Bloqueio do Nervo Supraescapular na Dor Crónica do Ombro: Uma Revisão

Suprascapular Nerve Block in Chronic Shoulder Pain: A Review

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Abstract

***Introduction*:** *The goal of this study was to find the existing evidence about the suprascapular nerve block in chronic shoulder pain.*

Methods: *The term "suprascapular nerve block" was searched at PubMed, in October 2015, with 156 analyzed articles. The inclusion criteria were experimental studies with non-continuous suprascapular nerve blocks in patients with chronic shoulder pain not surgery-related.*

Results: *After the application of the inclusion/exclusion criteria, 8 studies were selected: 7 randomized controlled trials and 1 case series. Of these trials, only 2 were placebo controlled with saline injection. The most frequent pathologies were adhesive capsulitis, hemiplegic shoulder pain and glenohumeral osteoarthritis. The procedures were guided by ultrasound, electromyography or anatomy landmarks and the most frequent drugs used were a mixture of bupivacaine and metilprednisolone. All the studies reported significant improvements in pain and range of motion scores ($p < 0.05$), which are analyzed.*

Discussion: *There are multiple variations among the studies, from the number of injections (1-3), the drugs used (with or without corticosteroid), the studied pathologies and the control groups. However, across all the studies there is a longitudinal improvement in patient's pain and range of motion scores.*

Conclusion: *Suprascapular nerve block may be an effective treatment in chronic shoulder pain. Additional quality studies are needed to find in which pathologies it may be useful and which are the most efficient injected drugs and treatment regime.*

***Keywords*:** *Chronic Pain; Nerve Block; Shoulder Joint; Shoulder Pain.*

Resumo

Introdução: O objetivo do presente estudo foi encontrar a evidência científica para o bloqueio do nervo supraescapular na omalgia crónica.

Métodos: O termo "suprascapular nerve block" foi pesquisado na PubMed em Outubro 2015, com 156 artigos analisados. Os critérios de inclusão foram estudos experimentais com bloqueios não contínuos dos nervos supraescapular em doentes com omalgia crónica não relacionada com cirurgia.

Resultados: Após a aplicação dos critérios de inclusão/exclusão foram selecionados 8 estudos: 7 estudos aleatorizados controlados e 1 série de casos. Destes estudos, apenas 2 eram controlados com placebo através da injeção de soro fisiológico. As patologias mais frequentes foram a capsulite adesiva, omalgia do doente hemiplégico e artrite glenoumeral. Os procedimentos foram guiados por ecografia, eletromiografia ou referências anatómicas e a combinação de fármacos mais frequentemente usada foi bupivacaina e metilprednisolona. Todos os estudos demonstraram melhorias significativas na dor e arco do movimento.

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Discussão: Existiu uma elevada variação entre os estudos, desde o número de injeções (1-3), ao tipo de fármacos usados (com ou sem corticoesteróide), as patologias abordadas e o uso de grupos controlo. Contudo, transversalmente a todos os estudos existiu uma melhoria da dor e arco do movimento dos pacientes submetidos a este procedimento.

Conclusão: O bloqueio do nervo supraescapular aparenta ser um tratamento eficiente na omalgia crónica. São necessários mais estudos adicionais para revelar as patologias em que poderá ser mais benéfico bem como para determinar o regime de tratamento e fármacos administrados.

Palavras-chave: Articulação do Ombro; Bloqueio Nervoso; Dor Crónica; Dor de Ombro.

Introduction

Shoulder pain is a complaint associated with a high morbidity, with an estimated one year prevalence in the general population between 5% - 47%.[1] In the last years, central nervous system modulation techniques have been emerging as pain management treatments, as a broader pain definition emerged.[2] The suprascapular nerve block (SSNB) has recently gained relevance, being associated with significant pain and function improvements. Even if its mechanism of action is not well defined, the most accepted theory is the suppression of the cortical representation of the painful stimulus, with pain improvements that last much longer than the half-life of the used anesthetic.[3]

The goal of this study was to find the existing evidence about suprascapular nerve block (SSNB) in chronic shoulder pain, including its efficiency, indications and side effects.

