Review: regular inhaled short acting β2 agonists improve lung function in stable chronic obstructive pulmonary disease


Q Is regular treatment with inhaled short acting β2 agonists (ISABAs) effective for stable chronic obstructive pulmonary disease (COPD)?

METHODS

Data sources: Cochrane Collaboration trials register up to and including May 2002 and reference lists of review articles and retrieved studies.

Study selection and assessment: randomised, placebo controlled trials of ISABAs given to patients with stable COPD for >7 days. Individual study quality was assessed on the basis of allocation concealment.

Outcomes: forced expiratory volume in 1 second (FEV1), forced vital capacity (FVC), peak expiratory flow rate (PEFR), breathlessness (visual analogue scale), treatment failure, and patient preference.

MAIN RESULTS

13 crossover trials met the selection criteria (n = 237, age range 56–70 y). Patients assessed were isoproteenol, terbutaline, and salbutamol; most were administered using pressurised metered dose inhalers or other hand held inhalers. Meta-analysis showed that patients who received ISABAs had improved post-bronchodilator FEV1, FVC, morning and evening PEFR, and breathlessness scores; and fewer treatment failures (table). Patients preferred ISABAs to placebo (table).

CONCLUSION

Regular inhaled short acting β2 agonists for >7 days improve post-bronchodilator lung function and reduce breathlessness in patients with stable chronic obstructive pulmonary disease.

A modified version of this abstract appears in ACP Journal Club.

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<table>
<thead>
<tr>
<th>Outcomes at 1–8 weeks</th>
<th>Number of trials (n)</th>
<th>Weighted mean difference (95% CI)</th>
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<tbody>
<tr>
<td>FEV1 (l)†</td>
<td>6 (196)</td>
<td>0.14 (0.04 to 0.25)</td>
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<tr>
<td>FVC (l)†</td>
<td>4 (116)</td>
<td>0.30 (0.02 to 0.58)</td>
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<tr>
<td>Morning PEFR (l/min)†</td>
<td>4 (124)‡</td>
<td>29.17 (0.25 to 58.09)</td>
</tr>
<tr>
<td>Evening PEFR (l/min)†</td>
<td>3 (86)‡</td>
<td>36.75 (2.56 to 70.94)</td>
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<tr>
<td>Breathlessness (100 mm visual analogue scale)</td>
<td>4 (94)§</td>
<td>1.33 (1.01 to 1.65)</td>
</tr>
<tr>
<td>Treatment failure‡</td>
<td>5 (198)</td>
<td>51% (27 to 67)</td>
</tr>
<tr>
<td>Patient preference for β2 agonists over placebo</td>
<td>4 (158)</td>
<td>507% (198 to 1135)‡</td>
</tr>
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RRR (CI) NNT (CI)

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<th>RRI (CI)</th>
<th>NINT (CI)</th>
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<tr>
<td>1.33 (1.01 to 1.65)</td>
<td>1 (0 to 3)</td>
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</table>

*FEV1 = forced expiratory volume in 1 second; FVC = forced vital capacity; PEFR = peak expiratory flow rate. Other abbreviations defined in glossary.
†Post-bronchodilator; positive numbers favour β2 agonists.
‡Treatment failure = number of dropouts because of worsening symptoms.
§Information provided by author.
|| Calculated from relative risk and control event rate in article.

Commentary

β2 agonists are frequently used as a first line treatment for COPD to maximise bronchodilation and minimise dyspnoea.1 The use of short acting versus long acting β2 agonists remains somewhat controversial because bronchodilators cause only small increases in FEV1. These drugs improve symptoms by reducing hyperinflation and thus reducing dyspnoea, but often with little effect on spirometry measurements.2 The review by Ram and Sestini attempted to clarify the effects of ISABAs compared with placebo.

Only 13 trials met the inclusion criteria. All were randomised crossover trials that assessed ISABAs alone or in combination with other drugs. Anticholinergic drugs such as ipratropium bromide have generally been considered more effective for treatment of COPD because they have fewer side effects, slower onset of action, and longer duration of action.3 Ram and Sestini suggest that ISABAs offer an inexpensive and effective treatment for the management of stable COPD, although the practical issue of the effectiveness of ISABAs compared with other bronchodilators (eg, long acting β2 agonists) remains unanswered. However, many patients with COPD have specific intolerances and contraindications that require customising COPD management using a stepwise approach based on severity of airway symptoms. Thus, primary care providers should continue to tailor selection of bronchodilators for treatment of COPD based on the individual requirements of patients. Use of any treatment should, of course, include close monitoring of patient symptoms, FEV1 exercise tolerance, oxygen saturation, and responses to bronchodilator treatment.

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