Systematic Review: Can Botulinum Toxin Be Recommended As Treatment for Pain in Myofascial Syndrome?

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Myofascial pain syndrome (MPS) may have an intrinsic muscle spasm component. Aim: Since botulinum toxin has been successfully used to reduce hypertonicity in several neurological disorders, we analyzed the efficacy of botulinum toxin A or B in reducing pain in MPS.

Methods: We performed a systematic review through an electronic search in MEDLINE, EMBASE, and Cochrane Library Plus. All clinical trials of botulinum toxin and regional pain were selected. In addition, the abstracts of the ACR and EULAR meetings in the previous 3 years were searched manually. The studies identified were reviewed and analyzed by 2 independent reviewers.

Results: Eight studies met the inclusion criteria. The methodological quality was generally low. Botulinum toxin was compared to saline solution (6 studies), to steroids (2 studies), and to lidocaine and dry needle (1 study arm). The population studied included persons with neck pain (n=3), low back pain (n=2), piriformis syndrome (n=2), several trigger points (n=1), and healthy volunteers in whom pain was provoked (n=1). Botulinum toxin showed a certain advantage over saline solution and steroids in pain control. A meta-analysis of the 3 studies with efficacy measures that could be combined showed a weighted mean difference in pain on a 0-10 visual analogue scale of -2.72 (95% CI, -3.86 to -1.58). However, botulinum toxin showed no advantage over lidocaine (P=0.016).

Conclusions: Currently, there is insufficient evidence to confirm the real efficacy of botulinum toxin A and B in the treatment of MPS. Given the high cost of botulinum toxin, long-term high quality studies are required.

Key words: Botulinum toxin. Myofascial syndrome. Systematic review. Meta-analysis.

Revisión sistemática: ¿es recomendable el empleo de toxina botulínica como tratamiento del dolor en el síndrome miofascial?

El dolor miofascial tiene un posible componente de contractura muscular. Objetivos: Dado que la toxina botulínica ha resultado beneficiosa en enfermedades asociadas a hiper tonía, se quiso evaluar la eficacia de la toxina botulínica en la reducción del dolor en el síndrome miofascial (SM).

Métodos: Se realizó una revisión sistemática con búsqueda en Medline, EMBASE y Cochrane Library Plus de todos los ensayos clínicos de toxina botulínica en dolor regional. Además, se efectuó una búsqueda manual entre los resúmenes de los congresos del ACR y EULAR de los últimos 3 años. Los estudios seleccionados fueron revisados y analizados de forma independiente por 2 revisores.

Resultados: Ocho estudios cumplían los criterios de inclusión. La calidad metodológica general fue baja. Toxina botulínica se comparó frente a solución salina fisiológica en 6 estudios, frente a esteroides en 2 y frente a lidocaína y aguja seca en 1 brazo de 1 estudio. La población estudiada incluyó cervicalgia (n=3), lumbaralgia (n=2), síndrome piriforme (n=2), puntos gatillo varios (n=1) y voluntarios sanos a los que se provocaba dolor (n=1). Toxina botulínica mostró una cierta ventaja sobre placebo y corticoides. Un metaanálisis de los 3 estudios con medidas de eficacia agrupables dio como resultado una diferencia media ponderada en una escala visual analógica de dolor de 0-10 de -2.72 (intervalo de confianza del 95%, -3.86 a -1.58). Sin embargo, toxina botulínica no mostró superioridad frente a lidocaína (p > 0.016).

Conclusiones: La evidencia en esta revisión no permite confirmar la efectividad de toxina botulínica A o B en el tratamiento del SM. Son necesarios estudios rigurosos, de
mayor calidad y a largo plazo dado el alto coste de la toxina botulínica.

