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[Intervention Review]

Oral corticosteroids for bronchiectasis (stable and acute exacerbations)

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ABSTRACT

Background

Inflammation plays a significant role in the pathophysiology of bronchiectasis. Two small studies have shown small benefits from inhaled corticosteroids and oral corticosteroids may be of benefit in bronchiectasis

Objectives

To determine the efficacy of oral corticosteroids in acute and stable bronchiectasis

Search methods

The Cochrane Airways Group Specialised Register was searched and bibliographies of retrieved papers were checked. Searches are current as of May 2011.

Selection criteria

Only randomised controlled trials were considered

Data collection and analysis

No trials met the inclusion criteria for the review.

Main results

No randomised controlled trials were identified

Authors' conclusions

There are no randomised trials upon which to base recommendations about the use of oral corticosteroids in acute or stable bronchiectasis.

PLAIN LANGUAGE SUMMARY

Oral corticosteroids for bronchiectasis (stable and acute exacerbations)

Bronchiectasis is a chronic respiratory disease. People with the condition experience difficulty in clearing mucus from their lungs, leaving them prone to infections. Oral steroids have a place in the management of acute and severe asthma. In bronchiectasis, inhaled steroids have small benefits but there is no evidence for or against the use of oral steroids for this condition.

BACKGROUND

Bronchiectasis is a chronic respiratory condition that can present at any age with chronic sputum production or recurrent respiratory infections. Recognised causes include congenital abnormalities, immunodeficiency, chronic inflammatory disorders and the sequelae of infection but most cases are idiopathic. Airflow obstruction is a common feature and may be sufficiently severe to cause respiratory failure and premature death.

Physiotherapy and antibiotics are the cornerstones of therapy and are considered mandatory in long term disease management where symptom control, treatment of exacerbations and the management of any associated respiratory failure are the usual clinical priorities.

Inflammation plays a significant role in the pathophysiology of bronchiectasis. In 45 children with cystic fibrosis (a specific form of bronchiectasis) long-term alternate day prednisolone showed significant benefits for the active treatment group in respect of height, weight, lung function, ESR and serum immunoglobulins after three years (Auerbach 1985). A substantial proportion of patients with bronchiectasis also have asthma (Murphy 1984) and it might be anticipated that beneficial effects were mediated through improvement in the latter. Support for this comes from two small studies of inhaled corticosteroids in bronchiectasis that show small benefits in lung function and inflammatory markers in sputum (Elborn 1992; Tsang 1997). A systematic review has examined the role of inhaled steroids in bronchiectasis (Kolbe 1999).

OBJECTIVES

The objectives of this systematic review were:

1. To determine the efficacy of oral corticosteroids in the treatment of acute exacerbation of bronchiectasis.
2. To determine the efficacy of long term oral corticosteroids in stable bronchiectasis.

METHODS

Criteria for considering studies for this review

Types of studies

Only randomised controlled trials were considered for this review. All double blind, single blind and open studies were considered for inclusion.

Types of participants

All adults (and children) with bronchiectasis were included except those with cystic fibrosis.

Types of interventions

Oral corticosteroids administered either long term or in exacerbation. Comparisons were considered with placebo/no treatment or any other physical or drug treatment.

Types of outcome measures

Primary outcomes

Exacerbations: number and duration

Secondary outcomes

1. Symptoms: daily sputum volume, cough, dyspnoea, acute exacerbations
2. Health status (Quality of Life)
3. Change in lung function: e.g. forced expiratory volume in one second (FEV1)
4. Use of antibiotics
5. Decline in lung function
6. Morbidity: days off work, number and duration of hospital admissions
7. Mortality
8. Markers of systemic inflammation

Search methods for identification of studies

Trials were identified using the Cochrane Airways Group Specialised Register of trials, which is derived from systematic searches of bibliographic databases including the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE and CINAHL, and handsearching of respiratory journals and meeting abstracts. All records in the Specialised Register coded as 'bronchiectasis' were searched using the following terms:

corticosteroid* or betamethasone* or cortisone* or deflazacort or hydrocortisone* or methylprednisolone* or prednisolone or dexamethasone* or triamcinolone*

Reference lists in retrieved papers were reviewed for additional references. The latest searches were carried out in May 2011.

Data collection and analysis

Selection of studies

The titles, abstracts and citations were reviewed to determine potential relevance for the full review.

Assessment of risk of bias in included studies

We plan to assess the risk of bias in each study according to the following domains:

1. Randomisation and allocation concealment
2. Blinding (participants, personnel and outcome assessors)
3. The handling of withdrawals
4. Selective outcome reporting
5. Other biases (such as carryover or adjustment within patient observation in crossover studies)

Data synthesis

All included trials were to be analysed using Cochrane Review Manager software. Results were to be presented with 95% confidence intervals. Tests for heterogeneity would have been performed on the data.

