Реабилитационная медицина в неврологии: пример ботулинотерапии как доказанного метода улучшения исходов

проф. Ахмадеева Л.Р.
Башкирский медуниверситет
www.ufaneuro.org

«Реабилитация должна занимать центральное место во все времена.

Люди, работающие в здравоохранении, должны уделять ***столько же внимания*** функциональной активности, социальным ролям и дистрессу, сколько они уделяют *диагностике и лечению заболевания*.

Процессы реабилитации должны идти параллельно медицинской (включая хирургическую и психиатрическую) помощи все время во всех учреждениях»

Rehabilitation – a new approach
Derick Wade,
Editor, *Clinical Rehabilitation, 2015*

Миссия Союза реабилитологов России

- Медицинская реабилитация является неотъемлемым компонентом лечебного процесса и представляет собой многогранный комплекс мероприятий, призванных повысить **эффективность** лечения и качество жизни пациента.
- Основным критерием эффективности медицинской реабилитации является не объем оказанной медицинской помощи, а **уровень достигнутых функциональных возможностей** за время, отведенное для проведения лечения, *самостоятельность и социальная активность пациента.*

https://rehabrus.ru/36/mission.html

Стандарты медико-санитарной помощи, утвержденные Минздравом России и зарегистрированные в Минюсте России (9), **включающие использование препаратов ботулинического нейропротеина**:

детские церебральные параличи
мышечные дистонии (детям и взрослым)
рассеянный склероз
эссенциальный тремор
болезнь Паркинсона

МООСБТ

Межрегиональная общественная организация

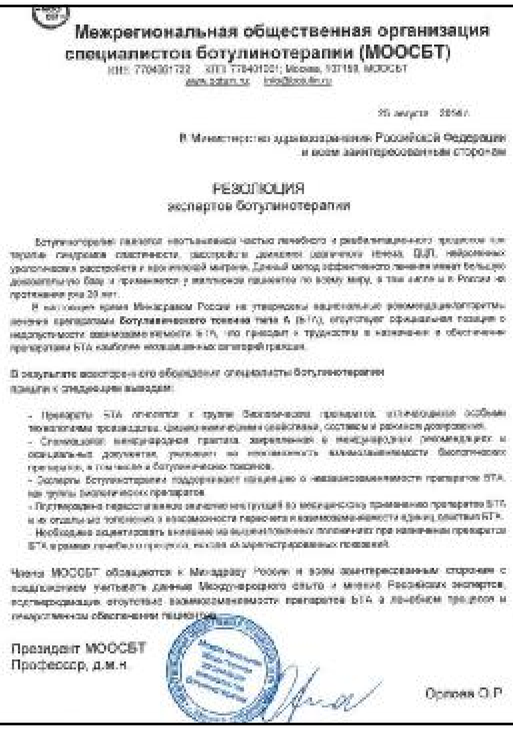
СПЕЦИАЛИСТОВ БОТУЛИНОТЕРАПИИ

Clostridium botulini - Gram (+) **анаэробная палочка, синтезирующая** 8 **серологически различных нейротоксинов** (**A**, B, C1, D, E, F, G **и H**)

В клинической практике используются только серотипы A и B

Белковые комплексы нейротоксинов различных серотипов содержат три вида белка:

- **Нейротоксин массой** 150 **кДа (все)**
- **Нетоксичные вспомогательные белки**
  - **-Гемагглютинин A**
  - **-Нетоксичный белок, не являющийся гемагглютинином**



Межрегиональная общественная организация специалистов ботулинотерапии (МООСБТ)

РЕЗОЛЮЦИЯ

экспертов ботулинотерапии

Президент МООСБТ
Профессор, д.м.н

Орлова О.Р.

В неврологии в мире широко используются

- **Тип А**
  - Ботокс = онаботулотоксин А
  - Диспорт = абоботулотоксин А
  - Ксеомин = инкоботулотоксин А
- **Тип В**
  - Миоблок = римаботулотоксин В (не зарегистрирован в России)

В России

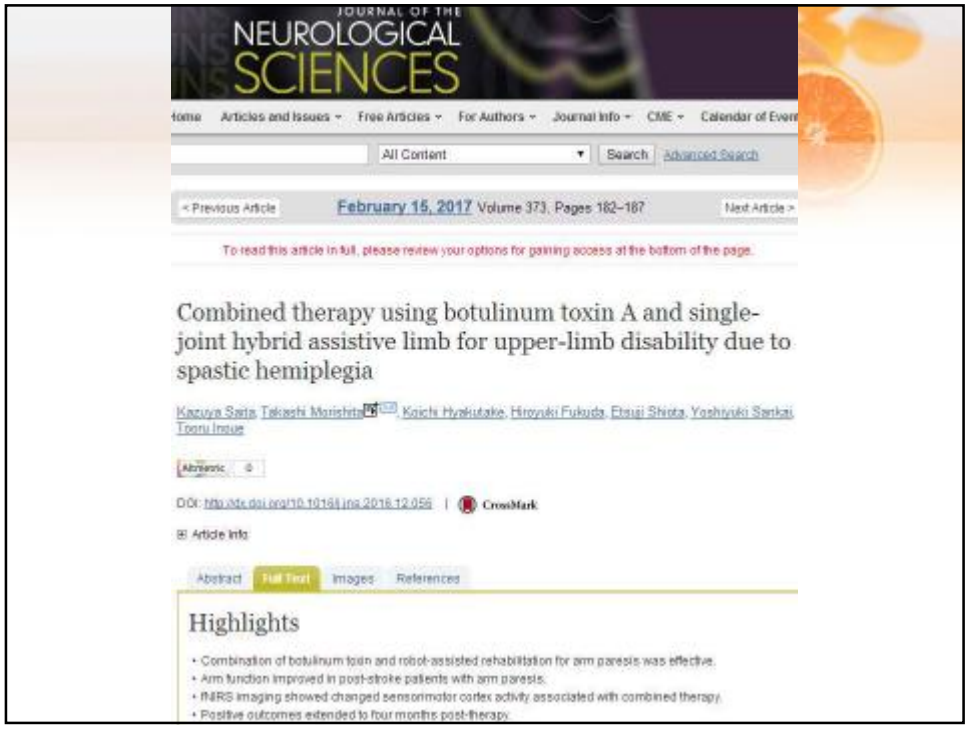
МНН	Торговое наименование	Дозы (ед.)	t хранения
Ботулинический токсин типа А - гемагглютинин комплекс	Ботокс	100, 200	2-8 С
Ботулинический токсин типа А - гемагглютинин комплекс	Диспорт	300, 500	2-8 С
Ботулинический токсин типа А	Ксеомин	50, 100	комнатная

