

its non invasiveness and easy execution, it is particularly interesting in clinical practice.

Aim

To define the sensitivity and diagnostic predictive value of spirometry in detecting tracheal collapse in patients with endoscopically-detected tracheomalacia.

Methods

53 patients with surgically corrected EA and tracheomalacia in follow-up at the Department of Pediatric Medicine of Bambino Gesù Children's Hospital, underwent flexible bronchoscopy. Values for forced expiratory volume in the first second (FEV1), forced vital capacity (FVC), FEV1/FVC ratio, peak expiratory flow (PEF) and FEV1/PEF ratio (mL/L/min) were recorded. The morphology of the volume-flow (F/V) loop during expiratory phase was examined in patients undergoing a spirometry test.

Results

12 patients with intrathoracic tracheomalacia and 4 patients with normal airway endoscopy underwent spirometry at a mean age of 9.3 ± 3.1 years. A restrictive ventilatory pattern was observed in 44% of the total population. A sudden and temporary drop during the expiratory phase was observed respectively in 8 and 1 patients. Mean FEV1/PEF ratio was 8.6 mL/L/min and 7.6 mL/L/min respectively in the first and second group. When compared with endoscopy, spirometry detected tracheal collapse during the expiratory phase with diagnostic sensitivity of 67%, specificity of 75% and a positive and negative predictive value respectively of 89% and 42%. FEV1/PEF ratio, which was expressive of intrathoracic obstruction, was higher in patients with tracheomalacia detected by endoscopy.

Conclusions

Spirometry is the most commonly used pulmonary function test in different EA studies while FEV1 and FVC are used to classify ventilatory defects as obstructive or restrictive. The analysis of the F/V curve provides additional information over conventional spirometry in determining the site, character and severity of airway obstruction. Even if flexible bronchoscopy remains the gold standard for the diagnosis of tracheomalacia, spirometry should be a useful and reliable tool for monitoring intrathoracic tracheomalacia in symptomatic patients and/or in patients for which sedation is not indicated.

#J21 – Comparison of Three Field Tests in Children: A Randomized Cross-over Study.

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Introduction

Even if the six minute walking test (6MWT) is the standard criterion for functional exercise performance evaluation, new field tests are

required as practical alternatives. This study aims to establish the validity of the 6-minute step test (6MST) and the 4-meter gait speed (4MGS) in children.

Method

64 healthy children from 6 to 12 years were recruited for this randomized cross-over trial. 6MWT, 6MST and 4MGS were randomly performed on three consecutive days. Pulsed oxygen saturation (SpO2), heart rate (HR), dyspnea (VAS) and fatigue (PCERT) were used as outcomes.

Results

Distance during 6MWT was correlated to number of steps during 6MST ($r = 0.320$; $p = 0.013$) but not correlated to 4MGS ($r = -0.074$; $p = 0.575$). No correlation between number of steps during 6MST and 4MGS ($r = -0.129$; $p = 0.332$) was found. HR was lower than the theoretical maximal HR after the tests. The increase in HR was significantly higher for 6MST and significantly lower for 4MGS than for 6MWT and it was higher for 6MST than for 4MGS. Dyspnea and perceived exertion were lower after 6MWT than after 6MST and higher than after 4MGS. They were also higher during 6MST than during 4MGS.

Conclusion

6MST is a valid surrogate to 6MWT in healthy children for functional exercise performance evaluation contrarily to the 4MGS. However, cardio-respiratory response differs between the three tests.

#J49 – Assessment of Bronchodilator Response with Spirometry in Children with and without Asthma – The Relevance of the Smaller Airways.

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Background

Bronchodilator (BD) response is an important component of asthma diagnosis and management. However, most previous studies only reported forced expiratory volumes that show the function of larger airways.

Aim

To evaluate BD response in spirometry parameters, particularly forced expiratory flows, in children with and without asthma.

Methods

Data from the cross-sectional and population-based study ICAR – Control and Burden of Asthma and Rhinitis (PTDC/SAU-SAP/119192/2010) conducted in Portugal were analyzed. Children aged 3–17 years that performed acceptable and reproducible spirometry, before and after inhalation of 400µg salbutamol MDI via spacer, were