RESULTS

Description of studies

A total of 71 abstracts were identified by electronic searches. Two reviewers (TL and KH) read through the searches and identified six abstracts, which were retrieved. None met the eligibility criteria

for the review (See additional references and excluded studies). A further update search conducted in May 2011 did not yield any new studies.

Risk of bias in included studies

No studies could be assessed

Effects of interventions

No data could be analysed

DISCUSSION

Although two small studies demonstrate that high dose inhaled corticosteroids are effective in reducing inflammatory indices in sputum in severe non-CF bronchiectasis (Elborn 1992, Tsang 1997), the benefit of oral corticosteroids in acute or stable bronchiectasis is not proven. Nevertheless if inhaled steroids are beneficial then it would be reasonable to anticipate that oral steroids would have similar or even greater effects. Clinicians may feel that in mild cases of bronchiectasis the benefits are unknown and outweighed by the potential for side effects. In more severe cases particularly where there is coexisting airflow obstruction (characterised as asthma or COPD) then in some individuals short courses of oral corticosteroids may be helpful. Although bacterial infection is almost always found during exacerbations of bronchiectasis, there appears to be little risk of dissemination or septicaemia perhaps because antibiotics are invariably prescribed at the same time or because the organisms involved have a low propensity to cause bacteraemia.

Some people with bronchiectasis whose disease is associated with colitis or rheumatoid arthritis will require oral corticosteroids for the underlying inflammatory condition and patients with allergic bronchopulmonary aspergillosis and bronchiectasis may well require maintenance prednisolone plus booster courses for exacerbations of their underlying asthma. A wider group of patients with obvious asthma (which may coexist with bronchiectasis) will primarily be managed with inhaled corticosteroids but a small percentage with "difficult" asthma will require a maintenance dose of oral steroids. Hence there are a number of clinical settings where the use of systemic steroids is rational and, anecdotally, safe. Nevertheless it would be desirable if there was an evidence base on which to base these practices and to allow more rigorous quantification of the extent of any benefit and the potential risks.

AUTHORS' CONCLUSIONS

Implications for practice

No relevant trials appear to have been published so this review concludes that there is no evidence for the benefit of oral corticosteroids in the treatment of acute exacerbations of bronchiectasis or stable bronchiectasis.

Implications for research

Randomised clinical trials of oral corticosteroids in bronchiectasis are required in order to gain a clear idea of the efficacy of this form of treatment.

ACKNOWLEDGEMENTS

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REFERENCES

References to studies excluded from this review

Elborn 1992 *{published data only}*

Elborn JS, Johnston B, Allen F, Clarke J, McGarry J, Varghese G. Inhaled steroids in patients with bronchiectasis. *Respiratory Medicine* 1992;**86**(2):121-4.

Tsang 1997 *{published data only}*

Tsang KWT, Ho CS, HO PL, Lam WK, Ip M, Yven KY. Inhaled fluticasone is beneficial in stable idiopathic bronchiectasis. *European Respiratory Journal* 1997;**10**(Suppl 25):3905.

Additional references

Auerbach 1985

Auerbach HS, William M, Kirkpatrick JA, Colten HR. Alternate-day prednisolone reduces morbidity and improves pulmonary function in cystic fibrosis. *Lancet* 1985;**2**:686-8.

Kolbe 1999

Ram FSF, Wells A, Kolbe J. Inhaled steroids for bronchiectasis (Cochrane review). *Cochrane Database of Systematic Reviews* 2000, Issue 2. [DOI: 10.1002/14651858.CD000996.pub2]

Murphy 1984

Murphy MB, Deen DJ, Fitzgerald MX. Atopy, immunological changes and respiratory function in bronchiectasis. *Thorax* 1984;**31**:179-84.

CHARACTERISTICS OF STUDIES

Characteristics of excluded studies *[ordered by study ID]*

Study	Reason for exclusion
Elborn 1992	Inhaled and not oral administration.
Tsang 1997	Inhaled and not oral administration.

WHAT'S NEW

Date	Event	Description
5 May 2011	New search has been performed	Literature searches re-run. No new studies were identified.

HISTORY

Protocol first published: Issue 2, 1999
Review first published: Issue 2, 2001

Date	Event	Description
15 August 2008	Amended	Converted to new review format.
1 January 2001	New citation required and conclusions have changed	Substantive amendment

CONTRIBUTIONS OF AUTHORS

TJL: Study assessment, write-up

KH: Protocol development, study assessment; write-up.

SM: Guidance with methodological issues; write-up.

MG: Content expertise; protocol development; write-up.

DECLARATIONS OF INTEREST

None known

SOURCES OF SUPPORT

Internal sources

- No sources of support supplied

External sources

- Garfield Weston Foundation, UK.

INDEX TERMS

Medical Subject Headings (MeSH)

Acute Disease; Administration, Oral; Anti-Inflammatory Agents [*therapeutic use]; Bronchiectasis [*drug therapy]; Steroids

MeSH check words

Humans