Position statement: nonoperative management of lateral epicondylitis in adults

Peter Lapner, MD
Ana Alfonso, MD, PhD
Jonah Herbert-Davies, MD
JW Pollock, MD
Jonathan Marsh, MD
Graham King, MD
on behalf of the Canadian Shoulder and Elbow Society (CSES)*

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Correspondence to:
P. Lapner
The Ottawa Hospital, General Campus
Box 502, W1648-501 Smyth Rd
Ottawa ON K1H 8L6
plapner@toh.ca

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We sought to compare methods of nonsurgical treatment of lateral epicondylitis in men and women older than 18 years to develop a guideline intended for orthopedic surgeons and other health care providers who assess, counsel and care for these patients. We searched Medline, Embase and Cochrane through to Mar. 9, 2021, and included all English-language studies comparing nonsurgical approaches. We compared physiotherapy versus no active treatment, corticosteroids versus placebo, platelet-rich plasma (PRP) versus placebo, and autologous blood injection versus placebo. Outcomes of interest were pain outcomes (visual analogue scale scores) and functional outcomes. We rated the quality of the evidence and strength of recommendations using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach. This guideline will benefit patients seeking nonsurgical intervention for lateral epicondylitis by improving counselling on nonsurgical treatment options and possible outcomes. It will also benefit surgical providers by improving their knowledge of various nonsurgical approaches. Data presented could be used to develop frameworks and tools for shared decision-making.

Nous avons voulu comparer les méthodes de traitement non chirurgical de l'épicondylite latérale chez des hommes et des femmes de plus de 18 ans pour créer une ligne directrice à l'intention des chirurgiens orthopédistes et autres professionnels de la santé qui évaluent, conseillent et soignent ces patients. Nous avons interrogé les réseaux Medline, Embase et Cochrane jusqu'au 9 mars 2021, et inclus toutes les études de langue anglaise qui comparaient des approches non chirurgicales. Nous avons comparé la physiothérapie à l'abstention de tout traitement actif, la corticothérapie au placebo, le plasma riche en plaquettes (PRP) au placebo et l'injection de sang autologue au placebo. Les paramètres d'intérêt étaient la douleur (échelle analogique visuelle) et le fonctionnement. Nous avons évalué la qualité des données probantes et la solidité des recommandations à l'aide de l'approche GRADE (Grading of Recommendations Assessment, Development, and Evaluation). Cette ligne directrice profitera aux patients qui cherchent une intervention non chirurgicale pour traiter une épicondylite latérale en améliorant les consultations sur les options thérapeutiques non chirurgicales et les résultats escomptés. Elle aidera aussi les chirurgiens orthopédistes en améliorant leurs connaissances sur différentes approches non chirurgicales. Les données présentées pourraient servir à mettre au point des cadres et des outils pour une prise de décision partagée.

Lateral epicondylitis is common, affecting 1%–3% of the population.[1] Nonoperative management is the mainstay of first-line treatment. Nonoperative treatment approaches may include physiotherapy, various types of injections and nonsteroidal anti-inflammatory drugs (NSAIDs).

The term "physiotherapy" itself may include a multitude of treatment options, including forearm/wrist extensor strengthening,[2] neuromobilization,[3] extracorporeal shock wave therapy,[4] massage,[5] laser therapy[6] and acupuncture.[7] The multitude of treatment options make interpretation of the literature challenging given that many studies compare one nonoperative treatment option with another (e.g., exercise v. ultrasonography),[8] or compare groups that received more than 1 treatment per group (e.g., ultrasonography + exercise).[9] As previous systematic reviews have pooled data from studies that compared various forms of physiotherapy in the intervention group[10] (e.g., extracorporeal

shock wave therapy[4] and microcurrent therapy[11]), deciphering the clinical effectiveness of specific nonoperative physiotherapy-based treatment options may be challenging. In addition, evidence-based recommendations may be confusing owing to the inconsistent quality of individual studies. The economic impact surrounding this treatment controversy is substantial, especially in health care systems with finite resources.

Another commonly used first-line intervention for lateral epicondylitis is injection treatment, including corticosteroids,[12] platelet-rich plasma (PRP),[13] autologous blood,[14] glycosaminoglycans,[15] botulinum,[16] prolotherapy[17] or glyceryl trinitrate.[18] Interpretation of the literature in this area has also been challenging, as some studies compared groups in which more than 1 treatment was administered,[19] and others compared different types of nonoperative treatment in the absence of a placebo control group.[20]

Clear guidelines for the nonoperative treatment of lateral epicondylitis are needed based on the best current evidence. This position statement provides recommendations for selection of nonoperative treatment interventions based on objective outcomes.

