

European Respiratory Society Annual Congress 2013

Abstract Number: 4608

Publication Number: P1216

Abstract Group: 7.4. Paediatric Respiratory Infection and Immunology

Keyword 1: Children **Keyword 2:** Wheezing **Keyword 3:** Cough

Title: Combined multichannel intraluminal impedance pH monitoring in diagnosing GER in children with refractory respiratory symptoms

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Body: Introduction: The main advantage of multichannel intraluminal impedance (MII) over pH monitoring is its ability to detect acid and non-acid gastroesophageal reflux (GER) and to determine the characteristics of reflux (liquid or gas). Aim: To compare the value of pH monitoring and MII for diagnosis of GER in children presented with refractory respiratory symptoms. Material: A prospective study which included 37 patients, aged 4,25±3,15 years was performed using combined MII pH monitoring. Patients were referred for investigation because of suspected GER as etiology of recurrent respiratory diseases: obstructive bronchitis, pneumonia, laryngitis, and chronic cough. Analyzed were percentage of time of pH<4, numeric and percentile values of acid, weak acid and non-acid reflux episodes, values of liquid and mixed refluxes. Diagnostic value separately for pH monitoring and MII was determined. Results: Reflux was detected in 31 patients. pH monitoring was positive in 20 (% time pH<4 17,72±12,06), negative in 17 patients (2,93%±1,67). Both pH and MII were positive in 19 patients; in 11 MII was positive and pH-metry negative; in 6 both were negative. Fisher exact test showed significant statistical difference and superiority of MII in diagnosing GER (p=0.033). Out of 30 patients with MII positive results, 15 had both acid and weak acid reflux episodes, 8 had weak acid and 3 patients had non-acid reflux. 16 patients had mixed (liquid and gas) reflux. Conclusion: This study suggests that significant number of GER include weak acid reflux that cannot be detected by pH metry alone. Combined MII and pH monitoring is a valuable diagnostic method for diagnosing GER in children.