European Respiratory Society
Annual Congress 2012

Abstract Number: 4638

Publication Number: P3221

Abstract Group: 5.2. Monitoring Airway Disease

Keyword 1: Lung function testing **Keyword 2:** COPD - mechanism **Keyword 3:** Lung mechanics

Title: Reference values for respiratory system resistance in adults

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Body: The degree of airway disease is usually determined in spirometry using maneuvers that require quite some effort. i.e. FEV1 and FVC. Bodyplethysmography can assess airway obstruction during tidal breathing by determination of airway resistance. Reference values for resistance are, however, scarce. Within the emphysema versus airway disease (EvA) study we therefore have determined airway resistance in a population of 261 apparently healthy Caucasian subjects aged 45 to 75 with 163 males and 98 females. These were ex-smokers for more than a year or never smokers (27%) with no evidence of acute or chronic lung disease. We determined total resistance (Rt), inspiratory resistance (Rin), expiratory resistance (Rex) and specific resistance (sR). Rex for the entire group was 0.22±0.11 kPaxsec/L (95 Percentile = 0.45) for males it was 0.20±0.12 kPaxsec/L and for females it was 0.26±0.12 kPaxsec/L. Rin for the entire group was 0.162±0.07 kPaxsec/L (95 Percentile = 0.29) for males it was 0.15±0.07 kPaxsec/L and for females it was 0.18±0.08 kPaxsec/L. Rt for the entire group was 0.19±0.09 kPaxsec/L (95 Percentile = 0.34). The resistance values for the females as compared to males were significantly higher for all 4 types of parameters ($p<0.001$ each). As expected resistance parameters Rt, Rin and Rex showed a strong inverse correlation with FEV1 (mL). There was no impact of age or packyears. The data obtained can form the basis for the evaluation of airway resistance in obstructive lung diseases like COPD. Supported by EU FP7 project #200506.