Моя задача сегодня:

познакомить Вас с результатами нескольких новых исследований, основанных на убедительных *доказательствах*, посвященных эффективности ботулинотерапии для реабилитации пациентов с неврологическими заболеваниями, опубликованных в лучших международных журналах в 2017 году

Направления:

- *Классические*
  - Мышечные дистонии
  - Спастичность
  - Хроническая мигрень
  - Навигация для инъекций
  - Комбинация ботулинотерапии с другими методами в реабилитационной медицине
- *Относительно новые*
  - Лечение других болей, крампи
  - Депрессии
  - Миотонии



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Combined therapy using botulinum toxin A and single-joint hybrid assistive limb for upper-limb disability due to spastic hemiplegia

Kazuya Saita, Takashi Morishita, Koichi Hyakutake, Hiroyuki Fukuda, Etsuji Shiota, Yoshiyuki Sankai, Tooru Inoue

Abstract 0

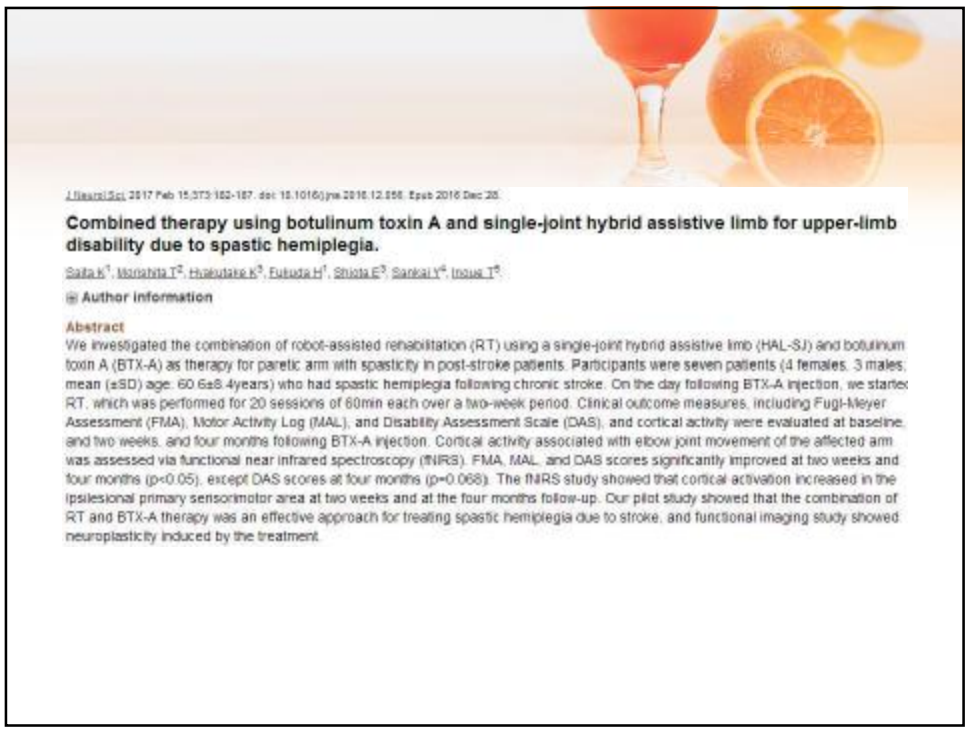
DOI: http://dx.doi.org/10.1016/j.jns.2016.12.056 | CrossMark

Article Info

Abstract Full Text Images References

Highlights

- Combination of botulinum toxin and robot-assisted rehabilitation for arm paresis was effective.
- Arm function improved in post-stroke patients with arm paresis.
- fNIRS imaging showed changed sensorimotor cortex activity associated with combined therapy.
- Positive outcomes extended to four months post-therapy.



J Neurol Sci. 2017 Feb 15;373:182-187. doi: 10.1016/j.jns.2016.12.056. Epub 2016 Dec 20.

Combined therapy using botulinum toxin A and single-joint hybrid assistive limb for upper-limb disability due to spastic hemiplegia.

Saita K[1], Morishita T[2], Hyakutake K[3], Fukuda H[1], Shiota E[3], Sankai Y[4], Inoue T[5].

