion of iodine with urine in babies getting additional iodine in maternal milk was much higher in comparison with the control group (94.6 mcg/L and 38.8 mcg/L respectively; $p<0.01$). Common number of allergic diseases (atopic dermatitis, bronchial asthma, angioneurotic edema, urticaria, drugs allergy) during the first 3 years of life was evidently lower in the group of babies getting iodine with maternal milk ($\chi 2=3.88$; RR=1.77; Sp=0.77). Frequent respiratory infections, especially pneumonia, in the first year of life have a high prognostic coefficient (PK = 7.46 and PK = 8.96, respectively) for the formation bronchial asthma. In basic group it was noted evident decrease of the frequency acute respiratory infections in comparison with the control group (2.9±0.32; 3.7±0.56 respectively, $p<0.05$).
Conclusions: The iodine drugs can be recommended to breast feeding mothers during the lactation period for the prevention atopic diseases and BA in infants.

P1143

Vitamin D in Tunisian young asthmatics

Eya Tangour[1], Haifa Maalmi[2], Jamel Ammar[1], Anissa Berraies[1], Hanadi Abid[1], Kamel Hamzaoui[2], Sadok Yaalaoui[3], Agnes Hamzaoui[1]. *[1]Paediatric Respiratory Diseases, A Mami Hospital, Ariana, Tunisia; [2]UR 99/08-40, Medicine School, El Manar University, Tunis, Tunisia; [3]Biology Laboratory, A Mami Hospital, Ariana, Tunisia*

Vitamin D deficiency has been described in numerous chronic inflammatory diseases.
We sought to investigate vitamin D in children with asthma and its interaction with disease variables and inflammatory responses.
Methods: Thirty-nine children with asthma in a stable state were enrolled. Samples were obtained in summer. Lung function was measured on the same day. Serum concentrations of vitamin D were assayed with a radioimmunoassay kit, 30 healthy children acted as controls. CD4+ blood lymphocytes were investigated for cytokines expression (IFNg, IL4, IL10, IL17) by intracytoplasmic cytokines expression quantified by cytofluorometry. CD4+ CD25+FoxP3+ cells were identified as regulatory T cells.
Only 15% of our patients had a sufficient serum 25(OH) D ((33.83 + 3.31 ng/ml). Deficient values were observed in 43% of asthmatic patients (14.40 + 3.30; P = 0.0001). A positive correlation was found between FVC percent predicted and vitamin D (r = 0.35; P = 0.027). A negative correlation was observed between serum IL-17 and vitamin D (r = - 0.617; P = 0.001). Th1/Th2 ratios of controls were higher (27.26 + 14.35%) than those of patients (13.48 + 8.55%; P = 0.0001). In asthma, Th1/Th2 ratio was correlated with vitamin D (r= 0.68; P = 0.0001). Tr1/Th17 ratio was significantly decreased in asthmatic children. A positive correlation was observed between vitamin D and IL-10+ cells (r = 0.428; P = 0.008). A correlation was observed between the percentage of CD25+FoxP3+ Treg cells and vitamin D values in asthmatics (r = 0.368)
Conclusions: Asthma was associated with lower serum Vitamin D levels despite high levels of sun exposure. Our findings suggest that vitamin D is an important promoter of T cell regulation in vivo in asthma patients.

P1144

Functional state of endothelium in bronchial asthma children

Natalya Orlova, Esfir Atkina, Larisa Guryeva, Lubov Babenkova, Gulnara Sakaeva, Alfia Biktasheva, Svetlana Levasheva. *Cathedra of Children Diseases, Bashkirian Medical University, Ufa, Bashkortostan, Russian Federation*

To examine the association between the functional state of endothelium and bronchial asthma the oxide nitrogen (NO) condition in blood samples was evaluated in 118 bronchial asthma children with a wide range of desease severity with the use of Yemchenko L.N. method (1994) by determination of terminal stabile metabolites, and endothelin-1 (ET-1) concentration with enzyme immunoassays analysis, and also with the use of J. Hladovec method (1978) of circulation endothelial cells (CEC) level establishing. The credible increase of ET-1 (0,525±0,06 fmol/ml), NO (66,59±4,45 mkM/ml), CEC (*7,28±0,63 cells/100 mkl)* levels in bronchial asthma children compared with control (0,22±0,01 fmol/ml, 29,86±0,77 mkM/ml, 3,03±0,22 accordingly, $p<0,01$). The levels of endothelial markers credibly decreased on the background of anti-inflammatory therapy by inhalative glucocorticosteroids (NO 82,69±14,38 mkM/ml and 42,12±9,66 mkM/ml, p=0,001; ET-1 0,64±0,15 fmol/ml and 0,35±0,06 fmol/ml, p=0,001; CEC 7,3±1,67 and 5,0±0,32 cells/100 mkl p=0,0017). All the trial results may be used as an additional standard definition of bronchial asthma severity and therapeutic efficiency in bronchial asthma children.

