Shoulder adhesive capsulitis: systematic review of randomised trials using multiple corticosteroid injections

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CRD summary

This review concluded that multiple corticosteroid injections for the treatment of adhesive capsulitis of the shoulder improved pain and range of motion for 6 to 16 weeks from the first injection. There was no evidence that treatment with more than six injections was effective. However, the authors' conclusions are uncertain given the lack of reported results.

Authors' objectives

To evaluate the efficacy of treating adhesive capsulitis of the shoulder with multiple corticosteroid injections.

Searching

MEDLINE, EMBASE, CINAHL, PEDro and the Cochrane Library were searched from inception to June 2006. SIGLE, NTIS, the British National Bibliography and the Index to Scientific and Technical Proceedings were searched for grey literature. In addition, the reference lists of retrieved publications were screened for further articles. The search terms were reported. Only studies written in English were eligible for inclusion.

Study selection

Study designs of evaluations included in the review

Randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review

Studies of multiple steroid injections were eligible for inclusion. The comparison groups in the included studies were different doses of steroid, different methods of steroid injection, physiotherapy, manipulation, ice therapy, stellate ganglion block, placebo or no treatment, and distension with steroid. Steroid treatment consisted of: triamcinalone acetonide, prednisolone acetate, triamcinalone acetonide, methyl prednisone acetate and hydrocortisone acetate at varying doses. The injections were administered intra-articularly or subacomially and the number of injections ranged from 2 to 6, with treatment periods ranging from 2 to 12 weeks. Various cointerventions were used (data not reported).

Participants included in the review

Studies of adults with adhesive capsulitis were eligible for inclusion. Studies of patients with conditions of the shoulder other than adhesive capsulitis were excluded. Studies of patients younger than 18 years of age were excluded. The four high-quality studies included patients with significant loss of passive external rotation and severe shoulder pain. Some studies excluded patients with bilateral symptoms, diabetes, previous treatment and neurological symptoms. Across studies, the mean age of the patients ranged from 47 to 56 years and 38 to 67% were female. The duration of symptoms ranged from 8 to 32 weeks. The studies were conducted in out-patient departments and general practice in Europe and the USA.

Outcomes assessed in the review

Inclusion criteria were not specified in terms of the outcomes. The outcomes assessed and methods of measurement varied between studies, although all assessed pain and range of movement at the glenohymera joint; some also assessed symptoms, disability, sleep function, functional ability and analgesic use. The duration of follow-up ranged from 6 to 52 weeks.

How were decisions on the relevance of primary studies made?

Two reviewers independently assessed studies for inclusion.

Assessment of study quality

Validity was assessed using the Van der Heijden quality scale, according to published criteria. Four main categories

were considered: study population, interventions, measurement of effects and data presentation. Supplementary information was presented on the British Journal of General Practice website; a journal subscription may be required for access. The maximum total score was 100. Studies scoring 50 or more were considered high quality. Only high-quality studies were used in the synthesis. The authors did not state how many reviewers performed the assessment.

Data extraction

Two reviewers independently extracted the data onto a standardised form. Data were extracted on reductions in pain and disability and increases in external rotation of the shoulder joint.

Methods of synthesis

How were the studies combined?

The studies were combined in a narrative. Each study was described in the text, with additional descriptive information tabulated. Only studies classified as high quality were included in the analysis.

How were differences between studies investigated?

Differences between the studies were apparent from inspection of the tables. Additional differences were discussed in the text.

Results of the review

Nine RCTs (n=476) were included.

Four of the 9 studies scored more than 50 points and were considered to be of a high methodological quality. Of these, selection of population was adequate in all four, but concealment of allocation was only adequate in two. All 4 studies reported groups being comparable at baseline and adequate reporting of withdrawals. The remaining studies scored between 15 and 49.5 points. Of these, selection of participants was adequate in most, but concealment of allocation was only adequate in one.

Four high-quality studies (n=220) found that multiple steroid injections resulted in reduced pain and/or improved movement (external rotation) from 4 to 16 weeks. Three studies found evidence that treatment with up to three corticosteroid injections was beneficial, while one found that up to six injections was beneficial. None of the studies assessed more than six injections.

Adverse events were reported in 4 high-quality studies. Adverse reactions related to corticosteroid injections included pain after injection (10 to 44%), facial flushing (12.5 to 20%), rash (4%) and irregular menstrual bleeding (10.5%). Other adverse events reported in one study included fever, skin irritation, sweating, fatigue, dry mouth, dizziness and headache.

Authors' conclusions

The evidence suggested that multiple corticosteroid injections improve pain and range of motion in the short-term, (6 to 16 weeks) from the first injection. There was evidence that up to three injections were beneficial, and limited evidence that six injections were beneficial.

CRD commentary

The review addressed a clear question that was defined in terms of the interventions, participants and study designs, but not explicitly defined in terms of the outcomes. Several relevant sources were searched and attempts were made to find grey literature. However, only studies in English were included, which means that some relevant studies might have been missed. The authors also highlighted the potential for publication bias. Methods were used to minimise error and bias in the data extraction, but it is unclear whether such approaches were also taken at the study selection and quality assessment stages.

Information on the included studies was adequate and highlighted differences across the studies in terms of the interventions, dose and outcomes. However, since there was little information about the participants, it is therefore not possible to assess the generalisability of the results. The heterogeneity between the studies in terms of interventions and

comparator treatments suggests that a narrative synthesis was appropriate, but this should have included some statistical information. The authors also excluded poor-quality studies based on the summary quality score. It is not possible to comment on the reliability of the authors' conclusions given the failure to present any information on the magnitude and statistical significance of the associations reported by the included studies.

Implications of the review for practice and research

Practice: The authors did not state any implications for practice.

Research: The authors stated that further RCTs of high methodological quality are needed to look at the optimum number, frequency, dose, volume, type of corticosteroid and importance of anatomical site of needle placement.

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