

309 Measurement of the fraction of exhaled breath temperature as a biomarker of asthma control in patients in northeastern Mexico

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RATIONALE: The measurement of the fraction of exhaled breath temperature has been used as a noninvasive biomarker in the detection of airway diseases. The purpose of our study was to compare the fraction of exhaled breath temperature (EBT) in patients with controlled and uncontrolled asthma to establish its use as a biomarker. EBT reports peripheral airway temperature (T₃max), central (T₁max) and the relationship between both (Rel T₁/T₃).

METHODS: We reviewed a total of 40 records of adult asthmatic patients that were consulted at the Regional Center of Allergy and Clinical Immunology at the University Hospital in Monterrey, Mexico and to whom the EBT was measured. Patients were classified as uncontrolled or controlled asthma by the Asthma Control Test and doses of inhaled corticosteroid were documented. EBT was compared among both group of patients. Data was analyzed using SPSS 23.0.

RESULTS: Nineteen patients (47.5%) had controlled asthma while 21 (52.5%) were uncontrolled. The mean of T₃ max temperature in controlled asthma using low doses of corticosteroids was 29.5; in patients with uncontrolled asthma and higher doses of inhaled corticosteroids, the mean was 28.1 with $p=0.032$.

CONCLUSIONS: Patients with uncontrolled asthma and higher doses of inhaled corticosteroids showed significant difference in EBT measurements compared to controlled asthma, establishing the EBT as a useful biomarker.

310 Comparison Of Exhaled Breath Fraction Temperature (frEBT) In Patients With Respiratory Allergy

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RATIONALE: The exhaled breath fraction temperature measures the level of inflammation of the respiratory tract. The objective was to measure the exhaled breath temperature in patients with respiratory allergy.

METHODS: Case-control study, retrospective, transversal, observational and descriptive. Patients between 18-75 years were evaluated, both genders with diagnosis of respiratory allergy, to whom the exhaled breath

temperature was measured to compare it with the level of inflammation of the respiratory tract according to the T₁/T₃ relation of the FracTAir machine.

RESULTS: 199 pacientes were included, 28.8% males, 71.2% females, with a median age of 29.7 years. 71.9% were allergic patients and 28.1% were controls, 23.6% had asthma diagnosis and 48% rhinitis. The exhaled breath fraction temperature was measured comparing controls vs respiratory allergy, the T₁max on the allergic group was 25.80 vs controls with a median 26.03 with $p=0.418$, the T₃ median on the allergic group was 29.01 vs controls median 29.49 with $p=0.045$, with a T₁/T₃ median relation on the allergic group of 11.04 vs controls median was 11.45 with $p=0.441$ respiratory frequency was measured finding with $p=0.003$. With statistic significance $p=0.05$. Therefore, values are statistically significant in patients with respiratory allergy vs controls on T₃ which correlates with inflammation of the periferic respiratory tract.

CONCLUSIONS: The measurement of exhaled breath fraction temperature in patients with respiratory allergy is a non-invasive measurement method which can relate to the level of inflammation of the respiratory tract in allergic patients

311 Impact of asthma control on susceptibility to ambient air pollution among African American teens with asthma

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RATIONALE: Despite overall improvements in air quality, exposure to ambient air pollution continues to cause asthma exacerbations. Having poorly controlled asthma increases risk of future asthma exacerbations; African-American teens are at high risk of having poorly controlled asthma. We hypothesized that having poorly controlled asthma increases susceptibility to ambient air pollution among African-American teens.

METHODS: This was a prospective observational study of 23 African-American teens with persistent asthma requiring controller therapies ages 12-17 followed at a subspecialty clinic. Participants completed questionnaires, performed spirometry, and underwent a history and physical exam at each of the six study visits over an 8-week period. At the baseline visit, study physicians classified participants' asthma as "well-controlled" or "not-well controlled" in accordance with NHLBI guidelines. A linear mixed effects model was used to evaluate the relationship of each outcome to ambient ozone concentrations at each visit and in prior days.

RESULTS: At the baseline visit, 14/23 participants had well-controlled asthma. After controlling for particulate matter exposure, an increase in ozone levels was associated with decrements of 2.7% in FVC ($p=0.02$) and of 2.5% in FEV₁ ($p=0.07$) per interquartile range (0.017 ppm) on the day of exam. Likewise, an increase in ozone levels was associated with a 0.93 increase in the total Asthma Control Questionnaire score ($p<0.001$). There was no effect modification by baseline level of asthma control.

CONCLUSIONS: Among African-American teens exposed to ozone levels below the National Ambient Air Quality Standard, having "well-controlled" asthma was not sufficient to protect against the pulmonary health effects of ambient air pollution.