

Effect of Budesonide Inhalation on Airway Obstruction at Bronchial Allergen Provocation after Varying Lengths of Pre-Treatment

To the Editor,

Steroids have earlier been shown able to protect against the late asthmatic reaction (1, 2, 3, 4). Dahl & Johansson have recently shown that also the immediate allergic reaction can be significantly reduced after premedication with 1000 µg budesonide per day for at least 1 week (2). After 4 weeks of treatment with budesonide the immediate reaction was almost neutralized.

We were interested to know if these good results on the immediate reaction could also be achieved with a lower dose of budesonide with varying lengths of pre-treatment.

Twelve asthmatics, two females and 10 males, with a mean age of 30 years (range 19-42 years) were selected for the trial. Mean duration of asthma was 11 years, range 1-42 years. Case histories were positive for pollen hypersensitivity. Inhalation provocations were performed with allergens which in addition to a positive history also had given positive skin prick test or in RAST class 3-4. At the start of the trial (winter) the spirometric values were

practically normal and no medication was given besides the trial drug. β -agonists were allowed for occasional use but not later than 12 h before a challenge test. In control challenge tests the allergen dose reducing PEFR by at least 20%, within 15 min, was established (mean decrease in PEFR 31%, range 22-42%). This allergen dose was used in the following two test provocations when pre-treatment was given with budesonide aerosol, either in a single dose of 400 µg 3-5 h before challenge or in 400 µg per day for 2 weeks.

In comparison with the control challenge results, a smaller PEFR-fall during the first 15 min after challenge test was observed already with 3-5 h pre-treatment with budesonide aerosol. Additional protective effect was obtained after the extended pre-treatment. The magnitude of the outcome of PEFR is in accordance with Dahl et al. (2), who used 1 mg budesonide on the evening preceding the provocation and a supplementary 1 mg in the morning 4 h before provocation. The immediate reaction (PEFR-fall) then was reduced from

Table 1
PEFR values before and after bronchial challenge with allergen ($M \pm SEM$, $n = 12$)

Treatment	Before challenge	After challenge	
	PEFR l/min	PEFR l/min	% fall in PEFR
Control	574 $\pm$ 19	395*** $\pm$ 19	30.4*** $\pm$ 2.5
Budesonide (400 µg given 3-5 h before)	587 $\pm$ 21	467*** $\pm$ 25	20.1*** $\pm$ 3.8
Budesonide (400 µg/day for 2 weeks)	589 $\pm$ 23	495*** $\pm$ 36	16.9*** $\pm$ 4.3

*** $P < 0.001$, Diff. v. prevalence.

^a $P < 0.05$, Diff. v. control.

28.5% at control provocation to $23.8 \pm 3.4\%$ (compared with a reduction from 30.4 to 20.1 $\pm$ 3.8% in our study 3–5 h after 400 mg of budesonide). Dahl et al. continued to give 1 mg inhaled budesonide per day for 1 week. When the patients were challenged, the fall in PEFR decreased to $16.8 \pm 4\%$ (compared with $16.9 \pm 4.3\%$ in our study after 400 μg for 2 weeks). When the treatment period was extended for 4 weeks (1 mg/day), Dahl et al. almost eliminated the immediate reaction (fall in PEFR: $10.2 \pm 2.1\%$).

With pre-treatment the patient recovered faster than in the control challenge test. When the patients were pre-treated with inhaled budesonide ($8 \times 50 \mu\text{g}$) 3–5 h before the provocation the PEFR-values were almost normal 3 h after challenge and when the duration of pre-treatment was prolonged to 2 weeks with 400 μg per day ($2 \times 50 \mu\text{g}$ q.i.d.), the patient recovered 1 h after challenge, compared with 8 h without pre-treatment.

This report supports the findings of Dahl et al. (2), but also shows that a protective effect of budesonide on the immediate asthmatic reaction may be achieved with as low a dose as 400 μg per day if the treatment time is long enough. We therefore presume that inhaled budesonide could serve as a prophylactic treatment in asthma before allergen exposure, e.g. the pollen season.

Lennart Tivenius
Jaak Kivilog
Christer Glennow

REFERENCES

1. Burge, P. S.: The effect of corticosteroids on the immediate asthma reaction. *Eur. J. Respir. Dis. Suppl.* **122**, 163–166, 1982.
2. Dahl, R. & Johansson, S. A.: Importance of duration of treatment with inhaled budesonide in the immediate and late bronchial reaction. *Eur. J. Respir. Dis. Suppl.* **122**, 167–175, 1982.
3. Martin, G. L., Atkins, P. C., Dunsky, E. H. & Zweiman, B.: Effect of theophylline, terbutaline and prednisone on antigen-induced bronchoapton and mediator release. *J. Allergy Clin. Immunol.* **66**, 204–212, 1980.
4. Van den Sur, J. G., Berg, C. W., Steenhuis, C. J. & de Vries, K.: The effect of aerosol administration of beclomethasone dipropionate on reactive bronchial obstruction after inhalation of house dust. *Ned. T. Geneesk.* **120**, 1928–1932, 1936.

Addresses:
Lennart Tivenius
Jaak Kivilog
Dept. of Lung Medicine
Regional Hospital
S-701 85 Örebro
Sweden

Christer Glennow
AB Draco
Box 1707
S-221 01
Lund
Sweden

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.