Methods

The term "suprascapular nerve block" was searched at PubMed, in October 2015, with 156 analyzed articles. The analytic process was done through the PRISMA statement guidelines (Fig. 1). The inclusion criteria were English written articles of trials with non-continuous suprascapular nerve blocks in patients with chronic shoulder pain, not surgery-related, and without age restrictions. The exclusion criteria were other concomitant nerve blocks (namely axillary nerve block).

Results

After the application of the inclusion criteria, 9 studies were selected, presented at Table 1: 7 randomized controlled trials,[1-7] 1 trial with own controls[8] and 1 case series.[9] Of these trials, only 2 were placebo controlled with saline injection. The most frequent pathologies were adhesive capsulitis, hemiplegic shoulder pain and glenohumeral osteoarthritis. The procedures were mostly guided by anatomy landmarks, followed by fluoroscopy and ultrasound. The most frequent drugs used were a mixture of bupivacaine and metilprednisolone. All the studies reported significant improvements in pain and range of motion scores in the SSNB groups ($p < 0.05$).

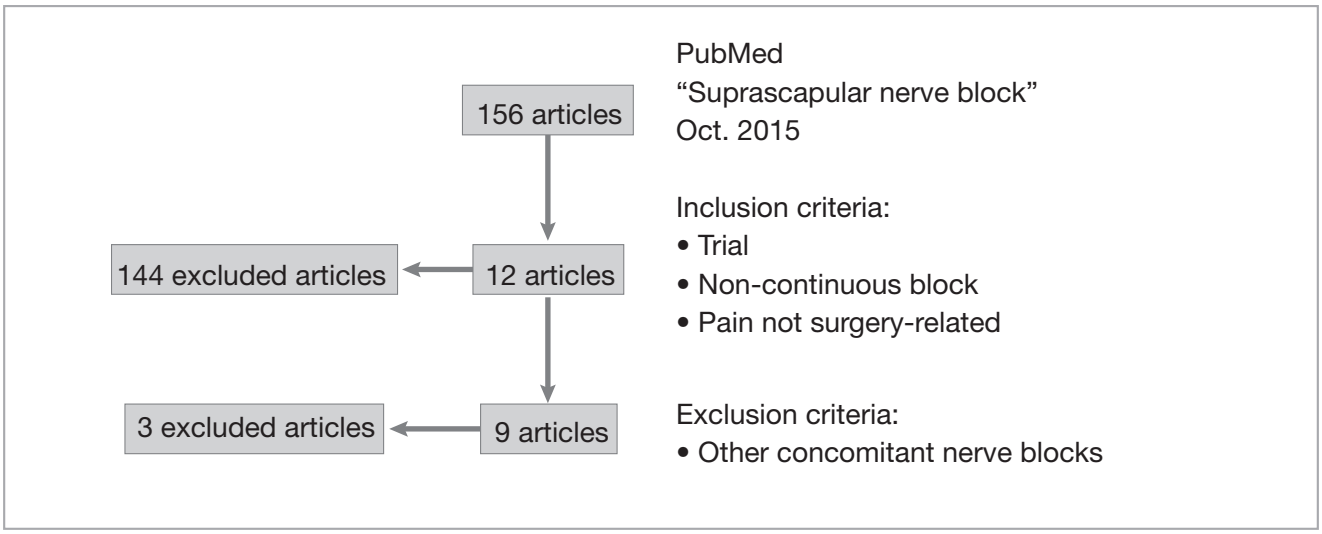

Figure 1 - Process of article selection.

Table 1 - Selected studies.