Author information

Abstract

We investigated the combination of robot-assisted rehabilitation (RT) using a single-joint hybrid assistive limb (HAL-SJ) and botulinum toxin A (BTX-A) as therapy for paretic arm with spasticity in post-stroke patients. Participants were seven patients (4 females, 3 males; mean (±SD) age: 60.6±8.4years) who had spastic hemiplegia following chronic stroke. On the day following BTX-A injection, we started RT, which was performed for 20 sessions of 60min each over a two-week period. Clinical outcome measures, including Fugl-Meyer Assessment (FMA), Motor Activity Log (MAL), and Disability Assessment Scale (DAS), and cortical activity were evaluated at baseline, and two weeks, and four months following BTX-A injection. Cortical activity associated with elbow joint movement of the affected arm was assessed via functional near infrared spectroscopy (fNIRS). FMA, MAL, and DAS scores significantly improved at two weeks and four months ($p<0.05$), except DAS scores at four months ($p=0.068$). The fNIRS study showed that cortical activation increased in the ipsilesional primary sensorimotor area at two weeks and at the four months follow-up. Our pilot study showed that the combination of RT and BTX-A therapy was an effective approach for treating spastic hemiplegia due to stroke, and functional imaging study showed neuroplasticity induced by the treatment.

•Комбинация БТА и роботизированной реабилитации для верхней конечности при спастических гемиплегиях после инсультов
•7 пациентов
•20 сессий по 60 мин в течение 2 недель на следующий день после инъекций БТА
•Клинические и нейровизуализационные методы оценки
•Показа эффективность комбинации этих методов и **нейропластичность** при фунциональной нейровизуализации

Disabil Rehabil. 2017 Jul;39(14):1426-1434. doi: 10.1080/09638288.2016.1196432. Epub 2016 Jul 6.

An international survey of patients living with spasticity.

Barnes M[1], Kocer S[2], Murie Fernandez M[3], Balcaitiene J[4], Theodoroff K[5]

Author information

Abstract

PURPOSE: To better understand patient perspectives on the life impact of spasticity.

METHODS: Global internet survey (April 2014-May 2015) of 281 people living with spasticity.

RESULTS: Respondents indicated that spasticity has a broad impact on their daily-life: 72% reported impact on quality of life, 44% reported loss of independence and 44% reported depression. Most respondents (64%) were cared for by family members, of whom half had stopped working or reduced their hours. Overall, 45% reported dissatisfaction with the information provided at diagnosis; main reasons were "not enough information" (67%) and "technical terminology" (36%). Respondents had high treatment expectations: 63% expected to be free of muscle spasm, 41% to take care of themselves and 36% to return to a normal routine. However, 33% of respondents had not discussed these expectations with their physician. The most common treatments were physiotherapy (75%), botulinum neurotoxin (BoNT, 73%) and oral spasmolytics (57%). Of those treated with BoNT, 47% waited >1 year from spasticity onset to treatment.

CONCLUSIONS: This survey emphasises the broad impact of spasticity and highlights unmet needs in the patient journey. Improvements with regards to communication and the therapeutic relationship would be especially welcomed by patients, and would help manage treatment expectations. Implications of Rehabilitation Spasticity has broad impact on the lives of patients and their families that extends beyond the direct physical disability. Patients with spasticity need to be well informed about their condition and treatments available and should be given the opportunity to discuss their expectations. Physicians need to be aware of the patient's individual needs and expectations in order to better help them achieve their therapeutic goals.

•Международный опрос пациентов со спастичностью (через Интернет)
•281 респондент
•Влияние на качество жизни – у 72% пациентов
•Потеря независимости и депрессия – 44%
•Уход со стороны родственников – 64%
•Ушли с работы или ограничили часы работы – 32%
•Недовольны качеством предоставляемой информации при диагностике – 45%
•Недостаточно информации – 67%
•«Сложная терминология» - 36%
•Не обсуждали ожидания от проводимой терапии с врачом – 33%
•У обсуждавших были высокие ожидания: 63% ждали, что полностью избавятся от спазмов в мышцах, 41% - что смогут быть самостоятельными и не требовать ухода, 36% - что вернутся к нормальной жизни
•Самые частые виды лечения: физическая реабилитация-ЛФК – 75%, БТА – 73%, миорелаксанты per os – 57%
•При лечении БТА более года от развития спастичности ожидали инъекций 47%
•**ВЫВОД о необходимости более тщательной работы в плане информирования пациента о формирования ожиданий**

Int J Neurosci. 2017 Jun;127(6):469-478. doi: 10.1080/00207454.2016.1196204. Epub 2016 Jun 27.

Effects of botulinum toxin A therapy and multidisciplinary rehabilitation on upper and lower limb spasticity in post-stroke patients.

Hara T[1,2], Abo M[1], Hara H[2], Kobayashi K[1], Shimamoto Y[2], Sannizo Y[2], Sasaki N[1], Yamada N[1], Niimi M[1].

Author information

Abstract

OBJECTIVES: The purpose of this study was to examine the effects of combined botulinum toxin type A (BoNT-A) and inpatient multidisciplinary (MD) rehabilitation therapy on the improvement of upper and lower limb function in post-stroke patients.

METHODS: In this retrospective study, a 12-day inpatient treatment protocol was implemented on 51 post-stroke patients with spasticity. Assessments were performed on the day of admission, at discharge, and at 3 months following discharge.

RESULTS: At the time of discharge, all of the evaluated items showed a statistically significant improvement. Only the Functional Reach Test (FRT) showed a statistically significant improvement at 3 months. In subgroup analyses, the slowest walking speed group showed a significantly greater change ratio of the 10 Meter Walk Test relative to the other groups, from the time of admission to discharge. This group showed a greater FRT change ratio than the other groups from the time of admission to the 3-month follow-up.

CONCLUSION: Inpatient combined therapy of simultaneous injections of BoNT-A to the upper and lower limbs and MD may improve motor function.

•Эффективность БТА и мультидисциплинарной реабилитации при спастичности в верхней и нижней конечности после инсульта
•Стационарная реабилитация 12 дней
•51 пациент
•Контроль через 3 месяца
•У **всех** показана клиническая эффективность на день выписки
•*Через 3 месяца* – эффективность показана по Functional Reach test
•Наилучшие результаты при анализе по подгруппам у пациентов с наименьшей скоростью ходьбы на 10 метров

Am J Phys Med Rehabil. 2017 Apr;96(4):221-225. doi: 10.1097/PHM.0000000000000627.

