



Trainer's Journal Club

September 27, 2005 Discussion Summary
5pm EST

Facilitator:

Margaret Lester, Director of Educational Programs

Staff in attendance:

Donna Dayer, Marketing Liaison
Casey Jones, COPD Course Lead

Trainers

Caroline Bell
Sheila Driver
Pam Ellwood
Colleen Felts
Jakki Rawlinson

Agenda items:

I. Welcome and Updates for discussion

II. Updates and Discussion

- Effect of long term budesonide on attainment of adult height – Margaret Lester
- Device Selection – Guidelines – Sheila Driver
- Self-management education with patients with COPD – Casey Jones

Title

Agertoft L, Pedersen S (2000). Effect of long-term treatment with inhaled budesonide on adult height in children with asthma. *New England Journal of Medicine* **343**, 1064-1069

Study Details

This was a prospective study with subjects in 3 groups:

- 142 children with asthma
- 18 control patients with asthma who have never received inhaled corticosteroids
- 51 healthy siblings of patients in the budesonide group who also served as controls.

The study started with 332 subjects, 270 on budesonide and 62 controls. Over the study period, 30 control subjects switched to budesonide and 14 were excluded for various reasons, leaving only 18 controls. They therefore recruited the healthy siblings to serve as controls.

Data reported in this article were collected over a 13.5 year period

- Mean duration of treatment was 9.2 years
- Mean dose was 412 g/day (approximately 2 inhalations from a Turbuhaler)

Background and Summary

Many parents are reluctant to have their children take inhaled corticosteroids for fear of stunting their growth. The primary outcome in this study was to measure the effect of long-term treatment of children with inhaled budesonide on attainment of adult height.

A number of secondary outcomes were analyzed, including whether the difference between measured adult height and predicted height depended on

- mean daily dose of budesonide
- total cumulative dose
- duration of treatment
- duration of asthma at the beginning of treatment
- use/non-use of intranasal corticosteroids
- growth rate during the first year of use of budesonide.

Conclusions

- The authors report that the children taking budesonide in this study attained normal adult height. They found no evidence of a relationship between target and adult height and
 - Mean daily dose of budesonide
 - Cumulative dose of budesonide
 - Duration of treatment with budesonide
- Mean difference between predicted and actual adult height was +0.3cm for the budesonide group; -0.2cm for the control children with asthma; +0.9cm for the siblings without asthma.
- Final adult height depended significantly on the child's height before budesonide.
- Study results did agree with other studies of ICS use which suggest that growth velocity is slowed in the first year of use – by approximately 1-1.5 cm. This decreased growth velocity did not persist and adult height was not affected.
- It appears that pre-pubertal children are more sensitive to the growth-retarding effects of these corticosteroids than pubertal children – and most studies have been done on children 6-9 years old.
- The patients in this study generally had well-controlled asthma, so it was difficult to assess how the severity of asthma affects growth. There is a suggestion that severe asthma has a negative effect on growth, but it is less clear if it also has an effect on adult height. The patients who stayed in the study either had milder asthma, or their disease had gone into remission. Many patients in the control group with more severe asthma dropped out of the study.

NRTC Trainers Journal Club

Prepared by Sheila Driver

Journal Club: September 27, 2005

Title

Dolovich, MB, Eng P, Ahrens RC, Hess DR, Anderson P, Dhand R, Rau, JL, Smaldown GC, Guyatt G (2005). Device selection and outcomes of aerosol therapy: Evidence-based guidelines. *CHEST* **127**, 335-371

Study Details

The authors reviewed 394 randomized controlled trials published in the literature from 1982-2001. Of these, 59 were found to have appropriate and useable data.

The quality of the evidence (good, fair, or low) and the strength of the recommendations (A, B, C... etc.) is also given.

Background and Summary

The number of inhaler devices for asthma and COPD medications has increased, leading to confusion on which device to choose for particular patients in varying situations, needing particular medications. Other meta-analyses have been done regarding inhaler devices – but the authors of this study wanted to provide evidence-based guidelines for device selection.

There were 2 aims of this study:

- 1) "...to compare efficacy and adverse effects of treatment using nebulizers vs pressurized metered-dose inhalers (MDIs) with or without a spacer/holding chamber vs dry powder inhalers (DPIs) for agonists, anticholinergic agents, and corticosteroids for several commonly encountered clinical settings and patient populations, and
- 2) ...to provide recommendations to clinicians to aid them in selecting a particular aerosol delivery device for their patients. " (p. 335)

Conclusions

- None of the delivery devices showed significant differences in efficacy in any patient group for each of the clinical settings investigated.
- Adverse effects were minimal and were related to higher dose of medication delivered.
- Each delivery device provided similar outcomes when using correct technique
- A number of factors need to be considered when choosing the right device for an asthma or COPD patient, including
 - Device/drug availability
 - Patient's age
 - Can they use the device correctly
 - Clinical setting
 - Simplify by choosing a device that you can deliver multiple drugs if possible
 - Finances
 - Drug administration time
 - Convenience
 - Provider preferences