Methodology

The studies included in our meta-analysis[21] were identified by searching Medline, Embase and Cochrane databases from inception through to March 9, 2021, for randomized trials and other studies comparing nonsurgical approaches for the treatment of lateral epicondylitis in adults 18 years or older. Additional studies were identified from reviews. Substudies of previously reported trials or abstracts that lacked the required data for meta-analysis were excluded. The Canadian Shoulder and Elbow Society Guideline Management and Oversight Committee selected the outcomes of interest: functional outcomes (e.g., patient-rated tennis elbow evaluation) and pain outcomes (visual analogue scores). We rated the quality of the evidence and strength of recommendations using the Grading of Recommendations Assessment, Development, and Evaluation (GRADE) approach.

Recommendations

1. Patients with lateral epicondylitis seeking nonoperative intervention with a physiotherapy eccentric strengthening program should be counselled that pain and function are similar to no active treatment (*Strong*, *moderate*).
2. Patients should be counselled that injection treatments, including corticosteroids, PRP and autologous blood, provide similar pain and functional outcomes as placebo (*Strong*, *moderate*).
3. Based on current evidence, a best practice recommendation for nonoperative treatment of lateral epicondylitis does not support the use of exercise-based physiotherapy or injection treatment, including corticosteroids, PRP or autologous blood products. (*Strong*, *moderate*).

See Appendix 1 (available at www.canjsurg.ca/lookup/doi/10.1503/cjs.019221/tab-related-content) for definitions and Appendix 2 (available at www.canjsurg.ca/lookup/doi/10.1503/cjs.019221/tab-related-content) for interpretations of strong and weak recommendations.

All summary statements refer to nonsurgical treatment of lateral epicondylitis in the short and medium term (up to 1 yr), except when otherwise specified.

Exercise-based physiotherapy compared with no active treatment

The meta-analysis included exercise- or strengthening-based physiotherapy (9 studies, 673 randomized patients)[2,22–29] but excluded neuromobilization, extracorporeal shock wave therapy, massage, laser therapy and acupuncture. Physiotherapy with exercise/strengthening resulted in postintervention pain, as determined by visual analogue scale scores, that was not significantly different from no active treatment (mean difference –0.18, 95% confidence interval [CI] –0.63 to 0.27). Exercise-based physiotherapy did not result in superior patient-reported function (standardized mean difference –0.07, 95% CI –0.45 to 0.31) (Box 1).

Box 1: Summary statement 1, recommendations 1 and 3
Nonoperative treatment with physiotherapy, including a strengthening program but excluding neurostimulation, extracorporeal shock wave therapy, massage, laser therapy and acupuncture, was similar to no active treatment in lateral epicondylitis for the outcomes of
- overall patient-rated pain measures (*low level of evidence*), and
- overall patient-reported outcome measures for function (*moderate level of evidence*).

Corticosteroid injection compared with placebo

The meta-analysis to compare corticosteroid with placebo included 10 studies (694 randomized patients).[12–14,22,26,30–34] There was no significant difference between corticosteroid and placebo groups in visual analogue scale pain scores (mean difference –0.04, (95% CI –0.86 to 0.78) or in functional scores (standardized mean difference –0.09, 95% CI –0.4 to 0.22) (Box 2).

Box 2: Summary statement 2, recommendations 2 and 3
Corticosteroid injection was similar to placebo for the outcomes of
- overall patient-rated pain measures (*low level of evidence*), and
- overall patient-reported outcome measures for function (*low level of evidence*).

Platelet-rich plasma compared with placebo

Five studies compared the treatment effect of PRP (285 randomized patients).[13,35–38] Patient-reported visual analogue scale pain scores did not differ significantly between PRP and control groups (mean difference –0.10, 95% CI –0.72 to 0.53). Similarly, no differences were found between PRP and control groups in patient-reported function (standardized mean difference 0.15, 95% CI –0.17 to 0.47) (Box 3).

Box 3: Summary statement 3, recommendations 2 and 3
Platelet-rich plasma injection was similar to placebo for the outcomes of
- overall patient-rated pain measures (*moderate level of evidence*), and
- overall patient-reported outcome measures for function (*moderate level of evidence*).

