225 Exhaled leukotriene B4 and nitric oxide in cystic fibrosis

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Cystic fibrosis (CF) is the most commonly inherited lethal pulmonary disorder in Caucasians. Progressive lung disease, characterized by a self-perpetuating cycle of airway obstruction, chronic bacterial infection and inflammation, is the main cause of morbidity and mortality in CF patients.
The aim of this study is to search for inflammatory markers for CF. Exhaled breath condensate (EBC) is used more and more in the search for noninvasive biomarkers for airway diseases. Samples were collected from 32 CF patients, of which 9 were chronically colonized with *Pseudomonas aeruginosa* and 21 healthy controls (age 6–23 years). EBC was collected by tidal breathing during 15 minutes in a RTube (Respiratory Research). NO was measured with a NIOX Mino (Aerocrine). EBC pH was measured without deaeration, exactly 5 minutes after sample collection. Exhaled LTB4, measurable in 73% of the samples (EIA, Cayman), was significantly higher in CF patients compared to healthy controls (median: 5.71 vs 3.59 pg/ml; Mann-Whitney U test: $p = 0.0029$). Values were especially elevated in CF patients with *P. aeruginosa* (10.05 pg/ml), but not significantly higher than in other CF patients. Gender, body weight, height or age didn't have an influence on exhaled LTB4. EBC pH was lower in the CF patients than in the control group, but the difference was not significant (median: 5.37 vs 5.70). No correlation was observed between LTB4 and EBC pH. Exhaled NO was significantly lower in CF patients compared to healthy controls (median: 8 vs 10 ppb; $p = 0.010$). A small but significant negative correlation between LTB4 and logNO was observed ($p = 0.049$). These data suggest that exhaled LTB4, which has potent chemotactic activity for neutrophils, could be used to monitor airway inflammation in CF patients.
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226 Neutrophil elastase in exhaled breath condensate in cystic fibrosis

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Neutrophilic inflammation is characteristic for CF lung disease. Neutrophil elastase (NE) is a marker of neutrophilic inflammation.
We examined NE in exhaled breath condensate (EBC) in 53 CF adults (29 M) aged 25.7±4.7 (mean±SD) years with FEV1 55.5±23.1% pred. and in 26 healthy controls (8 M) aged 28.4±4.8 years by using ECoScreen condenser and ELISA method (lower detection limit given by manufacturer was 3 ng/ml).
NE was detectable in EBC in 34.0% of CF patients and 34.6% of healthy controls. Detection didn't depend on sex ($p = 0.636$), age ($p = 0.134$), FEV1 ($p = 0.669$) and bacterial colonization of airways ($p = 0.67$) in CF patients. NE tended to be higher in CF patients, 3.9 (1.7–9.0) vs. 1.8 (1.0–3.4) ng/ml (mean and 95% CI), $p = 0.204$. NE correlated neither with EBC pH ($p = 0.726$) nor with EBC concentration of leukotriene B4 ($p = 0.88$). NE also didn't correlate with FEV1 ($p = 0.805$).
Based on these results, examination of NE in EBC by this means isn't useful for evaluation of neutrophilic inflammation in CF airways, probably due to detection limit. More sensitive methods are needed for future research in this field and suitability of ECoScreen condenser should be evaluated for this biomarker.
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