Biological Effects of Human Amniotic Membrane Products on Diabetic Foot Ulcers: A Systematic Review and Meta-Analysis

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ABSTRACT

BACKGROUND:

Diabetic foot ulcer (DFU) is one of the most serious diabetic complications. DFU is an open wound that usually occurs in the foot sole due to poor blood glucose control, peripheral neuropathy, and poor circulation. The human amniotic allograft membrane is a biologic wound dressing derived from the amniotic membrane. It contains amino acids, nutrients, cytokines, and growth factors that make the growth process easier.

OBJECTIVES:

To compare dehydrated human amnion and chorion allograft (DHACA) with the standard of wound care (SOC) and the SOC alone.

METHODS:

We searched for randomized clinical trials (RCTs) on PubMed, Scopus, Cochrane, Web of Science, and GHL till April 2021 using relevant keywords. All search results were screened for eligibility. We extracted the data from the included trials and pooled them as mean difference (MD) with 95% confidence interval (CI) or risk ratio (RR) with 95% CI, using Review Manager software (ver. 5.4).

RESULTS:

The pooled effect estimate from 11 RCTs showed that DHACA was superior to SOC regarding the complete wound healing in both 6th and 12th week (RR=3.78; 95%:CI [2.51, 5.70]; P<0.00001); (RR=2.06, 95% CI:[1.71, 2.48], P<0.00001) respectively. Also, the analysis favored the DHACA regarding the 12th-week healing (RR=-12.07, 95% CI:[-19.23, -4.91], P=0.001). The wound size reduction was better with DHACA than SOC alone (RR=0.42, 95% CI:[-0,53, 1.37], P=0.02).

CONCLUSION:

Using DHACA with SOC is safer and more effective than using SOC alone for DFU patients

KEYWORDS:

Diabetic foot ulcer, human amnion membrane, amniotic allograft, meta-analysis.

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