	Title	Type	Pathology	N	Eval.	Groups	Result
1	Wassef (1992)[3]	NC	Adhesive capsulitis with CRPS	9	4 weeks	I: Bupivacaine	Pain and range of motion improvement from baseline (p<0.05).
2	Kninç (2015)[4]	RCT	Adhesive capsulitis	41	1 month	I: Prilocaine + Triamcinolone + Physiotherapy C: Physiotherapy	Pain, activity and life quality improvement in intervention group (p<0.05)
3	Emery (1989)[5]	RCT	RA	20	1,4,12 weeks	I: Bupivacaine + Metilprednisolone C: Lidocaine + IA Metilprednisolone	Pain and range of motion improvement in intervention group (p<0.05)
4	Adey-Wakeling (2013)[8]	RCT	Hemiplegic shoulder pain	64	1,4,12 weeks	I: Bupivacaine C: Saline	Pain reduction both groups but higher in intervention group (p<0.05)
5	Jones (1999)[6]	RCT	Adhesive capsulitis	30	1,3,7,12 weeks	I: Bupivacaine + Triamcinolone acetonide C: Lidocaine + Triamcinolone intra-articular	Pain scores and range of abduction and external rotation improvement in intervention group (p<0.05)
6	Kamel G.(1993)[7]	RCT	RA	29	1,4,12 weeks	I: Bupivacaine + Adrenaline C: Bupivacaine + Adrenaline + Metilprednisolone	Pain and range of motion in both groups compared to baseline (p<0.001). No additional benefit of metilprednisolone.
7	Di Lorenzo (2006)[12]	RT - OC	Rotator cuff tendinitis	40	1,7,14,21, 28 days	I: Lidocaine 10cc Own controls	Pain, function and sleep improvement in intervention group (p<0.05)
8	Shanahan (2003)[13]	RCT	OA or RA	83	1,4,12 weeks	I: Bupivacaine + Metilprednisolone C: Saline (subcutaneous)	Pain, range of motion and disability improvement in intervention group (p<0.05)
9	Jeon (2014)[14]	RCT	Hemiplegic shoulder pain	30	1h, 1 week, 1 month	I: Bupivacaine C: Lidocaine + Triamcinolone intra-articular	Improvement in pain and range of motion in both groups compared to baseline (p<0.05). No statistical difference among groups.

RCT – randomized controlled trial; OC – own controls; NC – non controlled; OA - osteoarthritis; RA – rheumatoid arthritis; IA – intra-articular; CRPS – chronic regional pain syndrome.

Discussion

Procedure methodology

Most of the studies had injections guided by anatomic landmarks, without imagological confirmation, which is a major drawback since there is evidence that SSNB efficiency is higher when the anesthetic is deposited under the superior transverse scapular ligament.[10]

SSNB versus Other interventions

Comparing SSNB with other interventions, Jones and Emery demonstrated that SSNB was superior to conventional physiotherapy at 1month in patients with adhesive capsulitis and rotator cuff tendinitis, respectively.[6,7] Comparing SSNB with intra-articular corticosteroid injection, Kamel and Adey-Wakeling desmonstrated that SSNB was superior in pain intensity and range of motion at 1 month in rheumatoid arthritis and adhesive capsulitis patients, respectively,[7,8] while Wassei found no statistically significant differences at 1month in hemiplegic shoulder pain.[4] Paradoxically, SSNB seemed to be more effective in inflammatory shoulder pathologies rather than in hemiplegic shoulder pain. Since spasticity is a frequent pain etiology in hemiplegic patients,[11] we consider that futures studies approaching this kind of pain should assess if spasticity is a major contributor factor in these patients. In this context, it would also be interesting to compare the efficiency of SSNB with botulinum toxin.

Treatment protocols

Even if the use of a corticosteroid in the nerve block does not have a proper rationale in the SSNB (usually it is not a compressive neuropathy), most of the studies used a mixture of an anesthetic with a corticosteroid. However, Knınç *et al*, demonstrated that there was no additional benefit of using a corticosteroid in this nerve block.[4]

About the used anesthetic, even if bupivacaine, a long acting anesthetic, was the most used one, some studies used short acting anesthetics like lidocaine or prilocaine, keeping statistically significant results. There are currently no studies comparing the effect of short versus long acting anesthetics.

Even if some studies used multiple injections protocol,[3,12-14] most of the studies used a single injection regime, with satisfactory results. While waiting for a study to compare both regimes, we consider the single injection safer and more convenient to the patient, with additional injections being considered according to the evaluation of the respective cost/benefit ratio.

We may affirm that there is a benefit of SSNB in shoulder pain of different etiologies in terms of pain, range of motion and function, that seems to be superior to the classic therapeutic modalities (physiotherapy with additional NSAID/analgesics).

Limitations of this review

The conclusions of this review were impaired by a small number of studies, of a poor quality (only two randomized controlled trials placebo-controlled), mixing results from diversified pathologies.

Conclusion

Preliminary studies show that SSNB may be an effective treatment in chronic shoulder pain. Additional quality studies are needed to define its mode of action and indications, as well as the most efficient injected drugs and treatment regimes.

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