**Palabras clave:** Toxina botulínica. Síndrome miofascial. Revisión sistemática. Metaanálisis.

**Introduction**

The myofascial pain syndrome (MPS) is defined as muscle pain generally localized to the scapular or pelvic areas and is characterized by augmented tone and muscle rigidity, secondary to the contraction of muscle bands, that with digital pressure develop intense, localized pain as well as pain at a distance, a situation that is referred to as “trigger point.” It constitutes an important motive of consultation in the primary care setting, in rheumatology and in pain treatment units. In fact, it is estimated that between 30% and 85% of patients in pain treatment units are there due to MPS. Its pathogenesis is not conveniently clear. Though it has been observed that muscle spasm or contraction is present at trigger points, both electric activity and histology are almost always normal. On the other hand, it has an unsatisfactory response to medical treatment and physiotherapy. Botulinic toxin inhibits the muscle contraction by blocking the liberation of acetylcholine to the neuromuscular space and, therefore, produces muscle relaxation in the region of the injected muscle. Since more than a decade ago, it is employed both in adults and children with neurologic disorders that produce spasm, hypertonia and/or muscle dystonia. The botulinic toxin has demonstrated a reduction in pain and an improvement in muscle function, increasing the functional capacity of many patients with different neurologic problems. Because MPS evolves with pain summed to a probable component of sustained muscle contraction it was considered that botulinic toxin could be beneficial in its treatment. In daily practice, this drug is employed more every day, in spite of, at least up to this date, the lack of overwhelming evidence that recommends its use in MPS. Our objective was to determine, if possible, the efficacy of botulinic toxin A or B in the treatment of MPS and, if the contrary was true, to identify the degree of evidence for a recommendation. To that effect, that include establishing study selection criteria, a search strategy, and a systemic data collection.

**Selection Criteria**

By study type we decided to include randomized, controlled clinical trials. Regarding the number of participants, it is evident that MPS is a poorly defined pathology. Because of this it was decided that studies which concerned adult patients with MPS would be included, but also those of patients with regional pain of cervical, scapular, lumbar or gluteal localization, including the pyriform syndrome. Cervical pain and chronic headache due to whiplash were excluded, because those are patients normally followed by traumatology reason why patients with temporomandibular affection were also excluded. Regarding the type of intervention, studies that compared botulinic toxin, A or B, in any preparation (with saline solution or combined with anesthetic) applied intramuscularly, versus placebo (saline solution, dry needle) lidocaine or steroids, were included. We accepted studies with conterventions, only if they were applied to both groups similarly. By types of outcome measures, studies that measured the reduction in pain by any means, preferably the Visual Analog Scale (VAS) of the physician or the patient, by pain meter or through the patients or physicians global assessment, were selected.

**Search Strategies**

Searches of Medline (1966-2005), EMBASE Drugs and Pharmacology (1991-2005), and Cochrane Library Plus “All EBM Reviews” (Cochrane DSR, ACP Journal Club, DARE, and CCTR) were conducted and cross-referenced by 2 researchers (IJU/CAP) in an independent manner. The time limit of the search was May 2005. Additionally, a manual search of the abstracts presented at the American College of Rheumatology (ACR) and EULAR meetings of the last 3 years were done. Table 1 show the complete strategy used.

**Search Methodology**

Citations were introduced and manager in Procite 5.1 and were reviewed by title and abstract by 2 independent reviewers (CAP/IJU), with consensus in the inclusion of each pair and the dissolution of the incongruities of a third researcher (LC). We recovered all articles that by analysis of the abstract seemed to comply with the inclusion criteria or, in those without
an abstract, those in which the title suggested that the criteria were met. All of the recovered studies were evaluated by the independent pair and the data was concentrated in ad hoc data collection sheets, that had been previously piloted and in which Jadad’s quality criteria of the studies was met, as well as the number of patients and centers involved, inclusion and exclusion criteria, randomization methods, interventions, and outcome measures. The collected data was introduced afterwards in the Review Manager 4.2.7 software.

