Do low-dose corticosteroids improve mortality or shock reversal in patients with septic shock? A systematic review and position statement prepared for the American Academy of Emergency Medicine
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CRD summary
The review concluded that the evidence suggested that low-dose corticosteroids may reverse shock faster in adult patients with septic shock but mortality was not improved for the overall population. Reporting of review methodology, quality assessment and results were poor and made it difficult to determine the reliability of the authors’ conclusions.

Authors’ objectives
To determine whether low dose corticosteroids improved mortality or shock reversal in patients with septic shock.

Searching
MEDLINE was searched to September 2010 for articles in English. Search terms were reported. Reference lists of relevant articles were searched.

Study selection
Randomised controlled trials (RCTs) of low-dose corticosteroids in adult patients (at least 19 years) diagnosed with septic shock were eligible for inclusion. Low-dose corticosteroids were defined as the administration of 300mg of hydrocortisone every 24 hours or the dose equivalent. Trials had to report either mortality or time to shock reversal.

The included trials were published between 1998 and 2008. All trials used hydrocortisone. Definitions of shock reversal varied across trials and ranged from reversal on day three to day 28.

Three reviewers undertook study selection.

Assessment of study quality
Quality assessment was on the basis of design and methodology. Quality criteria details were not reported.

Two reviewers assessed study quality. Disagreements were resolved by discussion with a third reviewer.

Data extraction
Data were extracted on 28-day mortality and shock reversal and used to calculate relative risks (RR) and 95% confidence intervals (CI).

The authors did not state how many reviewers extracted data.

Methods of synthesis
It appeared that some form of meta-analysis was undertaken to calculate pooled relative risks and 95% CI. Each of the outcomes was graded as supportive, neutral, opposed or not reported.

The authors did not state how data were pooled.

Results of the review
Seven RCTs were included in the review (1,005 patients, range 40 to 499). Five trials were graded as outstanding quality, one was graded good and one was graded adequate quality.

Low dose corticosteroids were associated with a statistically significant increase in shock reversal (RR 1.17, 95% CI 1.07 to 1.28; seven RCTs). There was no statistically significant difference in 28-day mortality (RR 0.92, 95% CI 0.79 to 1.07; six RCTs).
Authors' conclusions
The evidence suggested that low-dose corticosteroids may reverse shock faster in adult patients with septic shock but mortality was not improved for the overall population.

CRD commentary
Inclusion criteria for the review were broadly defined. Only one relevant database was searched. There was potential for language bias as only articles in English were included. Risk of publication bias was not assessed and could not be ruled out. Attempts were made to reduce reviewer error and bias during study selection and quality assessment; whether the same attempts were made for data extraction was unclear. Details of the included trials (including comparators, patient characteristics and doses) were not fully reported.

Details of the quality assessment criteria were not reported and this made it difficult to interpret the results. The authors noted that definitions of shock reversal varied across the trials and this may have introduced bias. One trial also allowed trial entry up to 72 hours after shock onset. Methods used to pool the data were not reported. Statistical heterogeneity was not reported.

Reporting of review methodology, quality assessment and results were poor and made it difficult to determine the reliability of the authors' conclusions.

Implications of the review for practice and research
Practice: The authors stated that a one-time dose of 50mg to 100mg of hydrocortisone administered in the emergency department can reverse septic shock in emergency care patients.

Research: The authors did not state any implications for research.

Funding
Not stated.

Bibliographic details

PubMedID
22221983

DOI
10.1016/j.jemermed.2011.08.015

Original Paper URL

Indexing Status
Subject indexing assigned by NLM

MeSH
Anti-Inflammatory Agents /administration & dosage /therapeutic use; Humans; Hydrocortisone /administration & dosage /therapeutic use; Shock, Septic /drug therapy /mortality; Treatment Outcome

AccessionNumber
12012036414

Date bibliographic record published
03/01/2013
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.