Dexamethasone improved disability in acute bacterial meningitis


QUESTION: In patients with acute bacterial meningitis, does adjunctive treatment with dexamethasone improve outcomes more than placebo?

Design
Randomised (allocation concealed*), blinded (clinicians, patients, data collectors, outcome assessors, data analysts, data monitoring committee, and manuscript writers), ‡ placebo controlled trial with 8 weeks of follow up.

Setting
52 centres in the Netherlands, Belgium, Germany, Denmark, and Austria.

Patients
301 patients (mean age 45 y, 56% men) who had suspected meningitis in combination with cloudy cerebrospinal fluid, bacteria in cerebrospinal fluid on Gram staining, or cerebrospinal fluid leukocyte count > 1000/mm³. Exclusion criteria included hypersensitivity to β-lactam antibiotics or corticosteroids; cerebrospinal shunt; antibiotics in the past 48 hours; and history of active tuberculosis or fungal infection, head trauma, neurosurgery, or peptic ulcer disease. All patients were included in the analysis.

Intervention
Patients were allocated to intravenous dexamethasone, 10 mg every 6 hours for 4 days (n=157), or placebo (n=144). All patients received parenteral antibiotics.

Main outcome measures
The primary outcome was score on the Glasgow Outcome Scale (score of 5=favourable outcome [mild or no disability], and 1–4=unfavourable outcome [range, death to moderate disability]). Secondary outcomes were death, focal neurological abnormalities, hearing loss, gastrointestinal bleeding, fungal infection, herpes zoster, and hyperglycaemia.

Main results
Analysis was by intention to treat. Fewer patients who received dexamethasone had an unfavourable outcome than did patients who received placebo (table). Also, fewer patients in the dexamethasone group died than in the placebo group (table). The groups did not differ for any other secondary outcomes. Dexamethasone and placebo groups did not differ for adverse effects.

Conclusion
In patients with acute bacterial meningitis, adjunctive treatment with dexamethasone was more effective than placebo in improving disability and reducing death.

*See glossary.
†Information provided by author.
‡Unfavourable outcome

<table>
<thead>
<tr>
<th>Outcomes</th>
<th>Dexamethasone</th>
<th>Placebo</th>
<th>RRR (95% CI)</th>
<th>NNT (CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unfavourable outcome</td>
<td>15%</td>
<td>25%</td>
<td>41% (7 to 63)</td>
<td>10 (5 to 73)</td>
</tr>
<tr>
<td>Death</td>
<td>7%</td>
<td>15%</td>
<td>52% (5 to 75)</td>
<td>13 (7 to 163)</td>
</tr>
</tbody>
</table>

†Unfavourable outcome = score of 1–4 on the Glasgow Outcome Scale: death, vegetative state, severe disability, or moderate disability. Abbreviations defined in glossary: RRR, NNT, and CI calculated from data in article.