TAKE-HOME MESSAGE
Neither bed rest nor fluid supplementation decreases the incidence of headache after dural puncture.

Does Bed Rest or Fluid Supplementation Prevent Post–Dural Puncture Headache?

EBEM Commentators
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Results

Summary results for the risk of post–dural puncture headache with bed rest or fluid supplementation.

<table>
<thead>
<tr>
<th>Comparison</th>
<th>No. of Studies</th>
<th>No. of Participants</th>
<th>RR (95% CI)</th>
<th>I², %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed rest vs immediate mobilization</td>
<td>12</td>
<td>1,519</td>
<td>1.24 (1.04–1.48)</td>
<td>0</td>
</tr>
<tr>
<td>Fluid supplementation vs no supple-</td>
<td>1</td>
<td>100</td>
<td>1.00 (0.59–1.69)</td>
<td>NR</td>
</tr>
</tbody>
</table>

The review included 24 trials with 2,996 participants. Of these, 12 trials provided moderate-quality evidence of increased incidence of post–dural puncture headache with bed rest compared with immediate mobilization (RR 1.24; 95% CI 1.04 to 1.48). Furthermore, 18 trials similarly provided moderate-quality evidence that bed rest increased incidence of any headache compared with immediate mobilization (RR 1.16; 95% CI 1.02 to 1.32). Subgroup analyses based on indication for dural puncture, including diagnostic lumbar puncture, myelography, and spinal anesthesia, found no decreased incidence of post–dural puncture headache with bed rest. An analysis restricted to 2 trials at low risk of bias also found no decreased incidence of post–dural puncture headache with bed rest (RR 1.18; 95% CI 0.90 to 1.54). A single trial found that fluid supplementation does not decrease the incidence of post–dural puncture headache (RR 1.00; 95% CI 0.59 to 1.69).

Commentary

Lumbar puncture is frequently performed in the emergency department setting. This procedure is a critical component of the diagnosis of disease processes requiring emergency intervention, including meningitis and subarachnoid hemorrhage. Unfortunately, post–dural puncture headache is a common complication of this procedure. It was first reported in 1898 by August Bier, and modern estimates place the...
primary outcome was incidence of post–dural puncture headache, which is defined as a headache occurring within 5 days of dural puncture that worsens within 15 minutes after sitting or standing and improves within 15 minutes after lying supine. Secondary outcomes included any headache subsequent to lumbar puncture to incorporate symptoms not categorized as post–dural puncture headache. Two authors independently assessed risk of bias according to the Cochrane Handbook for Systematic Reviews of Interventions and rated overall evidence quality with the Grading of Recommendations Assessment, Development and Evaluation system. Authors assessed study heterogeneity with the I² statistic. They presented results as summary risk ratios (RRs) with 95% confidence intervals (CIs), using intention-to-treat analysis and a random-effects model. Authors performed subgroup analyses of studies stratified by indication for dural puncture and also performed an analysis restricted to trials determined to be at low risk of bias.

This meta-analysis does not include data for several alternative interventions reported by some studies to have efficacy in preventing post–dural puncture headache. A 2017 Cochrane review suggested that smaller needles or needles designed with atraumatic tips may be effective interventions for prevention of post–dural puncture headache, although incomplete methodology reporting precludes interpretation of the risk of bias for many of these studies. Additionally, another meta-analysis reported that orientation of the bevel parallel to the longitudinal fibers of the dura when lumbar puncture is performed with a cutting needle may reduce the incidence of post–dural puncture headache, although this systematic review did not assess the study quality of the included studies. Finally, reinsertion of the stylet before removal of the needle may decrease the risk of subsequent headache. Ongoing study of these strategies will be useful to further assess the efficacy of these interventions, which show more promise than bed rest and fluid supplementation.

incidence of this complication as high as 30%. The cause proposed by Dr. Bier and still widely accepted by the contemporary medical community is persistent leak of cerebrospinal fluid through the puncture site. Historical teaching has been to reduce the incidence of post–dural puncture headache by bed rest after the procedure; this meta-analysis suggests that bed rest is ineffective.

These results are an update of a meta-analysis summarized in a previous Systematic Review Snapshot. The previous meta-analysis, based on 8 trials, similarly reported no benefit with bed rest versus early mobilization. The updated meta-analysis includes 4 additional studies assessing the effect of bed rest on the incidence of post–dural puncture headache, strengthening the evidence for no association. It further offers evidence from a single trial indicating no benefit to fluid supplementation for preventing post–dural puncture headache.


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Michael Brown, MD, MSc, Jestin N. Carlson, MD, MS, and Alan Jones, MD, serve as editors of the SRS series.