Randomized Controlled Trial on Effectiveness of Intermittent Serial Casting on Spastic Equinus Foot in Children with Cerebral Palsy After Botulinum Toxin-A Treatment.

Dursun N[1], Gokbel T, Akarsu M, Dursun E

⊕ Author information

Abstract

OBJECTIVE: Physical therapy (PT) and botulinum toxin-A (BTX-A) injections are widely used in the treatment of spastic equinus foot due to cerebral palsy. The aim of this study was to show effects of intermittent serial casting (SC) in addition to standard treatment on spasticity, passive range of motion (PROM), and gait.

DESIGN: Fifty-one ambulatory patients, treated by BTX-A to plantar flexor muscles, were randomly assigned to casting or control groups in a 2:1 ratio. Both groups received PT for 3 weeks. Casting group additionally received intermittent SC during 3 consecutive weekends. Assessments included Modified Ashworth Scale (MAS), Tardieu Scale, Observational Gait Scale (OGS), and Physician Global Assessment at baseline and posttreatment weeks 4 and 12.

RESULTS: Significant improvements in PROM, MAS, Tardieu Scale, and OGS were recorded in both groups ($P < 0.001$ for all). Average changes in MAS, PROM, angle of catch, spasticity angle, and OGS of the casting group were significantly higher than those of the controls at week 4 ($P = 0.006$, $P = 0.002$, $P < 0.001$, $P = 0.005$, $P = 0.011$), and 12 ($P = 0.013$, $P < 0.001$, $P < 0.001$, $P = 0.011$, $P < 0.001$). Follow-up Physician Global Assessment also favored casting group ($P < 0.001$ for both).

CONCLUSIONS: Combining intermittent SC with BTX-A injections and PT might provide additional benefits for spastic equinus foot.

TO CLAIM CME CREDITS: Complete the self-assessment activity and evaluation online at http://www.physiatry.org/JournalCME CME OBJECTIVES: Upon completion of this article, the reader should be able to: (1) identify treatment options for spastic equinus goot in children with cerebral palsy; (2) explain different approaches of serial casting with an additional model of intermittent casting; and (3) describe the potential benefits of combined treatment modalities, including intermittent serial casting, for spastic equinus foot in children with cerebral palsy.

LEVEL: Advanced ACCREDITATION: The Association of Academic Physiatrists is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.The Association of Academic Physiatrists designates this activity for a maximum of 1.5 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

•Серия перемежающихся последовательных гипсований после лечения БТА у детей с ДЦП и спастической эквинусной установкой стопы
•51 пациент
•РКИ (2:1 – гипсование и контроль)
•В течение 3 недель – физическая реабилитация и гипсования к концу недели
•Оценка через 4 недели и через 12 недель
•Значимое улучшение по шкалам Тардье, объему пассивных движений, шкале Эшворта, шкалам, оценивающим ходьбу ($p < 0.001$)
•На 4й и 12й неделе – лучшие результаты в группе гипсования
•ЗАКЛЮЧЕНИЕ о дополнительной эффективности комбинации БТА, гипсований и физической реабилитации

J Neurol. 2017 Jan;264(1):112-126. doi: 10.1007/s00415-016-8384-z. Epub 2016 Oct 27.

Botulinum toxin therapy for treatment of spasticity in multiple sclerosis: review and recommendations of the IAB-Interdisciplinary Working Group for Movement Disorders task force.

Dressler D[1], Bhidayasiri R[2], Bohlega S[3], Chahidi A[4], Chung TM[5], Ebke M[6], Jacinto LJ[7], Kaji R[8], Koçer S[9], Kanovsky P[10], Michell F[11], Ortiva O[12], Paus S[13], Pirtosek Z[14], Reiz M[15], Rosales RL[16], Sandoval-Rodriguez JA[17], Schoenle PW[18], Shahidi GA[19], Timerbaeva S[20], Walter U[21], Sabri FA[22].

Author information

Abstract

Botulinum toxin (BT) therapy is an established treatment of spasticity due to stroke. For multiple sclerosis (MS) spasticity this is not the case. IAB-Interdisciplinary Working Group for Movement Disorders formed a task force to explore the use of BT therapy for treatment of MS spasticity. A formalised PubMed literature search produced 55 publications (3 randomised controlled trials, 3 interventional studies, 11 observational studies, 2 case studies, 35 reviews, 1 guideline) all unanimously favouring the use of BT therapy for MS spasticity. There is no reason to believe that BT should be less effective and safe in MS spasticity than it is in stroke spasticity. Recommendations include an update of the current prevalence of MS spasticity and its clinical features according to classifications used in movement disorders. Immunological data on MS patients already treated should be analysed with respect to frequencies of MS relapses and BT antibody formation. Registration authorities should expand registration of BT therapy for spasticity regardless of its aetiology. MS specialists should consider BT therapy for symptomatic treatment of spasticity.

•БТА при лечении спастичности при рассеянном склерозе
•В США БТА широко используется при лечении спастичности после инсультов и реже при спастичности при РС
•Анализ 33 публикаций
•РЕКОМЕНДОВАНО
- •использовать БТА при лечении спастичности вне зависимости от этиологии
- •внести предложение руководящим органам здравоохранения расширить показания для назначения ботулинотерапии при спастичности любой этиологии

Arch Phys Med Rehabil. 2017 Feb;98(2):388-396. doi: 10.1016/j.apmr.2016.09.126. Epub 2016 Oct 24.

Effect of Botulinum Toxin on Clonus: A Systematic Review.

