Steroids in second degree caustic burns of the esophagus. A systematic pooled analysis of fifty years of human data: 1956-2006

Fulton J A, Hoffman R S

CRD summary
This review investigated the usefulness of steroid therapy in grade II oesophageal burns. The authors concluded that the existing data fail to support the use of steroids in patients with caustic-induced grade II oesophageal burns. Although the conclusion was conservative, it may not be reliable given limitations in the analysis and the uncertainty about the quality of the included studies.

Authors' objectives
To re-evaluate the usefulness of steroid therapy in grade II oesophageal burns.

Searching
The studies included in two earlier reviews were assessed for inclusion and the bibliographies of these studies were also screened for additional studies. MEDLINE was searched (May 2006) for ‘recent’ studies; the search terms were not provided.

Study selection
Study designs of evaluations included in the review
The inclusion criteria for study design were not specified.

Specific interventions included in the review
Studies assessing steroid therapy of at least 10 days’ duration or no steroid therapy were eligible for inclusion. Three of the included studies compared steroid and no steroid therapy, otherwise the studies evaluated only one regimen. The studies evaluating steroid therapy used a range of different steroids including dexamethasone, depomedrol, prednisone, prednisolone, methylprednisolone, cortisone and hydrocortisone. Treatment duration varied between the studies. In most of the studies patients received antibiotic treatment in conjunction with steroids, and in some studies additional treatment modalities were used to prevent stricture formation.

Participants included in the review
Patients with endoscopically documented grade II oesophageal burns were eligible for inclusion. Grade II burns were defined as submucosal burns, ulcerations and exudates that were not circumferential (grade IIa), or exudates that were circumferential (grade IIb). The majority of the included studies were predominantly of children.

Outcomes assessed in the review
The outcome of interest was oesophageal strictures.

How were decisions on the relevance of primary studies made?
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
The proportion of patients with strictures was extracted. The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.
Methods of synthesis
How were the studies combined?
The overall proportion of strictures with steroid therapy and non-steroid therapy, for all the studies combined, was calculated. The chi-squared test was then used to test whether there was a statistically significant difference between the two groups.

How were differences between studies investigated?
Differences between the studies were reported in tabular format.

Results of the review
Thirteen studies (n=328) were included: two RCTs (n=40), one retrospective comparative study (n=21) and ten case series (n=267), nine of which were retrospective.

There were 244 patients who received steroid therapy and 84 who did not. Overall, 12.3% of patients receiving steroid therapy developed strictures compared with 19% in the non-steroid group. There was no statistically significant difference between the two groups.

Authors' conclusions
Although methodologically limited, the data fail to support the use of steroids in patients with caustic-induced grade II oesophageal burns.

CRD commentary
The main source for finding studies seemed to be two previous systematic reviews. It is unclear whether these previous reviews had thorough searches that included sources of unpublished studies, but it would seem that there is a risk that relevant studies might have been missed. Appropriate methods to reduce error and bias in the study selection and data extraction processes do not appear to have been used. Study quality was not systematically assessed and was not considered in the synthesis, though the evidence was described as methodologically limited. The authors stated that a formal meta-analysis was not appropriate because of the heterogeneity of the data. This would seem to be an appropriate judgement, but the alternative approach they adopted for the analysis was also inappropriate as it involved combining all the different study designs, as though they were from one study, to calculate an overall proportion of patients in each group that developed strictures. The authors' conclusion is conservative, however, given the limitations of the analysis and the uncertainty about the quality of the included studies it may not be reliable.

Implications of the review for practice and research
Practice: Given the failure to show a difference between steroid and non-steroid therapy and the inherent risks associated with steroid therapy, there is an argument against the routine use of steroids in caustic oesophageal injury.

Research: The authors suggested that ideally a prospective trial should be conducted. This should have specific inclusion criteria, equal times to endoscopy, a uniform burn grading system, consistent use of steroids and antibiotics across patients, matched controls and consistent time to follow-up.

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