

SUPPLEMENTS

Supplementary Table 1. Modified Bhalla scoring system

HRCT findings	Score			
	0	1	2	3
Severity of bronchiectasis	Absent	Lumen slightly greater than adjacent vessel	Lumen 2–3 x adjacent vessel	Lumen > 3 x adjacent vessel
Peri-bronchial thickening	Absent	Airway wall thickness equal to adjacent vessel	Airway thickening ≤ 2 x adjacent vessel	Airway thickening > 2 x adjacent vessel
Extent of bronchiectasis*	Absent	1–5	6–9	> 9
Extent of mucus plugging*	Absent	1–5	6–9	> 9
Sacculation/abscesses*	Absent	1–5	6–9	> 9
Generation of bronchial divisions, n	Absent	Up to 4th generation	Up to 5th generation	Up to 6th generation
Bullae, n	Absent			
Emphysema*	Absent	1–5	> 5	
Collapse/consolidation	Absent	Subsegmental	Segmental/lobar	
Mosaic perfusion*	Absent	1–5	> 5	

*Number of bronchopulmonary segments affected.

HRCT = high resolution computed tomography

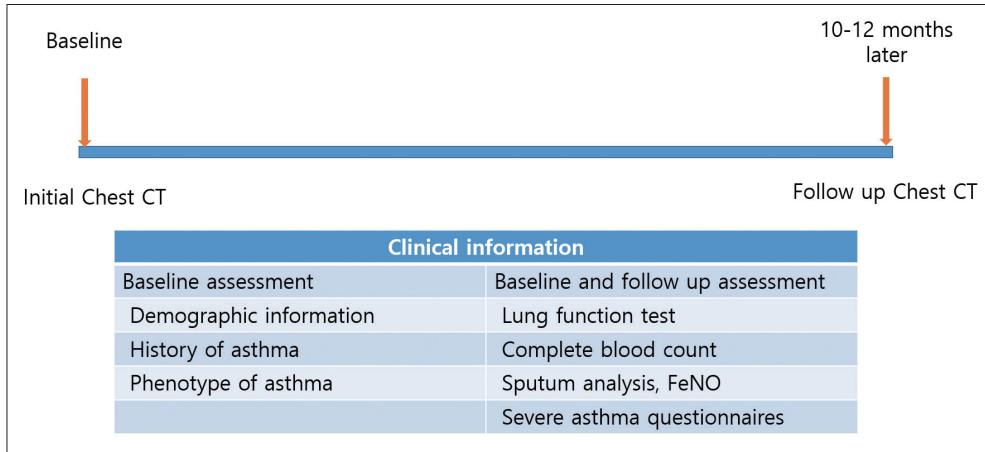
Supplementary Table 2. Correlations between visual and CT quantitative analysis on initial chest CT

Visual assessment	Quantitative analysis: air trapping				Quantitative analysis: airway		
	Normal lung area	Air trapping without emphysema	Air trapping with emphysema*	Emphysema without air trapping	Total branch count	Pi10	Wall area
Bronchiectasis scores, R1*	-0.581 (< 0.001)	0.582 (< 0.001)	0.636 (< 0.001)	0.186 (0.291)	-0.230 (0.191)	-0.108 (0.544)	-0.039 (0.828)
Bronchiectasis scores, R2*	-0.516 (0.002)	0.500 (0.003)	0.563 (0.001)	0.221 (0.231)	-0.174 (0.325)	0.080 (0.653)	0.099 (0.577)
Mucus plugging extent scores, R1*	-0.683 (< 0.001)	0.664 (< 0.001)	0.672 (< 0.001)	0.223 (0.204)	-0.537 (0.001)	0.095 (0.592)	0.131 (0.462)
Mucus plugging extent scores, R2*	-0.672 (< 0.001)	0.685 (< 0.001)	0.652 (< 0.001)	0.159 (0.370)	-0.587 (< 0.001)	0.215 (0.223)	0.239 (0.174)

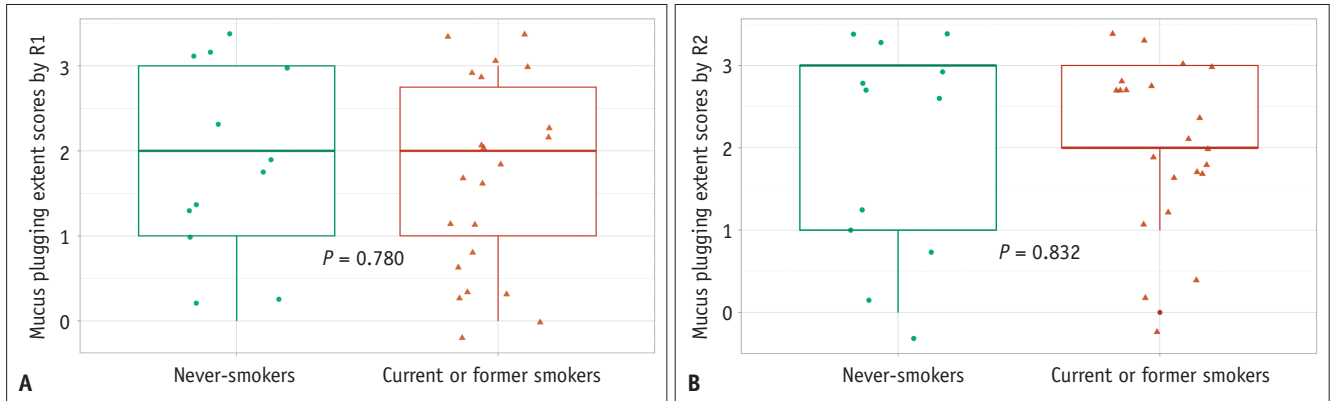
Numbers in parentheses are *P* values.

