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Title: Computed tomography and flexible bronchoscopy techniques for assessment of tracheomalacia in children

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Body: Background/Aims: Tracheomalacia is not an unusual diagnosis in pediatric respiratory clinics. We tried to find the most suitable approach to the evaluation and diagnosis of “brassy”,“barking”cough. Methods:We performed a dynamic helical CT scan (HCT) in 15 patients (aged 5 to 14 years) suspected of tracheomalacia on the grounds of clinical symptoms (barking cough ± recurrent chest infections). All patients underwent flexible bronchoscopy (FB) under deep sedation and spontaneously breathing. Four children who suffered from various parenchymal lung diseases but no “barking” cough were used as controls. The ratio of anteroposterior/tranverse diameter was measured in the thoracic inlet and the carina level, in full inspiration and end expiration. Results: Flexible bronchoscopy confirmed the existence of tracheomalacia in all patients; in 5 out of 15, lesions were located in the upper part of the trachea as shown by FB. HCTs showed localized narrowing of the intrathoracic trachea in 7 patients. The measured ratios were lower in the patient group as follows: at the carina level in inspiration 0.81±0.08 and 0.97±0.08, p=0.001, and at expiration 0.66±0.13 and 0.89±0.12, p<0.001, for patients and controls, respectively; at the thoracic inlet in inspiration 0.96±0.13 and 1.12±0.11, p=0.023, and at expiration 0.77±0.25 1.02±0.10, p=0.033, for patients and controls, respectively. Conclusions: FB is valuable in the assessment of patients with extrathoracic tracheomalacia since HCTs cannot be recommended as a safe approach (radiation of the thyroid). However, CT scans provide a more accurate estimation of endothoracic tracheomalacia as it is not influenced by the effects of general anaesthesia.