Place des bronchodilatateurs dans le traitement de la bronchiolite aigue du nourrisson [Role of bronchodilators in the treatment of acute infant bronchiolitis]

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Authors' objectives
To synthesise the evidence on the efficacy of various types of bronchodilators for the treatment of acute bronchiolitis in infants.

Searching
MEDLINE, HealthSTAR, EMBASE, Pascal and the Cochrane Library were all searched using the keywords 'bronchodilators', 'bronchiolitis' and 'childhood'. Only articles published between 1975 and 2000 in English or French were retained.

Study selection
Study designs of evaluations included in the review
The studies needed to be comparative, prospective and randomised. They had to include an appropriate statistical analysis and report precise statistical data (no further details were provided). Systematic reviews and meta-analyses were also accepted.

Specific interventions included in the review
No specific inclusion criteria for the interventions were given, apart from that the intervention needed to be clinically applicable. The included interventions used beta-2 mimetics, atropinic agents and adrenergic agents.

Participants included in the review
Infants aged 1 to 24 months who were affected by a first or second episode of acute bronchiolitis were included in this review. Asthmatics and those with acute respiratory insufficiency were excluded. The study population needed to correspond to those usually seen in clinical practice.

Outcomes assessed in the review
No specific inclusion criteria for the outcomes were given. The outcomes described in the review were:
- the improvement of respiratory distress clinical scores, in particular the respiratory distress assessment instrument, which measures respiratory frequency, wheezing and retraction signs;
- the rate of hospitalisation;
- the length of hospital stay;
- the variation in transcutaneous oxygen saturation; and
- criteria estimating resistance and airway flow.

How were decisions on the relevance of primary studies made?
The author does not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The reviewer used the Agence Nationale d'Accréditation et d'Evaluation en Sante (ANAES) evaluation criteria (see Other Publications of Related Interest) to assess methodological quality. The author does not state how the papers were assessed for quality, or how many of the reviewers performed the quality assessment.
Data extraction
The author does not state how the data were extracted for the review, or how many of the reviewers performed the data extraction.

Methods of synthesis
How were the studies combined?
The studies were combined in a narrative summary.

How were differences between studies investigated?
The studies were grouped according to whether they evaluated beta-2 mimetics, atropinic agents or adrenergic agents. Differences between the individual studies were highlighted within the text.

Results of the review
Twenty-one trials with 1,304 patients were included in the review. Of these, 13 trials included hospitalised patients and 8 were located in emergency services. The review also summarised the results of two meta-analyses and one systematic review.

Beta-2 mimetics may improve bronchiolitis in the short term, but in the longer term no study could demonstrate their efficacy in terms of the frequency of hospital admissions and the length of hospital stay. One study demonstrated a small effect of ipratropium bromide on transcutaneous oxygen saturation, whereas the other studies showed no difference. Adrenalin appeared to have a very short-term effect. In all studies comparing adrenalin and salbutamol, adrenalin was found to be the superior treatment.

Authors' conclusions
It was not demonstrated that beta-2 agonists, ipratropium bromide or adrenalin were helpful in the management of first or second episodes of bronchiolitis in non-asthmatic infants.

CRD commentary
The reviewer had a clear research objective. The inclusion criteria for the participants were well defined, but no specific inclusion criteria for the interventions and outcomes were given. The criteria for study design were defined. However, the inclusion of the systematic review and meta-analyses was unhelpful, as differences between these and the current review were not described in detail. The reviewer searched a comprehensive range of databases using limited keywords; thus, it is possible that references were missed. The studies were quality assessed using a published checklist. However, it is unclear whether a reviewer other than the author of this article contributed to judgements of relevance, quality checking and the data extraction. The studies investigated a range of outcome measures, and were appropriately combined in a narrative review rather than a statistical meta-analysis. The reviewer's conclusions appear to follow from the results, although the study details, results and significance levels are not reported in full. There are a number of methodological problems with some of the included trials, and sub-groups of good responders have not been adequately investigated. The reviewer highlights the need for more appropriately designed trials in this medical area.

Implications of the review for practice and research
Practice: The reviewer states that there is no argument for these treatments in ambulatory management in moderate forms of bronchiolitis. For severe forms of the disease, especially if there is uncertainty on the presence of asthma, the administration of adrenalin could be more effective than beta-2 mimetics in the short term.

Research: Placebo-controlled clinical trials that exclude children who have a personal or familial atopic history are needed. Short- and medium-term outcomes should be investigated, taking into account hospitalisation percentages in studies set in emergency services and the length of hospital stay for hospitalised children. It is important to try to define the characteristics of those who respond better to treatment.
Bibliographic details
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Other publications of related interest

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.