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Title: The usefulness of the simultaneous measurement of IOS and FeNO in the management of asthma

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Body: [Background] The evaluation of airway lesions by impulse oscillometry (IOS) and the evaluation of fractional exhaled nitric oxide (FeNO) as the indicator of asthmatic airway inflammation attract attention. [Aim] To evaluate asthmatic airway lesions by simultaneous measurement of IOS and FeNO. [Methods] The subjects were the good controlled 65 patients with asthma (good controlled group), and 42 symptomatic treatment-free initial-visit patients with asthma (initial-visited group). These subjects were nonsmoker. For the patients in both groups, we measured IOS and FeNO at the same time. IOS measured by Masterscreen and FeNO measured by NIOX MINO. [Results] The level of FeNO was 73.1 ± 7.5 ppb in initial-visited group, and was 25.0 ± 2.3 ppb in good controlled group, and the initial-visited group significantly showed high level. In the good controlled group, the positive correlation was accepted between the following IOS parameters, such as the total airway resistance, the small airway component, the peripheral capacitive reactance and the reactance area, the resonant frequency and FeNO ($p < 0.0001$), but the correlation was not found between the large airway component and FeNO. Whereas, in the initial-visited group, the association was not found between these IOS indicators and FeNO. [Conclusions] FeNO mainly shows the inflammation of the small airway in the good controlled patients with asthma. Whereas, in the treatment-free initial-visited patients with asthma, FeNO was reflecting the inflammation of various airway regions. [Discussion] By the simultaneous measurement of IOS and FeNO, the information about asthmatic airway lesions as the target of treatment is obtained in greater detail.