TABLE 1. Search Strategy Used in the Systematic Review

<table>
<thead>
<tr>
<th>Number</th>
<th>Text</th>
<th>Limits</th>
<th>Total References</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>Muscle pain</td>
<td>Randomized controlled trial</td>
<td>1177</td>
</tr>
<tr>
<td>#2</td>
<td>Low back pain</td>
<td>Randomized controlled trial</td>
<td>663</td>
</tr>
<tr>
<td>#3</td>
<td>Regional pain</td>
<td>Randomized controlled trial</td>
<td>495</td>
</tr>
<tr>
<td>#4</td>
<td>Myofascial pain syndrome</td>
<td>Randomized controlled trial</td>
<td>288</td>
</tr>
<tr>
<td>#5</td>
<td>Neuropathic pain</td>
<td>Randomized controlled trial</td>
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</tr>
<tr>
<td>#6</td>
<td>Shoulder pain</td>
<td>Randomized controlled trial</td>
<td>140</td>
</tr>
<tr>
<td>#7</td>
<td>Cervical pain</td>
<td>Randomized controlled trial</td>
<td>105</td>
</tr>
<tr>
<td>#8</td>
<td>Myofascial pain</td>
<td>Randomized controlled trial</td>
<td>99</td>
</tr>
<tr>
<td>#9</td>
<td>Regional pain syndrome</td>
<td>Randomized controlled trial</td>
<td>27</td>
</tr>
<tr>
<td>#10</td>
<td>#1 or #2 or #3 or #4 or #5 or #7 or #8 or #9</td>
<td>Randomized controlled trial</td>
<td>2738</td>
</tr>
<tr>
<td>#11</td>
<td>Botulinum toxin</td>
<td>Randomized controlled trial</td>
<td>212</td>
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<tr>
<td>#12</td>
<td>Botox</td>
<td>Randomized controlled trial</td>
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<td>#13</td>
<td>#11 or #12</td>
<td>Randomized controlled trial</td>
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<tr>
<td>#14</td>
<td>#10 and #13</td>
<td>Randomized controlled trial</td>
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</tr>
<tr>
<td>#15</td>
<td>#14 not stroke</td>
<td>Randomized controlled trial</td>
<td>34</td>
</tr>
<tr>
<td>#16</td>
<td>#15 not tension-type headaches</td>
<td>Randomized controlled trial</td>
<td>29</td>
</tr>
<tr>
<td>#17</td>
<td>#16 not dystonia</td>
<td>Randomized controlled trial</td>
<td>18</td>
</tr>
<tr>
<td>#18</td>
<td>#17 not anismus</td>
<td>Randomized controlled trial</td>
<td>17</td>
</tr>
</tbody>
</table>

In EMBASE

1. Myalgia Humans | 7812
2. Low back pain Humans | 2820
3. Neck pain Humans | 999
4. Neuropathic pain Humans | 931
5. Shoulder pain Humans | 809
6. Regional pain Humans | 428
7. Myofascial pain Humans | 396
8. Randomized controlled trial | 157
9. Botulinum toxin A | 2986
10. 1 or 2 or 3 or 4 or 5 or 6 or 7 | 13 608
11. 10 and 8 | 157
12. 11 and 9 | 10
Metaanalysis

We planned to perform a metaanalysis in those situations in which homogeneity of the outcome measures was observed, as well as in interventions and study populations. To carry out the metaanalysis we used differences in weighed means in a random effects model. The heterogeneity was evaluated by the statistical test $I^2$.

Results

The search in EMBASE and Medline produced 38 references, of which 14 were duplicates between databases. The search in the Cochrane Library resulted negative, both for "botulinum toxin and myofascial syndrome" as for "botox and myofascial syndrome." The search in meeting abstracts produced 2 results, one of which allowed the recuperation of an article not identified previously because it was published posterior to the date in which the Medline and EMBASE database search was done, but sufficiently important to be considered for the review. In all, 26 articles were analyzed, plus another 2 that were localized by the secondary search through the articles. Of the 28 articles analyzed, 11 compiled with the inclusion criteria, but in one was found in triplicate, so we included only the most recent reference, and a EULAR abstract was substituted for the complete article, which accounts for 8 included studies (Figure 1).

Study Description

The 8 included studies were double blind clinical trials (n=5), a simple blind (n=1), and crossed (n=2). The localization of MPS in which the response to botulinic toxin has been evaluated are: cervical pain (n=3), chronic lumbar pain (n=2), pyriform syndrome (n=2), various trigger points (n=1), and 1 in healthy volunteers in whom pain was induced. The dose of botulinic toxin injected varied enormously between studies, from 12.5 units to approximately 200. The controls used were mainly saline solution (n=6) and steroids (n=2 [triamcinolone and methylprednisolone]). One study showed a control arm with lidocaine. The median age of the study population is around 40 years, except in studies with healthy volunteers, who were in their twenties. The number of patients was low in all of the studies. The majority of articles were reviews or letters to the director, not formal studies, or had not established the type of pain specified as an inclusion criteria (Table 2).

Methodologic Quality of the Included Studies

The methodologic quality of the 8 included studies is moderate to poor. Two studies, Foster et al and Wheeler et al, both in 2001, surpassed the 3 value (moderate) in the Jadad quality scale for clinical trials. The rest of the studies did not describe the method of randomization or masking, or the blinding method, or were not analyzed as intention to treat, which reveals a low general quality of the studies.

