Corticosteroids for prevention of postextubation laryngeal edema in adults

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CRD summary
The review concluded that prophylactic corticosteroid therapy can reduce incidence of post-extubation laryngeal edema and the need for reintubation in mechanically ventilated high risk patients. Due to potential bias and a lack of information about primary studies the conclusions should be viewed with caution.

Authors' objectives
To assess the efficacy and safety of prophylactic corticosteroid therapy in the prevention of post-extubation laryngeal edema (PELE) and the need for reintubation in adults.

Searching
MEDLINE was searched (1966 to January 2008) for English language studies. Search terms were reported. Bibliographies of retrieved articles and abstracts of recent critical care meetings (dates not reported) were also examined.

Study selection
Randomised controlled trials (RCTs) that investigated the use of corticosteroids for PELE prevention in adults were eligible for inclusion. The included studies compared intravenous methylprednisolone, dexamethasone or hydrocortisone with placebo or no intervention. Doses and regimens varied: older studies (1988 to 1996) used a single dose initiated 30 to 60 minutes before a planned extubation in low-risk patients; and the newer studies (2006 to 2007) used four doses of corticosteroid therapy initiated 12 to 24 hours before planned extubation in high risk patients. The outcomes reported were PELE, post-extubation stridor (PES, the clinical manifestation of PELE) and reintubation. The included patients were intubated ≥24 hours to ≥4 days.

The authors did not state how the papers were selected for the review or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.

Data extraction
Data were extracted for incidence of PES, PELE and reintubation. The authors did not state how the data were extracted for the review or how many reviewers performed the data extraction.

Methods of synthesis
The RCTs were synthesised narratively and primary study details were presented in a table.

Results of the review
Six RCTs were included in the review (n=2,028).

The three older studies showed no statistically significant benefit of single doses of methylprednisolone or dexamethasone on PES (one RCT), PELE (two RCTs) or reintubation (three RCTs) when compared to placebo or no treatment. One newer study showed a significant decrease in PES with methylprednisolone compared to placebo (p=0.015). The three newer studies showed statistically significant reductions in PES (two RCTs; p=0.005 and p=0.037), PELE (one RCT; p<0.0001) and reintubation (two out of three RCTs; p<0.05, p=0.02 and p=0.56) with four doses of methylprednisolone or dexamethasone compared to placebo.

Authors' conclusions
The most recent trials suggested that prophylactic corticosteroid therapy can reduce the incidence of PELE and the
subsequent need for reintubation in mechanically ventilated patients at high risk for PELE.

**CRD commentary**
The research question was supported by inclusion criteria for participants, intervention, study design and outcomes. Only one electronic database was searched, the search for unpublished studies was limited and only English language studies were sought, so it is possible that relevant studies could have been missed. The authors did not state that they assessed validity of primary studies, so the reliability of their results was not known. Insufficient study details were provided for the reader to make a judgement regarding study quality. The review process was not described so it was not known whether steps were taken to reduce possible reviewer bias and error. The narrative synthesis appeared appropriate given the paucity of data included for outcomes and the different doses and regimens used. Primary study details reported did not include patient characteristics, so it was not known how heterogeneous the populations were. The authors’ conclusions reflected the evidence presented, but the lack of reporting of the review process, the potential for missed studies, the paucity of data and the lack of information relating to the quality of included studies, meant that the authors’ conclusions should be viewed with caution.

**Implications of the review for practice and research**
- **Practice:** The authors stated that clinicians should consider initiating prophylactic corticosteroid therapy in mechanically ventilated patients at high risk for PELE.
- **Research:** The authors stated that further studies were needed to better identify mechanically ventilated patients who were likely to derive the greatest benefit from prophylactic corticosteroid regimen, identify the optimal regimen and the best time to initiate this, and investigate safety of the therapy.

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