Fasting followed by vegetarian diet in patients with rheumatoid arthritis: a systematic review

Muller H, de Toledo F W, Resch K L

Authors' objectives
To shed more light on the role of fasting in rheumatoid arthritis, a systematic review was carried out to identify all studies which reported on fasting in rheumatoid arthritis, and the results of controlled trials were synthesised by a pooling of results.

Searching
MEDLINE was searched from 1966 to 1997 for entries in which fasting and rheumatic diseases were mentioned simultaneously, applying the following search strategy: '(rheum* or arthri* or collageno* or polyarthr* or ancylosan* or (lupus erythramatod*) or (panarth* and nodos*) or dermatomy* or polymyo* or spondyl* or osteochond*) and (fasting or fasted or fast or starv*)'. The reference lists of potentially relevant papers were checked for further studies and experts in the field were approached.

Study selection
Study designs of evaluations included in the review
The initial criteria included all studies that investigated fasting in rheumatic disease; only case reports and animal studies were excluded. In the second stage, all controlled clinical trials on fasting in rheumatoid arthritis, which reported follow-up data for at least 3 months after the start of treatment, were included for the statistical pooling of efficacy findings.

Specific interventions included in the review
Any intervention involving fasting in rheumatic disease was eligible for inclusion.

Studies meeting the initial inclusion criteria were of fasting periods (where specified) of between 7 and 23 days, followed by a variety of dietary adjustments of mainly unspecified duration. These included none, individually adjusted elimination diets, vegan, lacto-vegetarian, and 'rich in bases'.

Controlled studies meeting the final inclusion criteria for statistical pooling were of either (1) fasting periods of 7 to 10 days, followed by a lacto-vegetarian or vegan diet (3 studies), or (2) fasting periods of 14 to 23 days, followed by a diet 'rich in bases' (1 study).

Participants included in the review
The authors specified no participant inclusion or exclusion criteria apart from the presence of rheumatoid disease and the exclusion of animal studies.

The were no details provided of the participant characteristics for the included studies. Some of the included studies contained both healthy controls and diseased participants.

Outcomes assessed in the review
The authors did not specify any inclusion or exclusion criteria for outcomes.

A variety of outcome measures were reported in most studies. For quantitative pooling, the authors selected the most sensitive indicator of each study according to Gotsche (see Other Publications of Related Interest no.1). In three of the four studies, the selected outcome measure was a visual analogue scale of pain; for the remaining study it was 'improvement rates'.

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the
Assessment of study quality
The authors do not state that they assessed validity.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction. Data were extracted on study design, the number of participants, duration and type or extent of fasting, details of the diet following the fast (where applicable), and results.

Methods of synthesis
How were the studies combined?
The findings of the 4 studies meeting all the inclusion criteria were presented as a narrative summary, with RCTs discussed first followed by non-randomised controlled trials.

For pooled results, an effect size (d) and its standard deviation (SD) was calculated for each study, using the formulae provided by Rosenthal (see Other Publications of Related Interest no.2) and by Shadish and Haddock (see Other Publications of Related Interest no.3). These d-values correspond to a standardised difference between treatment and control group in units of their pooled SD. Results were pooled by a meta-analysis of one-sided p-values.

How were differences between studies investigated?
The authors do not state a method for assessing any differences between the studies.

Results of the review
Thirty-one studies with a total of 968 participants were initially included: 8 randomised controlled trials (RCTs) with 294 participants, 9 non-randomised controlled trials with 375 participants, 5 crossover trials with 63 participants, and 9 observational studies with 236 participants. Of these, 4 studies with a total of 143 participants met the final inclusion criteria for statistical pooling: 2 RCTs with 79 participants and 2 non-randomised controlled trials with 64 participants.

The authors state that pooling of the 4 included studies showed a statistically and clinically significant beneficial long-term effect. The pooling of the reported p-values for all 4 studies showed a significant beneficial effect of fasting followed by a vegetarian diet, (p<0.0001; correlation, r=0.38). When the 2 non-randomised trials were excluded the improvement remained significant, (p<0.01; r=0.28).

Authors' conclusions
The available evidence suggests that fasting followed by vegetarian diets might be useful in the treatment of rheumatoid arthritis. More randomised long-term studies of better methodological quality are needed to confirm this view.

CRD commentary
The review question was vague and poorly defined. The authors used very broad inclusion and exclusion criteria, specifying no detail of interventions, participant characteristics (beyond the presence of rheumatic disease), or outcome measures eligible for inclusion. All study designs were originally included, and any study design that had some form of control group was eligible for inclusion in the quantitative analysis.

The literature search was weak, being limited to a search of MEDLINE and an examination of the reference lists of retrieved publications. It is therefore likely that not all relevant studies would have been retrieved. The authors stated that they attempted to identify unpublished studies by contacting experts in the field, but there was no formal assessment of potential publication bias.
The authors did not report any attempt to assess the validity of studies included in their review. Given the methodological weaknesses of the reported studies it is highly likely that biases will be present which have not been noted.

Detailed descriptions were given of the fasting and follow-on dietary regimens used in the included studies. These were extremely varied, both in content and duration. Very limited participant details were reported; typically, the number of participants and disease state. The main outcome measure used was only reported for the four studies included in the quantitative analysis; a common measure was used in only three of the four. Three of the four studies included in the quantitative analysis had unequal participant numbers in the treatment and control groups, whilst the fourth used identical numbers of participants in both groups. The authors made no formal assessment of study heterogeneity, and it is unclear whether the four studies included in the quantitative analysis were suitable for statistical pooling.

The authors’ conclusion that available evidence suggests that fasting followed by vegetarian diets might be useful in the treatment of rheumatoid arthritis is rightly cautious. It is based upon the results of a very limited number of small, methodologically weak studies that have been inappropriately pooled.

Implications of the review for practice and research
Practice: The authors state that their quantitative synthesis and literature review support the hypothesis that a short period of fasting, followed by a vegetarian diet, can cause clinically relevant long-term improvement in patients with rheumatoid arthritis. They further state that the reported results cannot be generalised to all patients with rheumatoid arthritis, since all patients included in the reported studies were eager to fast and compliant.

Research: The authors state that there is an urgent need for methodologically sufficient clinical studies which evaluate long-term effects of fasting and diet.

Bibliographic details

PubMedID
11252685

Other publications of related interest

Indexing Status
Subject indexing assigned by NLM

MeSH
Arthritis, Rheumatoid /diet therapy; Controlled Clinical Trials as Topic; Diet, Vegetarian; Fasting; Follow-Up Studies; Humans; MEDLINE

AccessionNumber
12001000664

Date bibliographic record published
28/02/2002
Date abstract record published
28/02/2002

Record Status
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.