Osteoarthritis and Cartilage 25 (2017) 1379–1389

Osteoarthritis and Cartilage

Review

Systematic review of non-surgical therapies for osteoarthritis of the hand: an update

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ARTICLE INFO

Article history:
Received 9 February 2017
Accepted 27 May 2017

Keywords:
Osteoarthritis
Hand
Digital
Therapy
Systematic review

SUMMARY

Objective: To update our earlier systematic reviews which evaluated all published randomized controlled trials (RCTs) evaluating pharmacological and non-pharmacological therapies in patients with hand osteoarthritis (OA). Surgical therapies were not evaluated.
Design: RCTs published between March 2008 and December 2015 were added to the previous systematic reviews.
Results: A total of 95 RCTs evaluating various pharmacological and non-pharmacological therapies in hand OA were analyzed in this update. Generally, the methodological quality of these RCTs has improved since the last update, with more studies describing their methods for randomization, blinding, and allocation concealment. However, RCTs continue to be weakened by a lack of consistent case definition and a lack of standardized outcome assessments specific to hand OA. The number and location of evaluated hand joints continues to be underreported, and only 25% of RCTs adequately described the method used to ensure allocation concealment. These remain major weaknesses of published RCTs. A meta-analysis could not be performed because of marked study heterogeneity, insufficient statistical data available in the published RCTs, and a small number of identical comparators.
Conclusion: Hand OA is a complex area in which to study the efficacy of therapies. There has been an improvement in the overall design and conduct of RCTs, however, additional large RCTs with a more robust methodological approach specific to hand OA are needed in order to make clinically relevant conclusions about the efficacy of the diverse treatment options available.

Introduction

Therapy for hand osteoarthritis (OA) has received relatively little attention compared to OA of the hip and knee. The objective of this paper is to update our previous systematic reviews of pharmacologic and non-pharmacologic therapies for patients with hand OA by adding randomized control trials (RCTs) published between March 2008 and December 2015[1,2].

Criteria for inclusion and exclusion

The inclusion and exclusion criteria were identical to those used in the original version of the systematic review[1]. Only RCTs that evaluated a therapeutic intervention in adult subjects with hand OA were included. The trial must have explicitly stated that a randomized method of allocation to a treatment group was employed. Any non-surgical therapeutic interventions were considered. RCTs evaluating OA at multiple sites were only included if efficacy data was presented separately for the hand.

Exclusion criteria included[1]: RCTs evaluating a surgical therapy[2], RCTs presented in duplicate[3], unpublished RCTs, and[4] non-English RCTs if their English abstracts did not contain sufficient details on trial methodology and outcomes.

Search strategy and study identification

The following electronic data sources were searched for this updated version of the systematic review: MEDLINE (1946 to December week 4, 2015), EMBASE (1980 to December week 4, 2015), AMED (1985 to December week 4, 2015), ClinicalTrials.gov

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http://dx.doi.org/10.1016/j.joca.2017.05.016
1063-4584/

(1960 to December week 4, 2015), and EBM reviews, including the Cochrane Database of Systematic Reviews (CDSR), Database of Abstracts of Reviews of Effectiveness (DARE), ACP Journal Club, and the Central Cochrane Database (1980 to December week 4, 2015). Reference lists of all retrieved articles were also manually searched. A PRISMA diagram summarizing study identification and retrieval is shown in Fig. 1. The search strategy used in MEDLINE was identical to that used in the earlier version of this review[1].

Methods

A data abstraction form was used to extract information pertaining to trial demographics, methodology, quality, and outcomes[3,4]. Study quality was evaluated by using Jadad's scoring checklist[5]. The final score ranged from 0 to 5, with a higher score reflecting higher methodological quality. Data abstraction was performed by two authors, independently. Results were cross-checked for reliability and differences were resolved by reaching consensus. Allocation concealment was specifically evaluated for each RCT. A formal meta-analysis was to be performed, if feasible.

Results

A total of 95 RCTs were analyzed in this systematic review[6–99]. There were 2 RCTs published between 1970 and 1979, 5 between 1980 and 1989, 14 between 1990 and 1999, 34 between 2000 and 2009, and 40 between 2010 and December 2015. Eighty-eight RCTs were available as English full paper reports, four were non-English reports with English abstracts, and three were only available as English abstracts. Seventy-nine reports that evaluated therapies in hand OA were excluded from this review since they did not meet one or more of the stated inclusion criteria of this systematic review.

There were 82 RCTs evaluating a symptom modifying therapy, and 4 RCTs evaluating a structural modifying therapy[6,7,53]. There were 9 RCTs evaluating both a symptom modifying and structural modifying therapy[8,10,19,25,39,59,60,74,94]. A parallel, independent group study design was used in 79 RCTs, and 16 RCTs used a crossover design. The median number of subjects randomized per study was 56, with a range of 5–5586. The median number of subjects completing the trials was 49, with a range of subjects completing trials of 5–3983.

