Effectiveness of Aloe vera gel compared with 1% silver sulphadiazine cream as burn wound dressing in second degree burns

Shahzad MN, Ahmed N

Record Status
This is a critical abstract of an economic evaluation that meets the criteria for inclusion on NHS EED. Each abstract contains a brief summary of the methods, the results and conclusions followed by a detailed critical assessment on the reliability of the study and the conclusions drawn.

CRD summary
The objective was to assess the efficacy and cost of Aloe vera gel compared with 1% silver sulphadiazine, as a dressing for second-degree burns. The authors concluded that the gel was more effective and cost-effective compared with silver sulphadiazine. The assessment of efficacy was well conducted, but the scope of the cost analysis was limited. The authors’ conclusions on effectiveness appear to be appropriate, but their conclusions on cost-effectiveness should be treated with caution.

Type of economic evaluation
Cost-effectiveness analysis

Study objective
This study evaluated the efficacy, and compared the prices, of Aloe vera gel, compared with 1% silver sulphadiazine, as a dressing for second-degree burns.

Interventions
The intervention was Aloe vera gel (AleoTone JelR), which consisted of 98% unrefined gel from the inner leaf of the Aloe vera plant. The comparator was 1% silver sulphadiazine dressings. Wounds were cleaned with povidone iodine scrub and normal saline, before application of either Aloe vera soaked gauzes or a 1% silver sulphadiazine dressing. Dressings were applied twice a day until the burns were fully healed and re-covered with epithelial cells.

Location/setting
Pakistan/hospital.

Methods
Analytical approach:
The cost and effectiveness data were collected as part of a randomised trial, of 50 patients, conducted from July 2008 to December 2010. The authors did not state the perspective of the analysis.

Effectiveness data:
In the trial, effectiveness was measured by the time to wound epithelialisation (time required for healing) and pain (measured on a visual analogue scale from 1 to 10) relief. Patients with second-degree burns who presented within 24 hours and had a total burn surface area of less than 25% were analysed. There were 25 patients randomised to Aloe vera gel, and 25 to silver sulphadiazine. Wound colonisation and infection, and the type of cultured organisms were measured. The condition of the wound and the amount of epithelialisation were recorded every third day, and pain scores and local irritation were measured regularly. Final outcomes were assessed at two-month follow-up.

Monetary benefit and utility valuations:
Not applicable.

Measure of benefit:
The health benefit was measured by the time until the wound was covered with epithelial cells, and pain relief.

Cost data:
The cost of each dressing per percentage body surface burnt was reported. The costs were reported in Pakistani rupees (PKR).

**Analysis of uncertainty:**
Standard deviations were reported for the time required for healing.

**Results**
In the Aloe vera group, epithelialisation began on the fifth day, and for all patients, healing was complete by the fortieth day (mean 11 days; SD 4.18). In the silver sulphadiazine group, epithelialisation began on the ninth day, and healing was complete for all patients by the fifty-sixth day (mean 24.24 days; SD 11.16). The difference in time to wound epithelialisation, between the two groups, was statistically significant (p<0.001).

In the Aloe vera group, complete pain relief was achieved by day 21, compared with day 26, in the silver sulphadiazine group (p=0.01). Mean pain relief for the Aloe vera group was achieved at day 12, compared with day 16.8 for the silver sulphadiazine group.

Sixteen (64%) patients in the Aloe vera group developed wound colonisation, compared with 22 (88%) patients in the silver sulphadiazine group. There was no difference in the rate of infections. All patients in the study survived.

The cost per dressing per percentage body surface burnt for silver sulphadiazine was PKR 4.92 for two grams of ointment, compared with PKR 2.40 for 5mL of Aloe vera gel.

**Authors’ conclusions**
The authors concluded Aloe vera gel was more effective and cost-effective, compared with silver sulphadiazine.

**CRD commentary**

**Interventions:**
The intervention and comparator were clearly stated. The authors justified their choice of comparator, stating that silver sulphadiazine was the most common form of topical antimicrobial agent in use. They did not discuss any other relevant alternatives.

**Effectiveness/benefits:**
Appropriate measures of effectiveness were used, but it was not clear exactly when pain was measured. The effectiveness results were clearly reported. In the trial, patients appear to have been appropriately randomised to each group. The authors did not report if patients were blinded to treatment. If not, there is the possibility of assessment bias.

**Costs:**
The authors appear to have adopted a hospital perspective. The evaluation of the costs in the trial was limited; the objective does not appear to have been to conduct a full cost-effectiveness analysis. It was unclear exactly how the costs were measured, and only the short-term costs of each of the dressings was included. It was not clear that the average use and cost of resources was compared between the two options. It is likely that there were differences between the two groups in their use of items, such as pain relief medications, in-patient care, and long-term follow-up consultations. If these differed between the two groups, they should have been measured to accurately assess the costs of each treatment. The price year was not reported.

**Analysis and results:**
The results were clearly reported. The dosing requirements for each of the treatments was unclear, so it was difficult to interpret the costs that were reported. An incremental analysis of the costs (indicating the additional cost of the intervention over the comparator) was not conducted. Due to the limitations of the cost analysis, it is unlikely that the costs can be generalised to other hospital settings. Only a limited assessment of uncertainty around the results was conducted.

**Concluding remarks:**
The assessment of efficacy was well conducted, but the scope of the cost analysis was limited. The authors’ conclusions on effectiveness appear to be appropriate, but their conclusions on cost-effectiveness should be treated with caution.