Results

Table 3 shows in detail the characteristics of the 8 studies included. For statistical analysis effects, only 4
had the minimum requirements to be evaluated, this 
when detailing the results in a numeric fashion and not 
only with the $P$-values.\textsuperscript{13,15,16,19} This notwithstanding, 
only 3 studies had the same measures \textsuperscript{3} that were the 
ones finally metaanalyzed \textsuperscript{13,15,16} (Table 4). The 
metaanalysis showed Benedit of botulinic toxin A, both 
when compared to saline solution or needle \textsuperscript{13,16} or when 
compared to methylprednisolone,\textsuperscript{15} being the median 
weighed difference before and after treatment in a VAS 
of pain from 0 to 10 of $-2.42$ (95\% confidence interval 
[CI], $-3.54$ to $-1.30$). Curiously, the difference in 
efficacy of the botulinic toxin when compared to 
methylprednisolone is higher than when the control is 
saline solution. In the Kamanli et al\textsuperscript{13} study, there is no 
superiority in the botulinc toxin against lydocaine 
($P > 0.016$). If this study arm is included in the 
metaanalysis, the median weighed difference in favor of 
the botulinic toxin disappears ($-1.3$ [–3.67 to 1.42]) (Table 5). The Wheeler et al\textsuperscript{19} study, of good quality 
(Jadad of 4), did not find significant differences between 
the botulinic toxin and saline solution in a mixed pain 
scale and function of 0 to 100 (median difference 
between active and control of 36.2 [95\% CI, 26.9–45.4], 
in favor of placebo), nor in the patients global 
assessment by Likert scale ($-0.30$ [–1.30 to 0.70]), nor 
in the physicians global ($-0.20$ [–1.00 to 0.60]), nor in 
the pain meter punctuation (0.00 [–1.37 to 1.37]).

**Discussion**

Certain drugs are frequently used in clinical practice 
even when information about their benefit is limited. In 
our case, the clinical trials regarding the use of botulinic 
toxin that were analyzed are scarce. There are also, 
among the selected studies only a few that have 
expressed their results in a clear enough matter to be 
analyzed in an objective form. For example, 4 of the 
included studies\textsuperscript{16,18,20,33} conclude that botulinic toxin is 
more effective than saline solution or triamcynolone in 
MPS. None of the studies, through their results, permit 
an objective interpretation, nor are they metaanalizable. 
This casts doubt on the effectiveness of real treatment. 
On the other hand, studies done in general are characterized

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**TABLE 2. Excluded Studies and Cause**

<table>
<thead>
<tr>
<th>Studies</th>
<th>Exclusion Motive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquadro and Borodic, 1994</td>
<td>Review, not clinical trial</td>
</tr>
<tr>
<td>Balague, 1996</td>
<td>Review, not clinical trial</td>
</tr>
<tr>
<td>Barwood et al, 2000\textsuperscript{a}</td>
<td>Concerns the action of botulinic toxin A in children with neurologic disease</td>
</tr>
<tr>
<td>Biersch et al, 2002\textsuperscript{a}</td>
<td>Experimental study. Evaluates nociceptive receptors in humans responding to botulinic toxin</td>
</tr>
<tr>
<td>Boyd, 2003\textsuperscript{a}</td>
<td>Evaluation study of general mobility, hip dysfunction and its plegieid to surgery in children with infantile paralysis treated with botulinic toxin A</td>
</tr>
<tr>
<td>Carrasco et al, 2003\textsuperscript{a}</td>
<td>Descriptive retrospective study</td>
</tr>
<tr>
<td>De Andrés, 2004\textsuperscript{a}</td>
<td>Descriptive retrospective study</td>
</tr>
<tr>
<td>De Andrés et al, 2004\textsuperscript{a}</td>
<td>Open, uncontrolled study</td>
</tr>
<tr>
<td>Freund and Schwartz, 2000\textsuperscript{a}</td>
<td>Use of botulinic toxin A in patients with cervical pain secondary to whiplash</td>
</tr>
<tr>
<td>Freund and Schwartz, 2002\textsuperscript{a}</td>
<td>Headache of osteomuscular origin</td>
</tr>
<tr>
<td>Grazo et al, 1995\textsuperscript{a}</td>
<td>Measures spasticity and rigidity, but not pain</td>
</tr>
<tr>
<td>Hyman et al, 2000\textsuperscript{a}</td>
<td>Study of hip spasticity</td>
</tr>
<tr>
<td>Mahowald, 2004\textsuperscript{a}</td>
<td>Refers to intrarticular botulinic toxin effectivity in chronic refractory pain</td>
</tr>
<tr>
<td>Nixdorf et al, 2002\textsuperscript{a}</td>
<td>Estudio de efectividad de la toxina botulinica para dolor crónico mandibular</td>
</tr>
<tr>
<td>Paulson 1996\textsuperscript{a}</td>
<td>Evaluation of the effectiveness of botulinic toxin in fibromyalgia</td>
</tr>
<tr>
<td>Porta, 1999\textsuperscript{a}</td>
<td>Duplicated in Porta 2000 (included)</td>
</tr>
<tr>
<td>Porta, 1999\textsuperscript{a}</td>
<td>Duplicated in Porta 2000 (included)</td>
</tr>
<tr>
<td>Rollnick et al, 2001\textsuperscript{a}</td>
<td>Effectivity in tension headache, not cervical pain</td>
</tr>
<tr>
<td>Sarifakioglu and Sarifakioglu, 2004\textsuperscript{a}</td>
<td>Evaluation of the application of ice as analgesia in the site of application of botulinic toxin</td>
</tr>
</tbody>
</table>