Thanikachalam V[1], Phadke CP[2], Ismail F[3], Boulias C[3]

Author information

Abstract

OBJECTIVE: To conduct a systematic review of the literature that examined the effect of botulinum toxin type A on clonus.

DATA SOURCES: A literature search of multiple databases (PubMed, Cochrane, Google Scholar, Embase) was performed to identify articles published in English in the past 30 years (1986-2016).

STUDY SELECTION: Two reviewers independently applied the following inclusion criteria: (1) any adult patients older than 18 years with upper motor lesion; (2) any location and duration of clonus; and (3) subjective and objective measurements of clonus tested at least 2 weeks after botulinum toxin injection.

DATA EXTRACTION: Two reviewers independently extracted the data and assessed the methodological quality. A consensus method was used to solve disagreements.

DATA SYNTHESIS: The systematic review resulted in 164 articles, of which 14 met the inclusion criteria: 3 were randomized controlled trials, 1 was nonrandomized, and 6 were case series and 3 case studies. All studies (181 patients) showed improvement in clonus; 6 of 14 results were statistically significant. Different scales were used for clonus measurement, such as clonus score, patient diaries, clonus spasm score, and electromyogram duration.

CONCLUSIONS: Overall, there was preliminary evidence indicating improvement in clonus after botulinum injection. The major drawback with studies reviewed here was a large variation in the type of clonus assessment tools, which also lacked validity, reliability, and sensitivity to small changes in clonus.

•Систематический обзор эффективности БТА при клонусах
•Анализ PubMed за 30 лет
•Критерии: взрослые (18+) с заболеванием верхнего мотонейрона с любой локализацией и продолжительностью клонусов, количественная оценка субъективных и объективных шкал не менее чем через 2 недели после лечения БТА
•164 статьи, 181 пациент
•Улучшение у всех
•Статистически значимое улучшение в 6 из 14 исследований
•ЗАКЛЮЧЕНИЕ: Предварительно говорится об эффективности терапии БТА, требуется больше исследований с качественным дизайном

Front Neurol. 2017 Apr 3;8:120. doi: 10.3389/fneur.2017.00120. eCollection 2017.

Spasticity, Motor Recovery, and Neural Plasticity after Stroke.

Li S[1,2]

Author information

Abstract

Spasticity and weakness (spastic paresis) are the primary motor impairments after stroke and impose significant challenges for treatment and patient care. Spasticity emerges and disappears in the course of complete motor recovery. Spasticity and motor recovery are both related to neural plasticity after stroke. However, the relation between the two remains poorly understood among clinicians and researchers. Recovery of strength and motor function is mainly attributed to cortical plastic reorganization in the early recovery phase, while reticulospinal (RS) hyperexcitability as a result of maladaptive plasticity, is the most plausible mechanism for poststroke spasticity. It is important to differentiate and understand that motor recovery and spasticity have different underlying mechanisms. Facilitation and modulation of neural plasticity through rehabilitative strategies, such as early interventions with repetitive goal-oriented intensive therapy, appropriate non-invasive brain stimulation, and pharmacological agents, are the keys to promote motor recovery. Individualized rehabilitation protocols could be developed to utilize or avoid the maladaptive plasticity, such as RS hyperexcitability, in the course of motor recovery. Aggressive and appropriate spasticity management with botulinum toxin therapy is an example of how to create a transient plastic state of the neuromotor system that allows motor re-learning and recovery in chronic stages.

•Спастичность, моторное восстановление и нейропластичность после инсульта
•Использование БТА улучшает способность восстановления и моторного переобучения, участвует в создании пластичности в нейромоторной системе

Neurology. 2017 Mar 24. pii: 10.1212/WNL.0000000000003882. doi: 10.1212/WNL.0000000000003882. [Epub ahead of print]

Pharmacotherapy for diabetic peripheral neuropathy pain and quality of life: A systematic review.

Waldfogel JM[1], Nesbit SA[2], Dy SM[2], Sharma R[2], Zhang A[2], Wilson LM[2], Bennett WL[2], Yeh HC[2], Chelladurai Y[2], Feldman D[2], Robinson KA[2].

Author Information

Abstract

OBJECTIVE: To systematically assess the effect of pharmacologic treatments of diabetic peripheral neuropathy (DPN) on pain and quality of life.

METHODS: We searched PubMed and Cochrane Database of Systematic Reviews for systematic reviews from 2011 to October 12, 2016, and PubMed, Embase, and the Cochrane Central Register of Controlled Trials for primary studies from January 1, 2013, to May 24, 2016. We searched Clinicaltrials.gov on March 9, 2016. Two reviewers independently evaluated studies for eligibility, serially abstracted data, and independently evaluated risk of bias and graded strength of evidence (SOE).

RESULTS: We updated a recently completed systematic review of 57 eligible studies with 24 additional published studies and 25 unpublished studies. For reducing neuropathy-related pain, the serotonin-norepinephrine reuptake inhibitors duloxetine and venlafaxine (moderate SOE), the anticonvulsants pregabalin and oxcarbazepine (low SOE), the drug classes tricyclic antidepressants (low SOE) and atypical opioids (low SOE), and botulinum toxin (low SOE) were more effective than placebo. We could not draw conclusions about quality of life due to incomplete reporting. All studies were short-term (less than 6 months), and all effective drugs had more than 9% dropouts from adverse effects.

CONCLUSIONS: For reducing pain, duloxetine and venlafaxine, pregabalin and oxcarbazepine, tricyclic antidepressants, atypical opioids, and botulinum toxin were more effective than placebo. However, quality of life was poorly reported, studies were short-term, drugs had substantial dropout rates, and opioids have significant risks. Future studies should evaluate longer-term outcomes, use methods and measures recommended by pain organizations, and assess patients' quality of life.

