

Prediction of exacerbations of bronchial asthma using fractional exhaled nitric oxide (FeNO) and asthma control test (ACT)

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ABSTRACT

Background: Asthma exacerbations can significantly impact the quality of life of patients. ACT is a questionnaire which is used to assess asthma control by analysing asthma symptoms spanning 4 weeks. FENO is used to monitor eosinophilic airway inflammation which is used for objective assessment of the control of asthma. The purpose of this study was to assess the ability of exacerbation prediction of bronchial asthma using FeNO and ACT. **Methods:** This study was conducted in September 2020 – January 2021 among medical undergraduates with physician diagnosed bronchial asthma in Faculty of Medicine, University of Peradeniya, Sri Lanka. Students who volunteered were given an interviewer-administered questionnaire, which collected information regarding current control of asthma using ACT from which ACT score was calculated. Subsequently, the students underwent FeNO test (using Bedfont NObreath® NBR025079 (Serial No -TMI1850006587)). ACT score >19 was considered as good control whereas ≤19 was considered as poor control. FeNO value <50 ppb was considered as good control whereas ≥50 ppb was considered as poor control. The subjects were followed-up for 3 months, and asthma exacerbations within that period were obtained. Data was analysed with SPSS utilizing Independent samples T test. **Results:** 30 students participated in the study. Age range 21-25 years. Male 16(53.33%) and female 14(46.67%). According to ACT 16(53.33%) had good control and 14(46.67%) had poor control of asthma. According to FeNO, 21(70.00%) had good control and 9(30.00%) had poor control of asthma. The mean exacerbation of poor control group (according to ACT) was 0.6428 (±0.8419), whereas mean exacerbation for good control group (according to ACT) was 0.688 (±1.9906) (p =0.938). The mean exacerbations of good control group (according to FENO) was 0.190 (±2.4889) whereas Mean exacerbations for poor controlled group (according to FENO) was 1.778 (±2.4889) (p= .007). **Conclusion:** Students who had poor control according to FENO values had significantly higher asthma exacerbations than students who were identified as poor control with ACT. Therefore, FeNO may be considered as a better predictor of asthma exacerbations.