Autologous blood compared with placebo

We pooled data from 3 studies (134 randomized patients).[14,35,39] There was no significant difference between the groups in visual analogue scale pain scores (mean difference 0.49, 95% CI –2.35 to 3.33) or function (standardized mean difference –0.07, 95% CI –0.64 to 0.50) (Box 4).

Box 4: Summary statement 4, recommendations 2 and 3
Autologous blood injection was similar to placebo for the outcomes of
- overall patient-rated pain measures (*moderate level of evidence*), and
- overall patient-reported outcome measures for function (*high level of evidence*).

Discussion

Our systematic review included studies comparing nonoperative interventions with no active treatment or with placebo for the management of lateral epicondylitis. Following a rigorous methodology, experts in elbow surgery reviewed the available literature.

A recent systematic review and meta-analysis by Karasanios and colleagues[40] compared exercise programs with a "wait and see" protocol. In a subgroup analysis, statistically (but not clinically) significant differences in patient-reported functional outcomes and pain scores were observed favouring the exercise group at both short- and long-term follow-up. The difference in results from the present review, which found no differences between groups, may be explained by the inclusion criteria. We excluded the study by Olaussen and colleagues[41] because NSAIDs were used in the treatment group. We also included 4 additional studies[2,23–25,27] that were not included in the meta-analysis by Karasanios and colleagues.[40]

In contrast to the present study, a systematic review by Lian and colleagues[42] showed that injected corticosteroids resulted in better pain outcomes than placebo in patients with lateral epicondylitis. However, the inclusion criteria in the latter study were not as restrictive as ours. Lian and colleagues[42] included a study that permitted rehabilitation exercises in the control group,[19] whereas we included only studies comparing corticosteroid injection to placebo. We also included additional studies that compared corticosteroid with a control condition.

The results of the present meta-analysis evaluating the effectiveness of pain and function following PRP were in keeping with the results of recent meta-analyses by Lian and colleagues,[42] Kim and colleagues[10] and Simental-Mendia and colleagues,[43] who reported no benefit with PRP compared to placebo.

Limitations

A limitation inherent in any meta-analysis relates to the inclusion criteria. We used strict inclusion criteria and did not include studies that compared different treatment approaches (e.g., corticosteroid v. PRP) or studies that used combined treatment approaches (e.g., physiotherapy and corticosteroid in the intervention group). Furthermore, only individual therapies were compared with no active treatment (or placebo), and combination therapies (e.g., physiotherapy, corticosteroid and NSAIDs together) were not evaluated. Our comparison of physiotherapy with no active treatment did include trials in the no active treatment group that permitted passive stretching and use of a band or a brace. However, we conducted an additional subgroup analysis that excluded these studies from the pooled analysis and we found no differences in patient-reported pain (mean difference 0.38, 95% CI –1.12 to 0.37) or function (mean difference 0.61, 95% CI –0.13 to 1.36) between groups. A further limitation lies in the long-term durability in all treatment options. Many trials included in the analysis reported on only short-term follow-up. An additional subanalysis of trials reporting results with a minimum 6-month follow-up did not change our findings.

The grading of outcomes was generally moderate owing mainly to the possibility of bias. In a few instances, grading was low owing mainly to low patient numbers and study heterogeneity.

Conclusion

Surgeons counselling patients on treatment options for the nonoperative management of lateral epicondylitis should be aware that there are similar patient-reported outcomes in the short and medium term for no active treatment, physiotherapy, corticosteroid, PRP and autologous blood. Our meta-analysis shows that the highest-quality evidence available does not support the use of exercise-based

physiotherapy, corticosteroid injections, PRP or autologous blood injections in the treatment of lateral epicondylitis. Further high-quality trials with longer-term follow-up should focus on forms of physiotherapy interventions other than exercise.

Affiliations: From the Division of Orthopaedic Surgery, The Ottawa Hospital, University of Ottawa, Ottawa, Ont. (Lapner, Alfonso, Pollock); the Orthopedic Trauma Surgery Clinic at Harborview, Seattle, Wash. (Hebert-Davies); the Pan Am Clinic, Winnipeg, Man. (Marsh); the Section of Orthopaedic Surgery, Department of Surgery, University of Manitoba, Winnipeg, Man. (Marsh); and the Roth|McFarlane Hand and Upper Limb Centre, St. Joseph's Health Care, Western University, London, Ont. (King).

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