- Patient preferences

Key findings from the randomized controlled trials—the “good” quality evidence:

- Both nebulizers and MDIs with spacers used in the ED to deliver β_2 agonists were equally effective in improving pulmonary function and reducing acute asthma symptoms in both adults and children.
- In the in-patient setting, no difference in pulmonary function response between nebulizer and MDI/spacer+holding chamber delivery of β_2 agonist
- Pulmonary function & asthma symptom scores showed similar benefits for both continuous and intermittent nebulization of β_2 agonists
- Staff time & maintenance are less for continuous nebulization.
- Adverse effects of β_2 agonists were similar for both intermittent and continuous nebulization.
- In selecting devices for the outpatient setting, MDI vs DPI showed no difference pulmonary function for adults & peds
- For adult patients with asthma in the outpatient setting, both DPIs and MDI with spacer/holding chamber gave the same results in pulmonary function and symptom scores, assuming the same dose of ICS was used.
- Two studies showed significant patient preference for DPI over MDI with spacer
- In outpatient management of patients with COPD with B_2 agonist & anticholinergic agents, no difference in pulmonary function response was seen
- Increases in heart rate were greater with nebulizer administration of albuterol compared with MDI delivery.

“A” Recommendations include:

- Both nebulizer and MDI with spacer/holding chamber are appropriate for β_2 agonist delivery in the following settings and populations:
 - ED
 - in-patient setting
 - mechanically ventilated patients
- In the ED and ICU, both frequent intermittent nebulizer treatment or continuous nebulization are appropriate.
- For asthma treatment in the outpatient setting, both MDI, with or without a spacer/holding chamber, and the DPI are appropriate for delivering short acting β_2 agonists and inhaled corticosteroids
- For COPD treatment in the outpatient setting, the MDI, with or without spacer/holding chamber, the DPI, and the nebulizer are all appropriate for delivering inhaled β_2 agonists and anticholinergics.

NRTC Trainers Journal Club

Prepared by: Casey S. Jones

Journal Club: September 27, 2005

Title

Partridge, M (2004). What is the role of self-management education in COPD? *The Airways Journal* 2, 121-122

Study Details

This is the Editorial Comment in this issue of the *Airways Journal*. The author is a Professor of Respiratory Medicine in the UK and Chairman of the Board of Trustees of the National Respiratory Training Centre. He reviews the UK's National Institute for Health and Clinical Excellence (NICE) Guidelines and other studies about self-management in COPD.

Background and Summary

NICE Guidelines – Patients should be given self-management advice and encouragement to respond promptly to symptoms of an exacerbation. Programs for asthma should not be used in COPD. Main goal of management is to prevent exacerbations by lifestyle adaptation & allowing patients to acquire the skills to treat exacerbations early.

Monninkhof's article reviewing self-management for COPD was also evaluated. Are the results because of: a) lack of effectiveness of self-management in COPD, b) poor studies, c) wrong outcomes being monitored or d) ineffective interventions in COPD. See separate review of Monninkhof article in this Journal Club.

Conclusions

Further trials need to be performed. In the meantime, Dr. Partridge advocates self-management education for patients with COPD to include lifestyle advice and self-medication.

Included in the article was a sample self-management plan. One point in the plan included using "peak flow readings (if you are making them)." Presumably this refers to patients with asthma and COPD, as peak flow measurements are not the current recommendation for patients with COPD.

NRTC Trainers Journal Club

Prepared by: Casey S. Jones

Journal Club: September 27, 2005

Title

Monninkhof E, van der Valk P, van der Palen J, van Herwaarden C, Partridge MR and Zielhuis G (2003). Self-management education for patients with chronic obstructive pulmonary disease: a systematic review, *Thorax* 58:394-398

Study Details

Cochrane Airways Group search of the literature with inclusion of 12 articles containing 8 randomized controlled trials done over a 14 year period. There were several limitations of this analysis, including a wide variety of outcome parameters in the different studies, and in diagnostic criteria for COPD patients.

Keywords: self-care, lung-diseases-obstructive, COPD, patient education, self management

Background and Summary

This article reviewed the literature for studies that evaluated self care management plans for patients with COPD to examine their impact on health outcomes and healthcare utilization. In asthma, patient education and self-management programs are successful, but are they in COPD?

Conclusions

- Self-management education did reduce the need for rescue medication, although this was measured in only 1 study, so strength of evidence is poor.
- There was no positive effect on hospital admissions, emergency department visits, days lost from work, or lung function.
- Patients using self-management plans increased the use of oral corticosteroids and antibiotics for respiratory symptoms.
- The results were inconclusive for health related quality of life, COPD symptoms, and utilization of healthcare resources.

In addition to the limitations listed above, the authors note that most of these trials were not designed to improve self-management skills or change patient behavior. Knowledge transfer alone (a self-management plan) is only one element needed to help patients master the skills they need to impact self-care.

In summary, there was insufficient data to make recommendations for self care management plans for patients with COPD, and further research is needed.