*Data are presented as correlation coefficients determined using the Spearman's correlation with corresponding *P* value in parentheses.

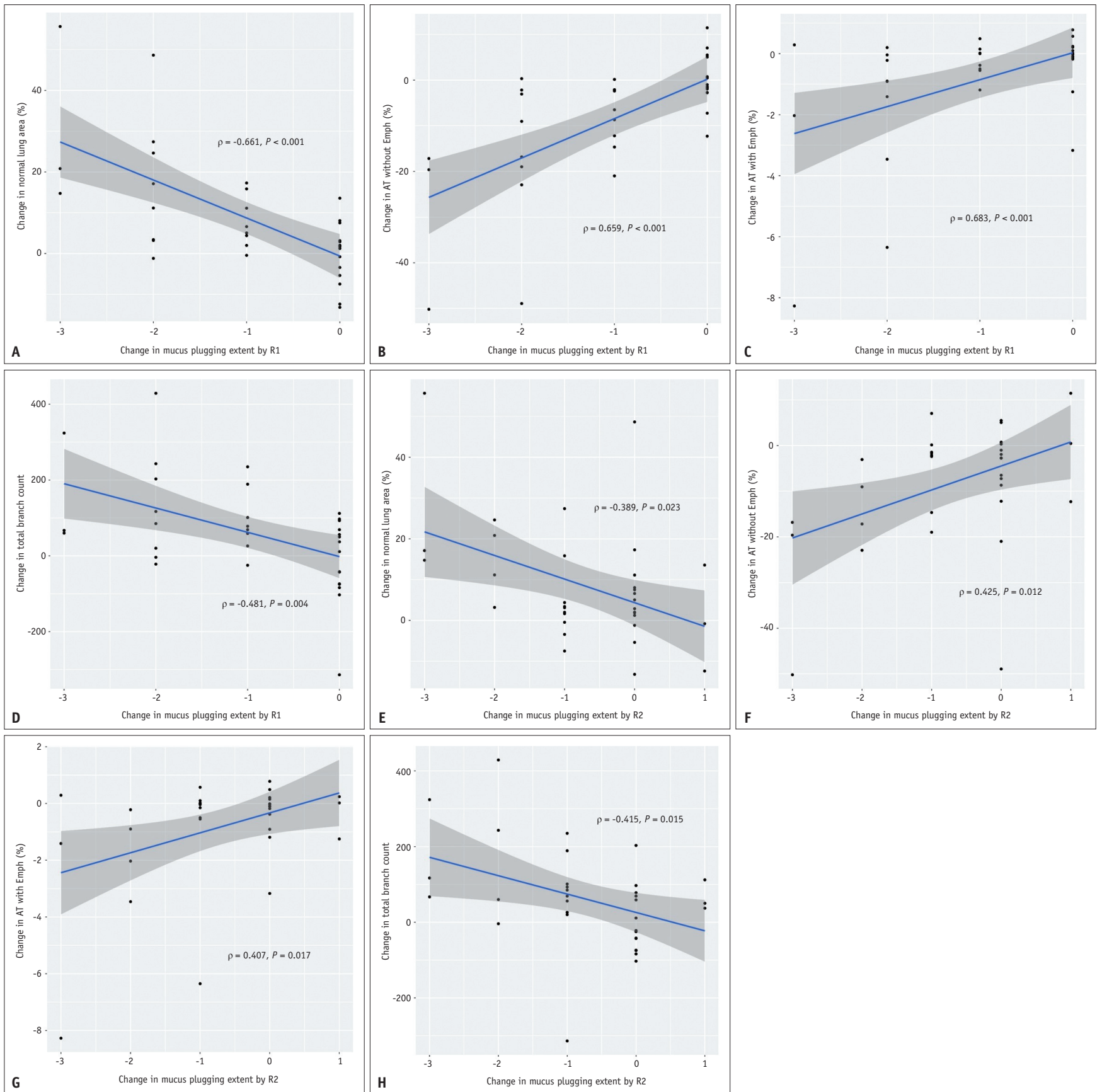
R1 = reader 1, R2 = reader 2



Supplementary Fig. 1. Study design of precision medicine intervention for severe asthma. The participants underwent chest CT scans at baseline and follow-up 10–12 months later, and the following clinical information was collected. FeNO = fractional exhaled nitric oxide



Supplementary Fig. 2. Distribution of mucus plugging extent scores by smoking habit. **A, B:** Distribution of mucus plugging extent scores by R1 (**A**) and R2 (**B**) according to never-smoker (green) and ever-smoker (orange) status. The box plots display the minimum, first-quartile, median, third-quartile, and maximum values. R1 = reader 1, R2 = reader 2



Supplementary Fig. 3. Scatterplots depicting the correlations between changes in mucus plugging extent and changes in quantitative CT measures. **A-H:** Linear correlations between changes in mucus plugging extent by R1 and normal lung area (%) ($\rho = -0.661, P < 0.001$) (**A**), AT without emph (%) ($\rho = 0.659, P < 0.001$) (**B**), AT with emph (%) ($\rho = 0.683, P < 0.001$) (**C**) and total branch count ($\rho = -0.481, P = 0.004$) (**D**) are presented. Linear correlations between changes in mucus plugging extent by R2 and normal lung area (%) ($\rho = -0.389, P = 0.023$) (**E**), AT without emph (%) ($\rho = 0.425, P = 0.012$) (**F**), AT with emph (%) ($\rho = 0.407, P = 0.017$) (**G**) and total branch count ($\rho = -0.415, P = 0.015$) (**H**) are shown. The blue lines represent the regression lines, while the gray areas represent 95% confidence intervals. R1 = reader 1, AT without emph = air trapping without emphysema, AT with emph = air trapping with emphysema, R2 = reader 2