Yttrium radiosynoviorthesis in the treatment of knee arthritis in rheumatoid arthritis: a systematic review
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Authors' objectives
To consider the question: How strong is the evidence in favour of yttrium synovecctomy in chronic knee arthritis in patients with rheumatoid arthritis, in comparison with placebo and intra-articular steroid treatment?

Searching
The authors searched MEDLINE and EMBASE up to October 1999, using both of the following search strategies for each database:

1. The MESH terms 'yttrium' and 'synovectomy', all headings and subheadings.
2. The MESH terms 'yttrium' and 'rheumat*', all headings and subheadings. The reference lists of retrieved articles were examined for additional studies.

Study selection
Study designs of evaluations included in the review
Only randomised controlled trials (RCTs) were included in the review.

Specific interventions included in the review
Papers were included if yttrium was compared with placebo or intra-articular corticosteroids. Of the two included papers, one compared yttrium (3 mCi) with saline, whilst the other compared yttrium (8 mCi) with triamcinolone hexacetonide (20 mg).

Participants included in the review
Papers were included if the study sample consisted of patients with rheumatoid arthritis and persistent knee arthritis. No other details were provided of the patients in the included studies.

Outcomes assessed in the review
The authors did not specify inclusion criteria for outcomes. However, the included studies did report on the following outcomes: knee circumference, joint range, fixed flexion, pain, subjective change, knee effusion, radiological assessment, pain at rest, pain on walking, joint tenderness, range of movement, and patient overall assessment.

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 selection.

Assessment of study quality
Methodological quality was assessed according to the Delphi List (see Other Publications of Related Interest), which employed nine criteria to assess the validity of RCTs: randomisation, concealment of treatment allocation, similarity of groups at baseline, specification of eligibility criteria, blinding of outcome assessors, blinding of care providers, blinding of patients, presentation of point estimates and variability measures, and intention to treat analysis. One reviewer assessed the methodological quality of the included studies.

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.
Methods of synthesis
How were the studies combined?
A narrative synthesis of the findings of the two studies was undertaken.

How were differences between studies investigated?
Potential sources of heterogeneity were not discussed and few study details were given.

Results of the review
Two studies met the inclusion criteria and presented sufficient data to be fully included in the review. The results of the review were based on a total of 43 patients with arthritis and 2 patients with unilateral gonitis.

One study reported that, at the 12-month follow-up, there was a significant difference in joint range of motion and knee circumference favouring knees treated with yttrium-90 (modest dose of 3 mCi), compared to those treated with placebo (saline). There were no significant differences in pain, effusion or subjective changes.

The second study found at the 1-month follow-up, that the response of the triamcinolone hexacetonide treatment group was significantly better than that of the yttrium-90 group (8 mCi dose) for pain, effusion and range of motion. At the 6-month follow-up, the only significant difference between groups was range of motion, which favoured triamcinolone.

Authors' conclusions
The authors state that, although radioactive yttrium is often used in the treatment of patients with chronic knee synovitis, there is little support from RCTs for this form of treatment. Most results reported are based on observations in non-randomised, heterogeneous patient groups and might have been biased in several ways. The studies included in this review, which were of sufficient methodological quality, show no clear evidence of the efficacy of yttrium synovectomy.

CRD commentary
The authors formulated a specific review question, which was supported by appropriate inclusion criteria. An effort was made to search more than one database, articles written in several languages were accepted, and the reference lists of retrieved articles were scanned. However, although validity was assessed according to a recognised list of criteria, these criteria were only applied by a single reviewer. It is also possible that not all the relevant evidence was included in the review. No attempt seems to have been made to identify unpublished data, and papers that lacked data or presented data that could not be interpreted were excluded, rather than the authors of the paper being contacted. A number of important issues were addressed in the narrative summary, but there was insufficient information about the included studies, e.g. patient characteristics, settings, in the text or tables. 'Significant' differences between treatment groups were reported, but no numerical data or p-values were given. Subsequently, it is difficult for the reader to assess the appropriateness of the authors' conclusions.

Implications of the review for practice and research
Practice: The authors state that this review indicates that it should be seriously questioned whether yttrium synovectomy deserves a place in clinical practice from the point of view of evidence-based medicine.

Research: The authors state that evidence to justify the continuation of yttrium synoviotrhesis might result from a trial with the following design: an RCT comparing four groups, one group receiving yttrium, one group receiving corticosteroids, one group receiving only placebo, and one group receiving yttrium and corticosteroids concomitantly.

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