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Correlation between fractional exhaled nitric oxide and asthma control test score and lung function parameters among asthmatic adults in Colombo, Sri Lanka

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Background: The fractional exhaled Nitric Oxide level (FeNO) is a reliable and easily applied marker to identify the airway inflammation and is used to determine the severity of the disease of asthmatic patients. In Sri Lanka, the relationship between FeNO and indicators of asthma control is unknown.

Objective: The study aims to determine possible correlations between FeNO and the Asthma Control Test (ACT) score; and between FeNO and lung function parameters.

Method: A cross-sectional study with consecutive sampling was conducted among 180 asthmatic adults attending to respiratory clinics in Colombo, Sri Lanka. An interviewer administered questionnaire was used as the data collection instrument. The fractional exhaled nitric oxide level was measured using a NO breath FeNO monitor. Asthma control were assessed using the Asthma Control Test and lung function was measured using a spirometer and a calibrated peak flow meter.

Results: A total of 180 asthmatic adults (60% females) were included and analyzed. The majority of asthma patients (80%) were above 50 years. Most of the asthma patients had a long history of asthma. Among them, 10.6% of asthma patients were affected with the disease for more than >20 years. Mean±SD of FeNO was 26.5±11.2 parts per billion (ppb) and Mean±SD of ACT score was 17.3±3.3. A significant difference in FeNO values was found among the four groups with different asthma control levels categorized according to the ACT score ($P<0.05$). FeNO level was significantly and inversely correlated with the ACT score ($r = -0.780$, $P<0.001$). However, there was no correlation ($p>0.001$) found between FeNO and lung function parameters (predicted FEV1, FVC, FEV1/FVC, PEFr).

Conclusion: Higher FENO levels are associated with greater asthma burden. Therefore, exhaled NO measurement is a complementary tool to help clinicians in asthma management.