## Coal Tar Solution Treatment for Psoriasis

<table>
<thead>
<tr>
<th>QUESTION</th>
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</thead>
<tbody>
<tr>
<td>Should adults with psoriasis be treated with coal tar solution compared to other topical preparations for psoriasis?</td>
</tr>
</tbody>
</table>

### CONTEXT

**Psoriasis**

Psoriasis is an immune-mediated chronic inflammatory skin disease that may be localized or widespread. Chronic plaque psoriasis, characterized by red patches of thickened skin, represents over 90% of all psoriasis cases, and affects mostly the knees, elbows, lower back, and scalp. Disease progression is related to local trauma, infections, use of certain drugs, sunlight, alcohol and cigarette use, and stress.

Treatment includes topical medications such as vitamin D analogues, topical corticosteroids, tar-based preparations, dithranol, salicylic acid, and topical retinoids. The first two are the most commonly prescribed treatments because they are cosmetically more acceptable than coal tar therapy and other treatments. However, it is unclear which treatment is more effective and which one has less adverse side effects.

### INTERVENTION

**Coal Tar Therapy**

- **Global improvement (investigator assessment of overall global improvement (IAGI)):** Coal tar therapy is less effective than vitamin D analogues or calcipotriol reaching a global improvement. *Moderate quality evidence.*
- **Global improvement (patient assessment of overall global improvement (PAGI)):** PAGI was lower among patients treated with coal tar therapy than with vitamin D analogues or calcipotriol. *Low quality evidence.*
- **Psoriasis area and severity index (PASI):** Coal tar therapy is less effective than vitamin D analogues or calcipotriol regarding PASI. *Low quality evidence.*
- **Side effects:** There were no statistically significant differences between coal tar therapy and calcipotriol regarding adverse side effects. *Very low quality evidence.*
## Summary of the Evidence

### Benefits

A Cochrane systematic review [1] (date of search: November 2008) identified 131 randomized controlled trials (RCT) with 21,448 participants that compared the effectiveness, tolerability, and safety of topical treatments for psoriasis.

This review found that, regarding investigator assessment of overall global improvement (IAGI), coal tar therapy is less effective than vitamin D analogues (2 RCT, mean difference between interventions (MD) -1.13, 95%CI -1.60 to -0.67) or calcipotriol (3 RCT, MD -0.52, 95%CI -0.68 to -0.36). Regarding psoriasis area and severity index (PASI), coal tar therapy was also less effective than vitamin D analogues (1 RCT, MD -0.84, 95%CI -1.39 to -0.28) or calcipotriol (1 RCT, MD -0.64, 95%CI -1.07 to -0.21). Patient assessment of overall global improvement (PAGI) was lower among patients treated with coal tar therapy than among patients treated with vitamin D analogues (1 RCT, MD -1.51, 95%CI -2.12 to -0.90) or calcipotriol (1 RCT, MD -0.56, 95%CI -0.99 to -0.13).

### Risks

There were no significant differences between coal tar therapy and calcipotriol regarding withdrawals due to adverse events (3 RCT, 38 events for calcipotriol and 21 for coal therapy, risk difference 0.02, 95%CI -0.06 to 0.10) or regarding local adverse events (2 RCT, 152 events for calcipotriol and 87 for coal tar therapy, risk difference 0.15, 95%CI -0.03 to 0.33). There was, however, high heterogeneity associated with both of these measurements.

### Applicability

Coal therapy was less effective than vitamin D analogues and calcipotriol treating psoriasis. Adverse events were associated equally with coal therapy and the aforementioned alternative therapies.

### Commentaries

Research on long-term effects of topical treatment for psoriasis is warranted. In addition, clinical outcomes included in this review were evaluated qualitatively, which adds heterogeneity to the findings.

### Costs

No studies on cost-effectiveness have been identified in the current literature.

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<table>
<thead>
<tr>
<th>Number of Studies (N)</th>
<th>Outcome</th>
<th>Comparison</th>
<th>Type of Evidence</th>
<th>Quality</th>
<th>Consistency</th>
<th>Direct Evidence</th>
<th>Size of Effect</th>
<th>GRADE</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 (710)</td>
<td>IAGI</td>
<td>Coal tar therapy vs. Vitamin D Analogues or Calcipotriol</td>
<td>4</td>
<td>-1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Moderate</td>
<td>Poor methodology</td>
</tr>
<tr>
<td>2 (141)</td>
<td>PASI</td>
<td>Coal tar therapy vs. Vitamin D Analogues or Calcipotriol</td>
<td>4</td>
<td>-1</td>
<td>0</td>
<td>0</td>
<td>-1</td>
<td>Low</td>
<td>Poor methodology, low number of events</td>
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<td>0</td>
<td>-1</td>
<td>Low</td>
<td>Poor methodology, low number of events</td>
</tr>
<tr>
<td>3 (655)</td>
<td>Side Effects</td>
<td>Coal tar therapy vs. Vitamin D Analogues or Calcipotriol</td>
<td>4</td>
<td>-1</td>
<td>-2</td>
<td>0</td>
<td>0</td>
<td>Very low</td>
<td>Poor methodology, high heterogeneity</td>
</tr>
</tbody>
</table>

Type of evidence: 4 = RCT; 2 = Observational studies; 1 = Non-analytic studies / Expert opinion