•Фармакотерапия и качество жизни при диабетической полинейропатии: систематический обзор
•Проанализировано 57 исследований, 24 опубликованных и 25 неопубликованных работ
•Эффективнее чем плацебо при лечении нейропатической боли: ингибиторы обратного захвата серотонина и норэпинефрина (дулоксетин, венлафаксин), антиконвульсанты (прегабалин, окскарбазепин), трициклические антидепрессанты, атипичные опиоиды, БТА
•Отмечено малое время наблюдения (менее 6 мес), большое число (>9%) выпавших из исследований из-за побочных эффектов

Arch Phys Med Rehabil. 2017 May;98(5):957-963. doi: 10.1016/j.apmr.2017.01.017. Epub 2017 Feb 14.

Botulinum Toxin Treatment for Nocturnal Calf Cramps in Patients With Lumbar Spinal Stenosis: A Randomized Clinical Trial.

Park SJ[1], Yoon KB[1], Yoon DM[1], Kim SH[2].

Author Information

Abstract

OBJECTIVES: To evaluate the clinical effectiveness of botulinum toxin (BTX) injection into the gastrocnemius muscles in patients with lumbar spinal stenosis (LSS) who have frequent nocturnal calf cramps (NCCs).

DESIGN: Prospective, randomized clinical trial.

SETTING: Outpatient department for interventional pain management.

PARTICIPANTS: Patients (N=50) with LSS who have NCCs at least once per week were enrolled.

INTERVENTION: Patients were randomly allocated to receive either conservative treatments plus gabapentin (group GPN) or BTX injection (group BTX).

MAIN OUTCOME MEASURES: We assessed back/leg pain intensity, the frequency and severity of NCCs, insomnia severity, and functional disability at baseline and after 2 weeks, 1 month, and 3 months. Additionally, Patient Global Impression of Change was assessed.

RESULTS: Forty-five patients completed all assessments (group GPN, n=21; group BTX, n=24). Compared with group GPN, leg pain intensity, cramp frequency, and cramp severity were significantly decreased in group BTX at all follow-up visits (all, P<.01). Also, insomnia significantly improved in group BTX at the 2-week (P=.018) and 1-month follow-up (P=.037). Functional disability significantly improved in group BTX at 2 weeks' follow-up (P=.041). At the 3-month follow-up, patients in group BTX reported a higher impression of improvement for NCC symptoms than did those in group GPN (P<.001). A mean dose of 642.8mg of gabapentin was given daily in group GPN, but 7 patients (33.3%) reported systemic side effects. There were no serious complications related to BTX use.

CONCLUSIONS: BTX treatment appears to be effective and safe for NCCs in symptomatic LSS patients receiving conservative care.

•БТА при ночных судорогах в икроножных мышцах у пациентов с люмбальным стенозом позвоночного канала: проспективное РКИ
•Инъекции в m.gastrocnemius
•50 амбулаторных пациентов
•Группа контроля – габапентин 642.8 мг
•Оценка через 2 недели, 1 месяц, 3 месяца
•Значимо лучше были показатели в группе БТА по интенсивности боли, частоте и выраженности крампи, качеству сна
•Системные побочные эффекты у 33.3% в группе габапентина, в группе БТА – их не было
•ЗАКЛЮЧЕНИЕ о безопасности и эффективности БТА в этой группе

- Treatment for sialorrhoea A single session of botulinum toxin type B injections to parotid and submandibular glands probably improves sialorrhoea and quality of life at up to 4 weeks compared to placebo injections, but not at 8 or 12 weeks after the injections (moderate-quality evidence from 1 placebo-controlled RCT, N = 20).

- Cochrane Database Syst Rev. 2017 Jan 10;1:CD011776. doi: 10.1002/14651858.CD011776.pub2.
- Symptomatic treatments for amyotrophic lateral sclerosis/motor neuron disease.
- Ng L1, Khan F1,2,3,4, Young CA5, Galea M1,3.

Лечение сиалореи при БАС

- Одна инъекция БТ типа B injections в слюнные железы (parotid + submandibular) вероятно улучшает качество жизни и уменьшает сиалорею в течение 4 недель по сравнению с плацебо, но не показала эффекта на 8 и 12 неделе (средний уровень доказательности, 1 РКИ, N = 20).

- Cochrane Database Syst Rev. 2017 Jan 10;1:CD011776. doi: 10.1002/14651858.CD011776.pub2.
- Symptomatic treatments for amyotrophic lateral sclerosis/motor neuron disease.
- Ng L1, Khan F1,2,3,4, Young CA5, Galea M1,3.

- Muscle Nerve. 2017 Feb 10. doi: 10.1002/mus.25610. [Epub ahead of print]
- Botulinum toxin type A in the treatment of facial myotonia in Schwartz-Jampel syndrome.
- Bandeira ID1, Jagersbacher JG1, Barretto TL1, Santos CV2, Lucena R1.

Л.В.Крылова, Д.Р.Хасанова. **Особенности ботулинотерапии при различных паттернах постинсультной спастичности**

- https://www.ncbi.nlm.nih.gov/pubmed/28374692
- Выводы: 1) Ботулинотерапия должна быть неотъемлемой частью реабилитационной технологии; 2) Раннее применение ботулинотерапии в комплексе с реабилитацией является более эффективным в восстановлении функциональных расстройств; 3) Необходим индивидуальный подход в выборе мышц- мишеней и их изменение с учетом динамики патологического двигательного паттерна.

Clin Rehabil. 2017 Apr;31(4):435-443. doi: 10.1177/0269215516644051. Epub 2016 Jul 10.

Intra-articular injections of botulinum toxin a for refractory joint pain: a systematic review and meta-analysis.

Wu T[1,2], Song HX[1,2], Dong Y[3], Ye Y[1], Li JH[1].

