

Abstract:

BACKGROUND: Up to 80% of hospitalised patients receive intravenous therapy at some point during their admission. About 20% to 70% of patients receiving intravenous therapy develop phlebitis. Infusion phlebitis has become one of the most common complications in patients with intravenous therapy. However, the effects of routine treatments such as external application of 75% alcohol or 50% to 75% magnesium sulphate (MgSO₄) are unsatisfactory. Therefore, there is an urgent need to develop new methods to prevent and alleviate infusion phlebitis.

OBJECTIVES: To systematically assess the effects of external application of Aloe vera for the prevention and treatment of infusion phlebitis associated with the presence of an intravenous access device.

SEARCH METHODS: The Cochrane Peripheral Vascular Diseases Group Trials Search Coordinator (TSC) searched the Specialised Register (last searched February 2014) and CENTRAL (2014, Issue 1). In addition the TSC searched MEDLINE to week 5 January 2014, EMBASE to Week 6 2014 and AMED to February 2014. The authors searched the following Chinese databases until 28 February 2014: Chinese BioMedical Database; Traditional Chinese Medical Database System; China National Knowledge Infrastructure; Chinese VIP information; Chinese Medical Current Contents; Chinese Academic Conference Papers Database and Chinese Dissertation Database; and China Medical Academic Conference. Bibliographies of retrieved and relevant publications were searched. There were no restrictions on the basis of date or language of publication.

SELECTION CRITERIA: Randomised controlled trials (RCTs) and quasi-randomised controlled trials (qRCTs) were included if they involved participants receiving topical Aloe vera or Aloe vera-derived products at the site of punctured skin, with or without routine treatment at the same site.

DATA COLLECTION AND ANALYSIS: Two review authors independently extracted the data on the study characteristics, description of methodology and outcomes of the eligible trials, and assessed study quality. Data were analysed using RevMan 5.1. For dichotomous outcomes, the effects were estimated by using risk ratio (RR) with its 95% confidence interval (CI). For continuous outcomes, mean differences (MD) with 95% CIs were used to estimate their effects.

MAIN RESULTS: A total of 43 trials (35 RCTs and eight qRCTs) with 7465 participants were identified. Twenty-two trials with 5546 participants were involved in prevention of Aloe vera

for phlebitis, and a further 21 trials with 1919 participants were involved in the treatment of phlebitis. The included studies compared external application of Aloe vera alone or plus non-Aloe vera interventions with no treatment or the same non-Aloe vera interventions. The duration of the intervention lasted from one day to 15 days. Most of the included studies were of low methodological quality with concerns for selection bias, attrition bias, reporting bias and publication bias. The effects of external application of fresh Aloe vera on preventing total incidence of phlebitis varied across the studies and we did not combine the data. Aloe vera reduced the occurrence of third degree phlebitis (RR 0.06, 95% CI 0.03 to 0.11, $P < 0.00001$) and second degree phlebitis (RR 0.18, 95% CI 0.10 to 0.31, $P < 0.00001$) compared with no treatment. Compared with external application of 75% alcohol, or 33% MgSO₄ alone, Aloe vera reduced the total incidence of phlebitis (RR 0.02, 95% CI 0.00 to 0.28, $P = 0.004$ and RR 0.43, 95% CI 0.24 to 0.78, $P = 0.005$ respectively) but there was no clear evidence of an effect when compared with 50% or 75% MgSO₄ (total incidence of phlebitis RR 0.41, 95% CI 0.16 to 1.07, $P = 0.07$ and RR 1.10 95% CI 0.54 to 2.25, $P = 0.79$ respectively; third degree phlebitis (RR 0.28, 95% CI 0.07 to 1.02, $P = 0.051$ and RR 1.19, 95% CI 0.08 to 18.73, $P = 0.9$ respectively; second degree phlebitis RR 0.68, 95% CI 0.21 to 2.23, $P = 0.53$ compared to 75% MgSO₄) except for a reduction in second degree phlebitis when Aloe vera was compared with 50% MgSO₄ (RR 0.26, 95% CI 0.14 to 0.50, $P < 0.0001$). For the treatment of phlebitis, Aloe vera was more effective than 33% or 50% MgSO₄ in terms of both any improvement (RR 1.16, 95% CI 1.09 to 1.24, $P < 0.0001$ and RR 1.22, 95% CI 1.16 to 1.28, $P < 0.0001$ respectively) and marked improvement of phlebitis (RR 1.97, 95% CI 1.44 to 2.70, $P < 0.001$ and RR 1.56, 95% CI 1.29 to 1.87, $P = 0.0002$ respectively). Compared with 50% MgSO₄, Aloe vera also improved recovery rates from phlebitis (RR 1.42, 95% CI 1.24 to 1.61, $P < 0.0001$). Compared with routine treatments such as external application of hirudoid, sulphonic acid mucopolysaccharide and dexamethasone used alone, addition of Aloe vera improved recovery from phlebitis (RR 1.75, 95% CI 1.24 to 2.46, $P = 0.001$) and had a positive effect on overall improvement (marked improvement RR 1.26, 95% CI 1.09 to 1.47, $P = 0.0003$; any improvement RR 1.23, 95% CI 1.13 to 1.35, $P < 0.0001$). Aloe vera, either alone or in combination with routine treatment, was more effective than routine treatment alone for improving the symptoms of phlebitis including shortening the time of elimination of red swelling symptoms, time of pain relief at the location of the infusion vein and time of resolution of phlebitis. Other secondary outcomes including health-related quality of life and adverse effects were not reported in the included studies.

AUTHORS' CONCLUSIONS: There is no strong evidence for preventing or treating infusion phlebitis with external application of Aloe vera. The current available evidence is limited by the poor methodological quality and risk of selective outcome reporting of the included

studies, and by variation in the size of effect across the studies. The positive effects observed with external application of Aloe vera in preventing or treating infusion phlebitis compared with no intervention or external application of 33% or 50% MgSO₄ should therefore be viewed with caution.

Reference:

Zheng, G.H., Yang, L., Chen, H.Y., Chu, J.F.l. and Mei, L. (2014) Aloe vera for prevention and treatment of infusion phlebitis. The Cochrane database of systematic reviews. June 4;6:CD009162. (epub ahead of print).