Title: Relationship between serum vitamin D levels and lower airway malacia in children undergoing fiberoptic bronchoscopy

Body: Studies in patients with asthma, cystic fibrosis (CF) and recurrent lower airway respiratory infections demonstrated vitamin D deficiency. Little is known about vitamin D levels and its correlation with lower airway malacia in children. Relationships between serum vitamin D, clinical characteristics, fiberoptic bronchoscopy (FOB) and bronchoalveolar lavage (BAL) findings were investigated in children with chronic lower airway diseases (CLADs). METHODS: We retrospectively analyzed 101 children (mean age, 85.4 months) who underwent FOB and BAL for CLADs from January 2011 until January 2013. Serum vitamin D was measured in 50 children with recurrent lower airway infection, 30 with laringo/bronchospasm and 21 with chronic cough. Relationships between vitamin D and age, month of evaluation, laboratory findings, FOB and BAL were evaluated. RESULTS The analysis performed in 101 pediatric patients (41 female) revealed 31 normal vitamin D level (>75 nmol/l), 34 insufficiency (50-75 nmol/l), 36 deficiency (<50 nmol/l). Vitamin D levels were correlated with the month of evaluation with higher levels during summer months. Vitamin D insufficiency/deficiency was correlated with female gender [p=0.01, odds ratio 3.2 (CI 1.2 to 8.5)]; low vitamin D levels (<50 nmol/l) is correlated with the presence of tracheo/bronchomalacia at FOB (p=0.05) with mean vitamin D levels of 58+-31 nmol/l to respect to 76+-65 nmol/l of children without malacia. No difference were found between BMI, age, indication for FOB and presence of atopia or asthma. CONCLUSIONS: In children with CLADs we found a relationship between lower vitamin D levels and female gender and presence of lower airway malacia.