
A review of the efficacy of dexamethasone in the prevention of postoperative nausea and vomiting

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CRD summary

This review of preoperative dexamethasone concluded that it was more effective than placebo in reducing postoperative nausea and vomiting than saline placebo. The validity of the conclusions may be limited by the inclusion of non-randomised trials, the restriction of studies to articles published in English and the lack of description on how authors selected studies, assessed validity and extracted data.

Authors' objectives

To compare the efficacy of dexamethasone to saline placebo in preventing postoperative nausea and vomiting following general anaesthesia and surgery.

Searching

MEDLINE, CINAHL and The Cochrane Library databases were searched for studies published in English in the "last 10 years". The search terms were reported. Reference lists of identified studies were searched.

Study selection

To be eligible for inclusion, articles were restricted to primary experimental research studies comparing dexamethasone to saline placebo in reducing postoperative nausea and vomiting in people having surgery under general anaesthesia. The reported outcomes were nausea, vomiting, nausea and/or retching and the use of anti-emetic medication.

Participants in the included studies were either children aged between two and 12 years undergoing tonsillectomies or adenotonsillectomies or adults (19 to 75 years) who underwent laparoscopic cholecystectomy, gynaecological procedures, coronary revascularization or thyroidectomy.

Participants received dexamethasone pre-operatively in all included studies. Children were given doses of dexamethasone of between 0.15 mg/kg and 1 mg/kg up to maximal doses of 8 mg and 25 mg. Adult patients were given dexamethasone in doses between 5 mg and 10 mg. Administration was intravenous in all studies where the route of administration was reported. All included studies were of a parallel group design.

The authors stated neither how the papers were selected for the review nor how many reviewers performed the selection.

Assessment of study quality

Studies were assessed using criteria from the Critical Appraisals Skills Programme. These included: the research question; randomisation; follow-up; blinding; baseline comparability; and co-interventions.

The authors did not state how the validity assessment was performed.

Data extraction

The percentage of patients in each group who experienced each of the review outcomes was extracted from each study.

The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis

Data was grouped under each type of surgical procedure and the results presented narratively.

Results of the review

The authors included 13 studies with 1,628 patients. All included studies met the validity criteria.

There were four studies of 477 children who underwent tonsillectomy or adenotonsillectomy; one study was reported as randomised. The percentage of children who vomited in the dexamethasone group was between 20% and 23% compared to between 51% and 56% in the placebo group. This was significantly different in both studies that reported this outcome. The use of anti-emetic medication was between 3% and 4% in the dexamethasone group compared to between 10% and 22% in the two studies that reported this outcome; neither of these was reported as significantly different. One study also reported that retching and/or vomiting was significantly lower in the dexamethasone group (48%) compared to the placebo group (88%).

There were two randomly allocated studies of 158 patients undergoing laparoscopic cholecystectomy. Over 24 hours the incidence of vomiting was between 5% and 10% in the dexamethasone group and between 25% and 34% in the placebo group; a significantly lower incidence in the dexamethasone group in both studies. The reported rates of nausea were between 13% and 30% compared to between 29% and 47% in the saline group; incidence was not reported as significantly different in either study. In the dexamethasone group, 20% of patients were reported to have received anti-emetic medication compared to 37.5% in the saline group; this difference was not reported as significantly different in the one study that reported this outcome.

The outcomes of vomiting, nausea and anti-emetic medication were reported in all five studies of 482 patients undergoing gynaecological procedures; two were randomly allocated. The percentage of patients in the dexamethasone group with nausea ranged from 14.3% to 25%, vomiting ranged from 8% to 30% and the use of anti-emetics from 7% to 20%. In the saline group the rates of nausea were between 25% and 62.5%, vomiting between 24.4% and 60% and use of anti-emetic medication was between 28% and 62.5%. Vomiting was reported as significantly lower in the dexamethasone group in two studies, nausea was significantly lower in one subgroup in one study and the use of anti-emetic medication was significantly lower in one study.

In the one non-randomised study of 294 patients having coronary revascularization procedures, the rates of vomiting (17%), nausea (36%) and anti-emetic use (30%) in the dexamethasone group were reported as not significantly different to those in the saline group (22% vomiting, 42% nausea and 42% anti-emetic use).

The rates of nausea were between 7% and 14% in the dexamethasone group in the one non-randomised study of 225 patients undergoing thyroidectomy compared to between 19% and 33% in the saline group. This was only significantly lower in the subgroup of patients receiving a 5 mg dose of dexamethasone. The use of anti-emetic medication was between 11% and 12% in the dexamethasone group, which was significantly lower than its 35% use with patients in the saline group.

Authors' conclusions

Dexamethasone reduced postoperative nausea and vomiting.

CRD commentary

The inclusion criteria and search strategy appeared to be adequate. However, the restriction to studies that were published in English and apparent limitation to published studies could have introduced language and publication biases into the review.

The narrative synthesis was presented well and seemed appropriate given the inclusion of non-randomised studies. However, the inclusion of studies that were not reported as randomised and the lack of any description on how the authors selected studies, assessed validity and extracted data may limit the validity of the review findings.

Implications of the review for practice and research

Practice: The authors stated that dexamethasone had anti-emetic properties.

Research: The authors stated that research into the usefulness of dexamethasone as an anti-emetic beyond the induction period was needed.

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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.