Evidence on the use of platelet-rich plasma for diabetic ulcer: a systematic review

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CRD summary
This review found that topical treatment with platelet-rich plasma was favourably associated with healing of chronic leg ulcers. However, the authors' conclusions should be interpreted with substantial caution given methodological flaws within the review, poor reporting of the review process and the lack of information provided about the included studies.

Authors' objectives
To evaluate the use of platelet-rich plasma for the topical treatment of chronic leg ulcers.

Searching
PubMed, EMBASE, CINAHL, LILACS and the Cochrane Library were searched up to July 2008 for relevant studies; search terms were reported. It was unclear whether language restrictions were applied. References of retrieved articles were checked to identify additional studies.

Study selection
Clinical trials and studies (published in international/national journals and indexed in the databases listed above) that evaluated the treatment of chronic leg ulcers with platelet-rich plasma were eligible for inclusion. Articles published in abstract form, editorials, letters studies that used platelet-poor plasma, or studies that used recombinant or single growth factors were excluded.

The included studies were published between 1996 and 2006. The blood volume used in included studies ranged from 20 to 240mL and was obtained by centrifugation or apheresis in most studies. Few included studies outlined previous topical treatment of ulcers. Little information was provided on the interventions, controls and treatment regimens. Most of the ulcers in the included trials were of diabetic aetiology. The outcomes measured appeared to be the numbers of healed ulcers.

The authors did not state how many reviewers performed the initial study selection, but studies regarded as "doubtful" were analysed for inclusion by two independent reviewers.

Assessment of study quality
The Jadad scale with a range of 0 to 5 points was used to assess the quality of included randomised controlled trials (RCTs) for randomisation, allocation concealment, blinding and follow-up criteria.

The authors did not state how many reviewers performed the validity assessment.

Data extraction
Data were extracted as reported in the individual studies to calculate odds ratios (OR) and 95% confidence intervals (CIs).

The authors did not state how many reviewers performed the data extraction.

Methods of synthesis
Where studies were considered to be methodologically similar, data appeared to be combined using a random-effects model (the authors stated that statistical heterogeneity was assumed).

Results of the review
The authors stated that 18 studies were included in the review including; seven RCTs, three cross-sectional cohort studies, one multicentre retrospective cohort study (n=26,599), one multicentre case-control study (n=3830), and four
studies with no specified control group (these specified study designs only account for 16 studies). The Jadad scores for the seven RCTs ranged from 3 points (two trials) to 5 points (one trial).

Four trials were evaluated in a meta-analysis, as they were judged to be methodologically similar. A significant benefit in ulcer healing was observed (95% CI 2.94 to 20.31) with the use of platelet-rich plasma compared with control treatments.

Authors' conclusions
Findings indicated that platelet-rich plasma was a treatment of choice for the topical care of chronic ulcers.

CRD commentary
The review addressed a question that was broad in scope. Criteria for the inclusion of studies were outlined, although eligibility criteria for the outcomes examined were not defined. Appropriate databases were searched for studies, but it was unclear whether there were any language restrictions, so language bias could not be ruled out. Studies not indexed in the databases listed were excluded, so there was a risk of publication bias. The authors did not report taking sufficient steps to minimise errors or biases during the review process.

It was difficult to make a judgement about the justification for combining the results of some studies because of the lack of information presented for the interventions, comparators, patients and outcomes in the review. It was also difficult to determine the reliability of the forest plot, given the scale used and results presented.

Methodological flaws within in the review, lack of information on the included studies and poor reporting of the review process means that the authors' conclusions should be interpreted with substantial caution.

Implications of the review for practice and research
Practice: The authors did not state any implications for practice.

Research: The authors stated that factors such as quality of life and cost effectiveness of treatments should be indicated as secondary outcomes in future studies.

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This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.