Objective: Bronchiectasis (BE) and trapped air severity in children with cystic fibrosis (CF). We aimed to identify early predictors of BE and TA severity in children with CF.

Methods: A single-center longitudinal study including CF patients with two routine bi-annual volumetric CTs, at least 5 years apart, aged 6–13 years at CT1. CTs were anonymized and scored with CF-CT scoring system (% maximum score). Intra- and interobserver variability: intraclass correlation coefficient. Associations between sweat chloride-levels and CF-CT subscores: Pearson’s correlation coefficient and multivariate regression models. Effect modification age CT-scan tested by stratification. Descriptives: expressed as median (range).

Results: 69 Children (34 male), age sweat chloride 0.8 (0–19.5) years, age chest CT 13.8 (5.5–19) years, TA score 6.0 (0–25.3)%max and BE score 2.0 (0–24.3)%max. Univariate analysis CF-CT BE scores vs sweat chloride (%). Multivariate models adjusting for age of sweat test and CT scan: significant association between sweat chloride and CF-CT BE (p = 0.036) and mucus plugging (p = 0.027). Stratification in tertiles for age of CT scan showed that association was present only in the oldest age group (range 15–19 years).

Conclusion: Sweat chloride levels are predictive of long term CF lung disease as determined by chest CT, the association was primarily determined by children older than 15 years.