Author information

Abstract

OBJECTIVE: To assess the benefit of intra-articular injection of Botulinum toxin A (BoNT-A) for chronic refractory joint pain regardless of joint or pathology.

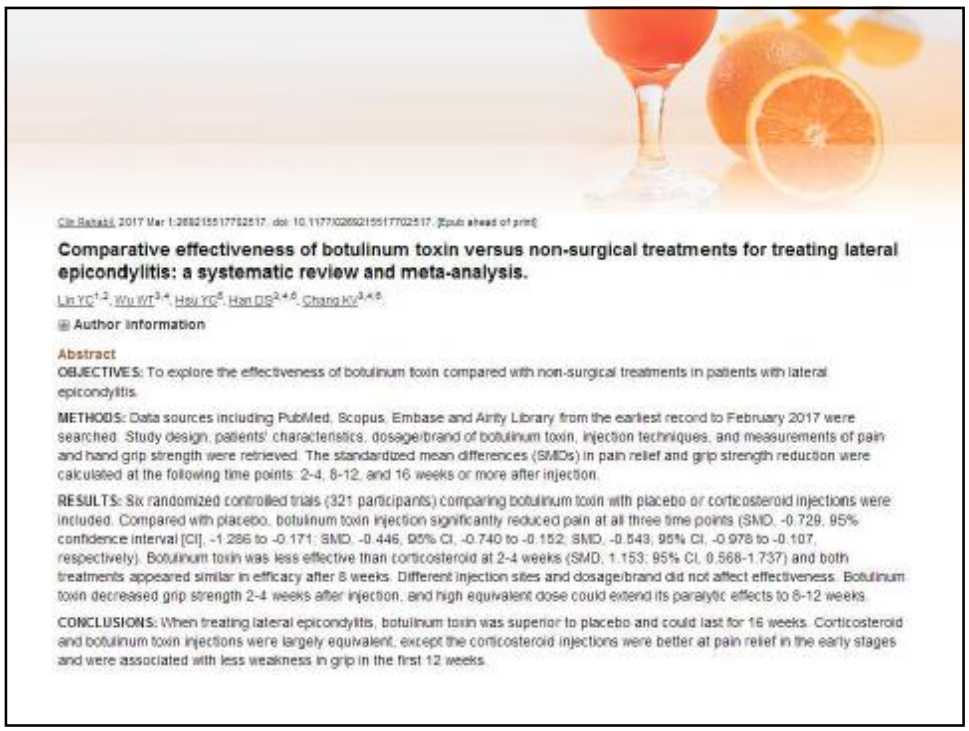
DATA SOURCES: The search was performed on Ovid MEDLINE(R) In-Process and Other Non-Indexed Citations, Ovid MEDLINE(R), Ovid EMBASE, Web of Science, and Scopus inception through Week 12, 2016. Trial selection: Clinical randomized controlled trials that evaluated BoNT-A intra-articular injection in patients with refractory joint pain were included.

DATA EXTRACTION: Two independent reviewers conducted data extraction.

RESULTS: A total of 6 out of 284 records were included. The analysis indicated that a statistically significant decreased pain score was found in BoNT-A therapy group than control group with WMD=1.10 (95% CI: 0.35 to 1.85, P<0.001; I^2=95%); WMD=0.7 (95% CI: 0.09 to 1.32; P=0.02; I^2=0%) at week 4, and 8 after injection, respectively. WOMAC score was also significant decreased in BoNT-A therapy group than control group with WMD=4.71 (95% CI: 2.76 to 6.67; P<0.001; I^2=0%); WMD=3.67 (95% CI: 1.08 to 6.26; P=0.006; I^2=27%) at week 4 and12 after injection, respectively. There was no difference in adverse event between BoNT-A therapy group and control group with OR=1.25 (95% CI: 0.88 to 1.78; P=0.47; I^2=0%).

CONCLUSION: As compared with conventional therapy, BoNT-A intra-articular injection have beneficial effects with improved pain score and WOMAC score in adult patients with refractory joint pain.

•Внутрисуставное введение БТА у взрослых пациентов с рефрактерными болями в суставах вне зависимости от нозологической формы: систематический обзор и метаанализ.
•Только рандомизированные контролируемые исследования.
•**Показана эффективность** (количественная оценка на 4й, 8й и 12й неделе после ввведения).
•Нет различий по побочным эффектам в сравнении с контрольной группой



Clin Rehabil. 2017 Mar 1:269215517702517. doi: 10.1177/0269215517702517. [Epub ahead of print]

Comparative effectiveness of botulinum toxin versus non-surgical treatments for treating lateral epicondylitis: a systematic review and meta-analysis.

Lin YC[1,2], Wu WT[3,4], Hsu YC[5], Han DS[2,4,6], Chang KV[3,4,6].

Author Information

Abstract

OBJECTIVES: To explore the effectiveness of botulinum toxin compared with non-surgical treatments in patients with lateral epicondylitis.

METHODS: Data sources including PubMed, Scopus, Embase and Airiti Library from the earliest record to February 2017 were searched. Study design, patients' characteristics, dosage/brand of botulinum toxin, injection techniques, and measurements of pain and hand grip strength were retrieved. The standardized mean differences (SMDs) in pain relief and grip strength reduction were calculated at the following time points: 2-4, 8-12, and 16 weeks or more after injection.

RESULTS: Six randomized controlled trials (321 participants) comparing botulinum toxin with placebo or corticosteroid injections were included. Compared with placebo, botulinum toxin injection significantly reduced pain at all three time points (SMD, -0.729; 95% confidence interval [CI], -1.286 to -0.171; SMD, -0.446; 95% CI, -0.740 to -0.152; SMD, -0.543; 95% CI, -0.978 to -0.107, respectively). Botulinum toxin was less effective than corticosteroid at 2-4 weeks (SMD, 1.153; 95% CI, 0.568-1.737) and both treatments appeared similar in efficacy after 8 weeks. Different injection sites and dosage/brand did not affect effectiveness. Botulinum toxin decreased grip strength 2-4 weeks after injection, and high equivalent dose could extend its paralytic effects to 8-12 weeks.