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**Resumat Clín. 2006;2(4):173-82 177**
<table>
<thead>
<tr>
<th>Study</th>
<th>Methods</th>
<th>Participants</th>
<th>Interventions</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chesire et al, 1994*</td>
<td>Clinical trial, crossed, controls, 8 weeks. Self financing</td>
<td>n=6 (median age, 43; 67% women). Inclusion criteria: cervical paraspinal pain or in scapular gridle. Exclusion criteria: diffuse pain or neurologic deficit</td>
<td>Botulinic toxin A 50 U in 4 mL of saline IM (n=6) on 2 separate occasions for 8 weeks. IM saline (n=6) 2 twice with 8 weeks in between applications</td>
<td>Of the 6 patients, 4 responded, one of them in the 5 variables and 3 patients in 4 variables</td>
<td>No abandonment of treatment. No adverse effects. Limitations: low number of patients. Short follow-up. Quality: Jadad 2</td>
</tr>
<tr>
<td>Porta, 2000*</td>
<td>Clinical trial, randomized, simple blind, 60 days. Self financing</td>
<td>n=40 (median age 47, 68% women). Inclusion criteria: chronic myofascial pain with chronic muscle spasm in the pterygoid, lipsomas or anterior scalenus muscles &gt;6 months and &lt;2 years. Exclusion criteria: dysautonomia, cervical osteoarthritis, retropatellar pain, or chronic low back pain.</td>
<td>Botulinic toxina A 60-100 U + saline solution 2 mL + bupivacaine 0.5% (n=20). Methylprednisolone 80 mg +2 mL bupivacaine (n=20).</td>
<td>VAS (0 to 10) evaluation 30 and 60 days. After 30 days neither botulinic toxina nor methylprednisolone showed any significant difference when compared to baseline. After 60 days botulinic median –2.5 (n=10) 0.0005 when compared to methylprednisolone</td>
<td>No patients abandoned treatment. Adverse events: in 9 patients there was an increment or recurrence of pain, in 2 dysphonia lasting 2-3 hours, anterior scalenus weakness in legs (group unknown), 19 patients pain upon extension, 3-4 days postinjection. Limitations: adverse events is not segregated by group. Jadad: 2</td>
</tr>
<tr>
<td>Childers et al, 2002*</td>
<td>Clinical trial, crossed, double blind, 20 weeks. Self financing</td>
<td>n=9 (median age, 42; 81% women). Inclusion criteria: Buttock pain, hip and coger extremity (myofascial pain syndrome) of ≥3 months, pain ≥5/10 in VAS in 3 consecutive evaluations. Exclusion criteria: pregnancy, lumbar disk hernia, root compromise, pathologist EMG</td>
<td>Botulinic toxin A: 100 U i.m. (n=9) 1 application Solution saline (dose not specified) (n=9), in both cases the intervention was fluoroscopically guided as well as electromyographically</td>
<td>Weekly for 10 weeks. VAS improved in a few patients, with botulinic and intensity as well as spasm improved, but not distress</td>
<td>Patient abandonment (1/10). Adverse effects not mentioned. Limitations: crossed trial with difficult analysis, without a description of adverse effects, without a description of placebo dose applied. Number of patient cointerventions was not specified. Jadad: 3 (poor)</td>
</tr>
<tr>
<td>Wheeler, 2008*</td>
<td>Clinical trial, randomized, double blind, 4 months. Financing: Allergan Corp</td>
<td>n=33 (no demographic description). Exclusion criteria: refractory pain, unilateral, cervicothoracic, paraspinal, myofascial. Exclusion criteria: less than 23 years of age, diffuse pain, pregnancy, allergy to botulinic, fibromyalgia, illness that interferes with neuromuscular transmission, systemic inflammation, steroid infiltration in trigger point in the 4 previous weeks</td>
<td>Botulinic toxin A: 50 U in 2 mL saline. Botulinic toxin 100 U in 2 mL of saline. Placebo = saline solution. Eleven patients received a second injection of botulinic toxin in the same region and 2 patients in an adjacent region</td>
<td>Basil, 1, 3, 6, 9 weeks and 12, 15, and 18 months. There was no significant difference among the 3 groups in the global evaluation of pain nor in pain measured by the pain meter</td>
<td>Abandonment: none. Adverse effect: 2 patients with paresthesias and a heavy sensation on the ipsilateral arm, 3 patients with a discrete discomfort in site opposing the injection, 2 changes in the site of pain after the injection. Limitations: low patient number, lack of Standard deviation in the measurements, no discrimination by gender. Jadad: 2</td>
</tr>
<tr>
<td>Foster, 2004*</td>
<td>Clinical trial, randomized, double blind, 8 weeks. Self financing</td>
<td>n=35 (mean age, 46, 57% women). Inclusion criteria: lumbar pain ≥6 months, uni or bilateral. Exclusion criteria: lumbar pain &lt;6 months, ≥18 years of age, inflammatory illness</td>
<td>Botulinic toxina A 40 U IM.</td>
<td>Three and 8 weeks. Visual analog scale 0-100 and OLBPQ (0-5 item postinjection pain in 2 patients with saline). Limitations: low patient number. Amount of saline used is not specified. Jadad: 5 (very good quality)</td>
<td></td>
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</tbody>
</table>

