Effect of Baseline Emphysema on Reduction in FVC Decline with Nintedanib in the INPULSIS™ Trials

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Background: The INPULSIS™ trials were two replicate randomized, placebo-controlled, 52-week Phase III trials that assessed the efficacy and safety of nintedanib 150 mg twice daily in patients with IPF. In both trials, nintedanib slowed disease progression by significantly reducing the annual rate of decline in forced vital capacity (FVC), the primary endpoint, compared with placebo.

Methods: A post-hoc subgroup analysis of the effect of nintedanib on the primary endpoint in patients with or without emphysema at baseline, as assessed on qualitative central assessment of chest high-resolution computed tomography (HRCT) scans, was undertaken using pooled data from both trials.

Results: In total, 420 patients (nintedanib 254, placebo 166) had emphysema at baseline and 641 patients (nintedanib 384, placebo 257) did not. Baseline characteristics for patients with versus without emphysema were as follows: mean age 65.8 versus 67.4 years, 89.0% versus 72.9% were male, mean FVC % predicted was 82.5% versus 77.7%. There was no statistically significant treatment by subgroup interaction for the primary endpoint (p=0.5199): the adjusted annual rate of decline in FVC was -105.1 mL/year with nintedanib and -207.2 mL/year with placebo (difference: 102.0 mL/year [95% CI: 43.2, 160.9]) for patients with emphysema versus -118.8 mL/year with nintedanib and -234.2 mL/year with placebo (difference: 115.4 mL/year [95% CI: 73.8, 157.1]) for patients without emphysema at baseline.

Conclusion: A post-hoc subgroup analysis of pooled data from the INPULSIS™ trials demonstrated that nintedanib slowed disease progression by reducing the annual rate of FVC decline independent of the presence of emphysema at baseline.