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Tiotropium Bromide
A Viewpoint by Walter Vincken

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A prominent and characteristic finding in patients with chronic obstructive pulmonary disease (COPD) is poorly reversible and steadily progressing airflow limitation, which is due to both a loss of elastic lung recoil and airway obstruction. As the airway obstruction is due in part to increased vagal bronchomotor tone, inhaled anticholinergics such as the quaternary ammonium salt ipratropium bromide are recommended first-line bronchodilators in the maintenance treatment of COPD. Poor gastrointestinal absorption further limits their systemic availability and, hence, their adverse effects.

The anticholinergic tiotropium bromide (Spiriva®) has the advantage of a long duration of action extending for more than 24 hours. This allows a single once-daily inhalation of 18μg of drug as a dry powder from the HandiHaler® pocket-sized inhaler. This once-daily feature is the result of kinetic selectivity for the M_1- and M_3- muscarinic receptors as compared to the M_2-muscarinic receptor, and should greatly improve the patient's adherence to the prescribed maintenance treatment.

A large, recently published long-term study[1] compared tiotropium 18μg once daily to ipratropium metered-dose inhaler 2 puffs four times daily in patients with moderate to severe COPD. Tiotropium not only improved forced expiratory volume in one second by 120ml after 1 year of treatment (as compared with an expected yearly loss of 50ml or more), but also significantly improved dyspnoea, the use of rescue bronchodilators and quality of life.

Furthermore, tiotropium increased the time to the next COPD exacerbation and the time to the next hospitalisation for a COPD exacerbation, issues of extreme importance not only to the patients themselves, but also to the healthcare financing system. Aside from dry mouth, an expected topical adverse effect of anticholinergics, tiotropium was well tolerated and this effect did not lead to discontinuation of the treatment in any of the patients studied.

These data, and those of other studies, support the use of tiotropium once daily as a first-line maintenance treatment in patients with COPD. Further studies will have to assess whether tiotropium can indeed modify the natural history of COPD, i.e. can slow down the progressive decline in lung function seen in patients with COPD, and whether the combination of tiotropium with long-acting β_2-agonists can even further improve the already promising results obtained with tiotropium alone. ▲

Reference

1. Vincken W, van Noord JA, Greefhorst APM et al, on behalf of the Dutch/Belgian Tiotropium Study Group. Improved health outcomes in patients with COPD during 1 year's treatment with tiotropium. Eur Respir J 2002; 19: 209-216.