CONCLUSIONS: When treating lateral epicondylitis, botulinum toxin was superior to placebo and could last for 16 weeks. Corticosteroid and botulinum toxin injections were largely equivalent, except the corticosteroid injections were better at pain relief in the early stages and were associated with less weakness in grip in the first 12 weeks.

•Сравнительная эффективность БТА и нехирургического лечения латерального эпикондилита: систематический обзор и метаанализ
•Шесть РКИ, 321 пациент
•Сравнение БТА, плацебо и кортикостероидных инъекций:
  •По сравнению с плацебо – БТА значительно более эффективен
  •БТА и кортикостероиды примерно равноэффективны, но стероиды действуют лучше в ранеем периоде по уменьшению болей и не дают слабость при сжатии в кулак.

Статьи про методики, ультразвуковую навигацию. Анатомические особенности с прекрасными иллюстрациями для практикующих специалистов

www.ufaneuro.org

J Comput Assist Tomogr. 2017 Mar/Apr;41(2):336-338. doi: 10.1097/RCT.0000000000000588.

Procedure-Oriented Torsional Anatomy of the Hand for Spasticity Injection.

John J[1], Clanca J, Chiou-Tan F, Pandit S, Fum-Stimming E, Taber KH.

Author Information

Abstract

OBJECTIVES: To provide musculoskeletal ultrasound (MSKUS) images of hand anatomy in the position of hemiparetic flexion as a reference for spasticity injections. After a stroke, spasticity can result in anatomic distortion of the hand. Spasticity may require treatment with botulinum toxin or phenol injections. Anatomic distortion may decrease the accuracy of injections. Standard anatomic references are of limited utility because they are not in this spastic hemiparetic position. There presently is no anatomic reference in the literature for these spastic postures. This study is part three of a series examining torsional anatomy of the body.

DESIGN: Ultrasound (US) images were obtained in a healthy subject. The muscles examined included the lumbricals and the flexor pollicis brevis. A marker dot was placed at each dorsal and palmar anatomic injection site for these muscles. The US probe was placed on these dots to obtain a cross-sectional view. A pair of US images was recorded with and without power Doppler imaging: the first in anatomic neutral and second in hemiparetic spastic positions. In addition, a video recording of the movement of the muscles during this rotation was made at each site.

RESULTS: On the palmar view, the lumbricals rotated medially. On dorsal view, the lumbricals can be seen deep to the dorsal interossei muscles, with spastic position, and they become difficult to identify. The flexor pollicis brevis (FPB) muscle contracts with torsion, making abductor pollicis brevis (APB) predominately in view.

DISCUSSION: The anatomic location of the lumbrical muscles makes them difficult to inject even with ultrasound guidance. However, recognizing the nearby digital vasculature allows for improved identification of the musculature for injection purposes. The FPB muscle also can be identified by its adjacent radial artery lateral to the flexor pollicus longus tendon.

CONCLUSION: Normal anatomy of hand can become distorted in spastic hemiparesis. Diagnostic ultrasound is able to discern these anatomic locations if the sonographer is competent in recognizing the appearance of normal anatomy and is skilled in resolving the visual changes that occur in spastic hemiparesis. The authors hope this series of images will increase the accuracy, safety, and efficacy of spasticity injections in the hand.

Eur J Phys Rehabil Med. 2017 Mar 6. doi: 10.23736/S1973-9087.17.04663-9. [Epub ahead of print]

Innervation zone targeted botulinum toxin injections.

Kaymak B[1], Kara M[2], Yabiz-Ün A[3], Soylu AR[4], Özçakar L[1].

Author Information

Abstract

Muscle overactivity (spasticity, dystonia or spasm) seen in certain neuromuscular disorders has been effectively treated with intramuscular injection of botulinum neurotoxins (BoTXs). Since they act in the nerve terminals, the toxin must be transported to the neuromuscular junctions which are generally clustered in one or more restricted areas (innervations zone(s)) in a skeletal muscle. The innervation zone targeted BoTX injections using guidance is highly recommended to achieve an optimal therapeutic goal with lower doses and fewer side effects. Hence, detection of the injection sites should be based on the knowledge about the localization of the innervation zone and the transport mechanism of BoTX in skeletal muscle. In this paper, we discuss the relevant muscle architecture and physical principles as regards BoTX distribution during muscle overactivity management.

Eur J Phys Rehabil Med. 2017 Mar 6. doi: 10.23736/S1973-9087.17.04664-0. [Epub ahead of print]

Sonographic guide for botulinum toxin injections of the upper limb: euro-musculus/USPRM spasticity approach.

Kara M[1], Kaymak B[2], Ata AM[3], Tok F[4], Özçelik GT[3], Chang KV[5], Hsiao MY[5], Huang CY[6], Yaldız On A[7], Özçakar L[2]

Author information

Abstract

The pertinent literature lacks overt technical data for optimal upper limb muscle botulinum toxin injections using ultrasound (US) imaging. Therefore, this guide is prepared for the commonly injected muscles of the upper limb and the shoulder girdle mainly in spasticity. It includes clinical information, anatomical description and explanation regarding the US imaging of several muscles. The figures have been organized to orient the readers on the innervation zones, injection sites, probe positionings and the US images simultaneously.

УДАЧИ ВСЕМ!

С ЮБИЛЕЕМ, НАШ УНИВЕРСИТЕТ!