Continued next page
by a poor registry of adverse effects and a reduced number of patients. The metaanalysis shows a statistical difference in favor of botulinic toxin against saline solution or methylprednisolone, but not if lidocone is included as a control. Apart from the metaanalysis, a study of great quality, there was no evidence of an advantage of botulinic toxin over saline solution. It has to be said that there is no evidence of a publication tendency, because there is the same number of studies in favor of as against the intervention.

Weaknesses in our study have a basis on the limitations of primary studies in which it is based, especially due to the general low quality and the low number of patients included. It is true that the comparative characteristics chosen, it cannot be stated, alter this review, that employing botulinic toxin A or B in MPS can produce

### Table 3. Included Studies (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Methods</th>
<th>Participants</th>
<th>Interventions</th>
<th>Results</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheeler, 2001*</td>
<td>Clinical trial, randomized, double blind, controlled, 4 months, Self financing</td>
<td>N=50 (mean age, 43; inclusion criteria: chronic cervical pain in the last 3 months, without mental or psychological problems. Exclusion criteria: other illness, without muscular disease</td>
<td>Botulinic toxin A: 331 U (mean) i.m., once a week for 4 months (n=25). Saline solution: once a week for 4 weeks (n=25).</td>
<td>Pain reduction in 73% of patients with botulinic toxin A at 3 weeks, 56% at 8 weeks</td>
<td>Abandonments: 4 patients with botulinic toxin A and 5 with saline. Adverse effects: muscle weakness, pain at the site of injection, cold symptoms. No specification as to which episode. Limitations: does not distinguish number of patients according to outcome. (Jadad: 4)</td>
</tr>
<tr>
<td>Voller, 2003**</td>
<td>Clinical trial, randomized, double blind, 28 days, Financed by Allergan Inc.</td>
<td>N=46 (mean age, 28; 56% women). Inclusion criteria: to establish the analgesic efficacy of botulinic toxin on C and A fibers. Exclusion criteria: healthy volunteers, right handed, between 19 and 40 years of age, no medications including analgetics, 4 weeks prior to start</td>
<td>Botulinic toxin A: 50 U intradermic in 4 points of the forearm, on one occasion. Saline solution: 0.12 mL in 4 points of the forearm, on one occasion</td>
<td>3.14, 14 days. No significant differences between groups in pain due to heat, tolerant to pain and VAS posterior to the capsaicin test</td>
<td>Abandonments: none. Adverse effects: none. Limitations: the studied population is not specified, no crude results in results section (nor means nor percentages). (Jadad: 2)</td>
</tr>
<tr>
<td>Kamali, 2005*</td>
<td>Clinical trial, simple blind, 4 weeks, self financing</td>
<td>N=29 (age not specified, 21 women and 8 men). Inclusion criteria: patients with SM in a physiotherapy program</td>
<td>Lydocaine 0.5%-1 mL: 4 weeks. Botulinic toxin A: 10-20 U intradermic in trigger point, simple needle, one application.</td>
<td>botulinic toxin was superior to 2 comparators in anxiety and depression scales. Lydocaine was effective in VAS pain being botulinic the most expensive procedure</td>
<td>Abandonments: not described. Adverse effects in the 3 groups: cold or burning sensation, 50% paresthesia, 30% fatigue, 15.6%, muscle pain, 17%, headache, 10%, and malaise predominated in 50% with dry needle. Limitations: age is not clear in the study group. (Jadad: 1)</td>
</tr>
</tbody>
</table>

