Erdosteine

A Viewpoint by Margaret Wilsher

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Cough and the production of mucoid, often viscous, sputum are among the more distressing symptoms experienced by patients with chronic obstructive pulmonary disease (COPD). Although early studies failed to demonstrate a clear role for mucolytics in the management of COPD, larger multicentre trials have shown clinical efficacy for some of these agents in reducing cough, improving expectoration of sputum and reducing the incidence of disease exacerbation. Improvement in physiological parameters of airflow limitation has been less convincingly demonstrated. Even newer agents with clear benefits in cystic fibrosis, such as dornase alfa, have yet to be shown to improve lung function in COPD.

Erdosteine is a thiol derivative of the same class as acetylcysteine, a mucolytic widely used in both its oral and nebulised form. It is of interest that both erdosteine and acetylcysteine have antioxidant properties which theoretically protect the lung from oxidant damage, especially in those patients who continue to smoke.

Erdosteine, like many mucolytics, appears to improve sputum viscosity and sputum clearance. It has been shown, in a placebo-controlled trial, to increase the concentration of amoxicillin in the sputum of patients with an acute infective exacerbation of COPD. Despite improving global clinical assessment indices, including sputum viscosity, cough and dyspnoea, no improvement in lung function could be demonstrated with erdosteine in these patients. Nevertheless, symptoms resolved more quickly in the active treatment group and the drug was well tolerated.

There are now a number of mucolytic agents available for physicians to consider for use in the management of COPD. Whilst clear evidence of their relative efficacy in improving lung function remains lacking, symptoms such as cough and sputum production may be improved in some patients,

particularly during acute infective exacerbation of disease. These benefits need to be measured against the cost of these drugs and their tolerability profile. ▲

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A Viewpoint by Carlo Felice Marchioni and Maurizio Moretti

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Mucus hypersecretion due to bronchial gland enlargement and hyperplasia of mucosal cells is one of the major mechanisms of airway obstruction in patients with chronic obstructive pulmonary disease (COPD), both in the stable phase of the disease and during an infective exacerbation. The production of large amounts of mucus with increased viscoelastic properties impairs airway clearance by the mucociliary system and the cough mechanism. Treatment with mucokinetic agents is indicated to enhance airway secretion clearance.

The new mucolytic agent erdosteine is a pro-drug which generates metabolites with free sulphhydryl radicals; these are responsible for its pharmacodynamic properties. Clinical studies have shown that erdosteine decreases sputum viscoelastic properties in both stable and acute COPD and that it increases mucociliary clearance in comparison with placebo. Erdosteine also promotes the penetration of amoxicillin into bronchial secretions, favouring faster regression of symptoms of infection. These data support the use of erdosteine in the treatment of acute infective exacerbation of COPD.

Moreover, erdosteine metabolites are able to scavenge oxygen-free radicals and thereby protect the efficacy of α_1 -antitrypsin. The metabolites also exert an anti-inflammatory effect by reducing mucus markers of bronchial inflammation in stable chronic bronchitis. These pharmacodynamic properties highlight the importance of long term treatment with erdosteine in patients with COPD and, indeed, erdosteine has been shown to decrease the number of acute exacerbations after 6 months' therapy. ▲