The median duration of the RCTs was 12 weeks, with a range of 2 hours–260 weeks, and a mean of 26.41 weeks. Of subjects randomized, 79.65% were female. The mean age of randomized subjects was 64.71 years, with a range of 44.8–82.6 years. There were only 35 RCTs reporting duration of OA of subjects. The mean duration of OA was 6.9 years, with a range of 0.9–15.2 years.

Five RCTs had an open follow-up period after study discontinuation. Thirty-eight of the 95 RCTs (40%) had a placebo group/arm. There were 16 multi-center RCTs. The continent of origin was heterogeneous, with 61 RCTs from Europe, 22 from North America, 7 from Asia, 4 from South America, and 3 from Australia.

Twelve RCTs had an oral non-steroidal anti-inflammatory drug (NSAID) treatment group/arm. The NSAIDs evaluated were Ibuprofen, Naproxen, Meclofenamate, Rofecoxib, Lumiracoxib, Indomethacin, Diclofenac, and Celecoxib. Eight RCTs had a topical NSAID treatment group/arm. The individual topical NSAIDs evaluated were Ibuprofen, Etofenamate, Diclofenac, and Niflumic acid. Two RCTs had a topical ASA group/arm, both compared topical trolamine salicylate to placebo. Eight RCTs had an intra-articular steroid treatment group/arm, while seven studies had an intra-articular hyaluronate treatment group/arm. There were 30 RCTs that evaluated occupational therapy interventions. These included protective splints/gloves ($N = 16$), joint exercises ($N = 7$), and mobilization techniques ($N = 7$). Other active agents included chondroitin sulfate ($N = 4$), glycosaminoglycan polysulfate (GAGPS) ($N = 2$), and capsaicin cream ($N = 2$). Amongst RCTs evaluating other unconventional OA therapies, there were 6 RCTs that evaluated baths or balneotherapy, 3 RCTs with laser therapy, and 2 RCTs with Adalimumab, Hydroxychloroquine, and vitamin therapy. There were single RCTs that evaluated Fiorinal, Dextrose

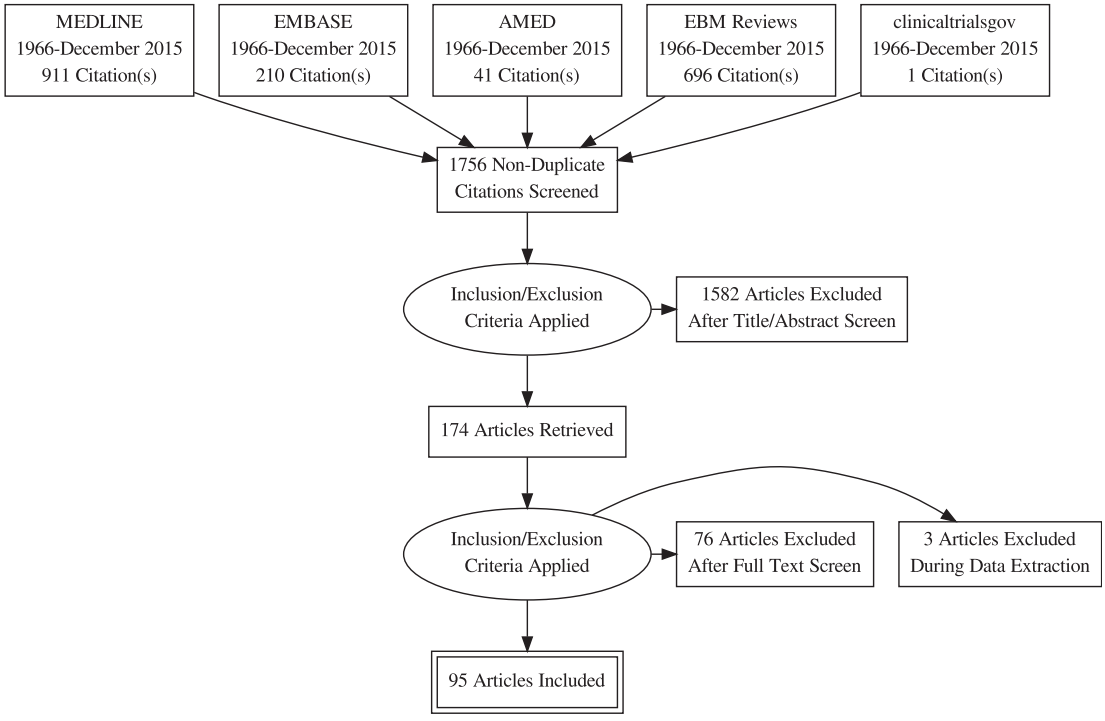

Fig. 1. PRISMA diagram summarizing search strategy, study identification and retrieval.