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*FADIR test: prolongation of the Achilles tendon reflex with a fixed leg, adduction and internal rotation of at least 1.26 msg.
better results than non steroidal antiinflammatory drugs or muscle relaxants, due to the lack of direct physical comparisons confronting other interventions apart from parenteral.

Conclusions

– Implications for practice. This systematic review does not constitute sufficient evidence to confirm the effectivity of botulinic toxin. The poor quality of the studies, the inadequate size of the sample and the lack of trial replication make it impossible to draw conclusions.

– Implications for research. There is an important necessity to do methodologically strict studies that describe the real effectivity of the botulinic toxin in MPS.

Recommendations

The existing evidence does not allow us to recommend or contraindicate the use of botulinc toxin A or B in the treatment of MPS of any localization. It is necessary to do prospective studies with a larger number of patients and an appropriate design. Grouping the patients with MPS by localization, localizing the muscles to be injected by ecography and comparing in a crossed manner the botulinic toxin with local anesthetic without postinjection physiotherapy will help to know if botulinic toxin A or B is really effective. The authors believe that these studies are needed due to the high cost of botulinic toxin.

References


TABLE 5. Efficacy Metaanalysis of Botulinic Toxin Alter One Week Versus Any Comparator in Myofascial Pain Syndrome

<table>
<thead>
<tr>
<th>Study or Subcategory</th>
<th>N</th>
<th>Botulinic Toxin Mean ±SD</th>
<th>N</th>
<th>Mean Control ±SD</th>
<th>WMD (Random)</th>
<th>Weight, %</th>
<th>WMD (Random) 95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control: placebo</td>
<td>9</td>
<td>-1.74±2.26</td>
<td>9</td>
<td>0.23±2.77</td>
<td></td>
<td>22.49</td>
<td>-1.51 (3.85 to 0.83)</td>
</tr>
<tr>
<td>Control: methylprednisone</td>
<td>20</td>
<td>-5.0±0.30</td>
<td>20</td>
<td>-2.5±0.70</td>
<td></td>
<td>27.60</td>
<td>-3.00 (3.33 to 2.67)</td>
</tr>
<tr>
<td>Control: lidocaine</td>
<td>9</td>
<td>-3.41±1.04</td>
<td>10</td>
<td>4.95±1.67</td>
<td></td>
<td>26.3</td>
<td>1.54 (0.30-2.87)</td>
</tr>
<tr>
<td>Control: lydocaine</td>
<td>9</td>
<td>-3.41±1.04</td>
<td>10</td>
<td>4.95±1.67</td>
<td></td>
<td>26.3</td>
<td>1.54 (0.30-2.87)</td>
</tr>
<tr>
<td>Control: placebo</td>
<td>47</td>
<td>100.00</td>
<td>49</td>
<td>100.00</td>
<td></td>
<td>100.00</td>
<td>-1.13 (3.67 to -4.44)</td>
</tr>
</tbody>
</table>

Heterogeneity test: χ²=0.00; df=1 (P=0.99), %I²=0%
Total effect test: Z=1.97 (P=0.05)

In favor of toxin

In favor of control

*WMD indicates weighted median difference; IC, confidence.