P1145

Climatic impact on the level of exhaled NO in children with asthma

Renata Volkmer Staresina, Danijela Ratkovic, Daniel Buljevic, Tihomir Mavric, Milica Zvonarek. *Peadiatrics, Thalassotherapia Crikvenica, Crikvenica, Croatia*

The aim of this study was to investigate the climatic impact on the level of exhaled NO in children with asthma and atopic disease who were treated at the department of pediatrics of the Special Hospital for Medical Rehabilitation Thalassotherapy Crikvenica. We wanted to demonstrate a positive effect on reducing the climatic NO.The work comprises sixty-nine children who stayed hospitalized for a period of fourteen or twenty-one days.The level of exhaled NO was measured at the beginning and end of treatment. To conduct these measurements we used coffee Analyzer CLD 88 Eco Swiss company medics.During the period of five months we have collected data regarding the level of exhaled nitric oxide. We treated 69 patients suffering from asthma.The patients were children from the ages of 9-18 years.We measured exhaled NO at the beginning and the end of the stay in our department. In data processing, we have taken only patients with elevated NO at baseline, and our goal was to determine whether it will be less and normal at the end of treatment. After conducting the climatic treatment,we obtained the following results: 43,48% of the children was measured above the 70ppb NO. In group 3,NO of 30-70ppb in the beginning of treatment was also 44.93% of patients. Slightly elevated NO 20 - 30ppb had 11.59% of children on admission to treatment. At the end of the treatment we received the following results: of 69 patients, as many as 55.07% had a NO in normal, and a high of 1.45% of patients.All this leads to the conclusion that climatic therapy in our hospital has a positive effect in decrease exhaled nitric oxide, which also directly has beneficial effect on the underlying disease itself.

P1146

Association of IL4 gene polymorphisms with asthma phenotype

Maria Vakharlovskaya[1], Maria Petrova[1], Tatyana Ivashchenko[2]. *[1]Laboratory of Inherited Lung Disorders, St.Petersburg Pavlov State Medical University, St. Petersburg, Russian Federation; [2]Laboratory of Prenatal Diagnostics of Congenital and Inherited Disorders, D. O. Ott Research Institute of Obstetrics and Gynecology, RAMS, St. Petersburg, Russian Federation*

Background: Asthma is a major chronic disease, and a lot of studies indicate that it is on the rise worldwide. The implication genes responsible for this disease may indicate pathways for therapeutic intervention and information about the prognosis of children from asthma's family. Genetic risk factors may be useful for identifying subtypes of asthma. Several lines of evidence suggest that the IL-4 gene is involved in the development of atopic asthma.
Objective: The objective of this study was to analyze the polymorphism -590 C/T IL-4 in the subgroups of patients with early-onset asthma (defined as asthma

developing before 16 years of age) and later-onset asthma and in the group of population control.The genetic polymorphisms –590 C/T were studied by PCR-RFLP analysis

Results: The frequency of -590 C allele of the IL-4 gene was significantly higher in the group of patients with asthma (p = 0.0366) as compared to the population group. The analysis of distribution of the -590 C/- genotype showed significant increasing of the frequency of this genotype in the group of patients with later-onset asthma (p = 0.0231) as compared to the early-onset asthma group of patients. According to odds ratio value (OR=4.2 [CI:1.658-11.014]) -590 C/- genotype of the IL-4 could be responsible for 4-fold increase in the risk of later-onset asthma.

Conclusions: Asthma is caused by genetic and environmental factors and this chronic disease is genetically heterogeneous. Our data show that -590 C/T IL-4 polymorphism plays a role in disease formation and could be treated as a prognostic genetic marker of the risk of later-onset asthma.