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## Evaluation of Factors Affecting Lung Function in Children with Wheezing by Impulse Ossilometer Method

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**Objectives:** In this study, we aimed to evaluate the pulmonary functions in pre-school children with wheezing by episodic and multiple triggers, by using the impulse ossilometer (IOS) method to compare the values of healthy children and to determine the factors affecting lung functions.

**Methods:** In this prospective and cross-sectional study, 102 wheezy children (35 episodic and 67 multiple triggers) and 30 healthy children were enrolled in our hospital between December 2018 and January 2019. IOS values, demographic characteristics and relationship between co-morbid conditions and lung function were investigated. The data were compared with the values of healthy children.

**Results:** The age of the children with multiple-trigger wheezing ( $p=0.005$ ) and the duration of the symptoms ( $p=0.001$ ) were higher than the episodic ones, whereas the basophil count was lower ( $p=0.025$ ). In wheezy children, R5 ( $p=0.001$ ), Fres ( $p=0.003$ ) and AX ( $p=0.012$ ) values were higher than healthy controls and X20 ( $p=0.011$ ) was found to be low. There was no difference in terms of IOS values among wheezy children with episodic and multiple triggers ( $p=0.05$ ). In boys, X5 values were found to be lower than girls ( $p=0.004$ ). In wheezy children with obesity, VT/kg was significantly lower and R5 was higher ( $p=0.006$ ,  $p=0.024$ , respectively), but there was no significant difference in healthy children ( $p=0.05$ ). The number of exacerbations was higher in atopic patients and lower in those with passive smoking ( $p=0.043$ ,  $p=0.013$ , respectively). IOS parameters were not affected in wheezy children in the presence of adenoid hypertrophy, whereas in healthy children R5 and R20 values were significantly lower ( $p=0.013$ ,  $p=0.005$ , respectively). In contrast to healthy children, VT/kg values in wheezy children were correlated with R5, R5-20 and AX, whereas they were inversely related to X20 ( $p=0.033$ ,  $p=0.012$ ,  $p=0.009$ ,  $p=0.005$ , respectively).

**Conclusion:** Impulse ossilometry is a useful method of assessment in preschool wheezy children. In wheezy children, R5, Fres, AX values were higher than healthy children and X20 was lower. No difference was found in terms of IOS parameters among children with episodic and multi-trigger wheezing. Male gender, adenoid hypertrophy, obesity and basophilia are the factors affecting IOS parameters.

**Keywords:** Wheezy child, impulse ossilometer, pulmonary function test