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twenty patients given needle acupuncture sessions by a rate same as laser group and group C (control group) under their asthmatic medications only. Assessing of the clinical condition of the patient (frequency of attack and severity of asthma) and laboratory (IgE level and Eosinophil count) before and after the study.

Results: Frequency of asthmatic attack diminished in group A ($p < 0.001$) more than in group B ($p = 0.002$) and least in group C ($p = 0.147$) at the end of the study, Clinical severity of group A significantly improved ($p < 0.001$) than group B and C, IgE level were significantly improved in both groups A and B ($p < 0.001$) better than changes occurred in group C ($p = 0.057$). Eosinophilic count showed more significantly improvement in group A ($p < 0.001$) than group B ($p = 0.206$) and group C ($p = 0.784$).

Conclusions: Application of laser acupuncture sessions beside medical treatment results in more significantly improvement of the asthma frequency of attack, the degree of asthma severity, IgE level and eosinophilic count in asthmatic children than the use of needle acupuncture or medications used only.

OP09

The concentration of exhaled carbon monoxide in asthmatic children with different controlled stadium

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Introduction: The exhaled carbon monoxide is an important biomarker of the oxidative stress and the airways inflammation. Most scientific publications account of increase values in asthma. However our known literature does not have data on the relationship between different stadiums of asthma control and the exhaled carbon monoxide values. The aim of this study was to access this correlation.

Method: Our patients are well controlled, partly and uncontrolled asthma bronchial children, who are treated in outpatient clinic. Each of them has treatment according to GINA protocol. Before spirometry, patients were made deep inhalation, then they were made slow exhalation to the carbon monoxide measure equipment. (PiCO + Smokerlyzer) The exhaled carbon monoxide values were only known by the assistant, so that these values wouldn't influence when putting in a category. We made the statistic by InStat softver. We used non-parametric procedures.

Results: We found significant differences between the groups of well controlled and group of partly or uncontrolled in concentration of exhaled carbon monoxide, but significant difference was not demonstrable between the group of partly controlled and group of uncontrolled (Table 1).

Conclusion: According to our investigation/examinations the exhaled carbon monoxide is significantly higher in partly or uncontrolled stadium of asthma bronchial than in well controlled stadium of asthma. This higher amount of exhaled carbon monoxide values show the raising of airways inflammation and the finish of well controlled stadium. The exhaled carbon monoxide suggests the inflammation aspect of asthma bronchial. Detailed analysis of our results shows that the eCO can be used to estimate the compliance of patients (Table 2).

Table 1 Summary

| | Well controlled | Partly controlled | Uncontrolled | Significance |
|--------------------|-----------------|-------------------|-----------------|--------------|
| Number of patients | 99 (37 %) | 102 (38 %) | 68 (25 %) | |
| eCO (ppm) | 3.21 (SD: 1.15) | 4.88 (SD: 2.60) | 5.55 (SD: 2.49) | $P < 0.0001$ |

Table 2 Summary

| | Controlled | Partly controlled | Uncontrolled | Significant relation |
|-------------------------------|----------------------|-----------------------|----------------------|--------------------------------|
| Patients number (male/female) | 99 (37 %) (51/48) | 102 (38 %) (62/40) | 68 (25 %) (36/32) | – |
| Age | 11.13 | 11.23 | 10.97 | $p > 0.05$ |
| FVC% | 94.53 | 94.06 | 94.74 | $p > 0.05$ |
| FEV1% | 95.29 | 92.24 | 91.57 | $p > 0.05$ |
| FEV1/FVC | 88.24 | 85.68 | 85.41 | $P < 0.05$ ($p = 0.0186$) |
| FEF25–75 % | 94.82 | 85.95 | 86.65 | $P < 0.05$ ($p = 0.0163$) |
| eCO/ppm/ | 3.21 | 4.88 | 5.55 | $P < 0.05$ ($p < 0.0001$) |

OP10

Effect of vitamin D3 supplementation during pregnancy on risk of persistent wheeze in the offspring: a randomised clinical trial

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Importance: Observational studies have suggested that increased dietary Vitamin D intake during pregnancy may protect the offspring against preschool wheezing, which is the most common disorder in young children.

Objective: To determine whether supplementation of Vitamin D₃ during third trimester of pregnancy reduces the risk of persistent wheeze in the offspring.

Design, setting and participants: The study was a double-blinded, single-center, randomized controlled trial conducted within the Copenhagen Prospective Study on Asthma in Childhood (COPSAC₂₀₁₀) unselected mother-child cohort. A total of 627 women were recruited for the Vitamin D trial at 24 weeks of pregnancy, between March 4th 2009 and November 17th 2010. Clinical follow-up of the children (n = 581) was completed when the youngest child turned 3 years and unblinded on March 28th 2014.

Intervention: Vitamin D₃ (2400 IU/day) supplementation or matching placebo tablets from pregnancy week 24 to 1 week postpartum.

Main outcome measure: Persistent wheeze at age 0–5 years diagnosed solely by the intervention-blinded study pediatricians strictly adherent to a predefined algorithm based on 11 scheduled and additional acute clinic visits and a day-to-day symptom diary filled by the parents from birth. Secondary outcomes were number of wheezy episodes, asthma, neonatal airway immunology, respiratory infections, allergic sensitization and eczema.

Results: Occurrence of persistent wheeze did not differ between the Vitamin D₃ supplement and control group (incidence, 18 % vs. 21 %; hazard ratio, 0.79; 95 % CI, 0.54–1.14, $P = 0.21$). The number of wheezy episodes was reduced by the Vitamin D₃ intervention (mean 5.9 vs. 7.2 episodes; incidence risk ratio, 0.83; 95 % CI, 0.71–0.97, $P = 0.02$) and the airway immune profile at age one month was up-regulated (principle component analysis, $P = 0.04$). There was no effect on additional end-points.

Conclusion: The use of Vitamin D₃ supplementation during pregnancy did not reduce the risk of persistent wheeze in the offspring.