and monitoring disease progression in patients with PPS.

http://dx.doi.org/10.1016/j.rehab.2014.03.667

CO18-003-e

Botulinum toxin for the treatment of arthropathies

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Keywords: Intra-articular botulinum toxin; Pain; Stiffness; Mechanical and inflammatory arthropathies

Introduction.– Botulinum toxin (BTX) has long been used for the treatment of spasticity. Currently, its indications have been enlarged to the musculoskeletal system and particularly to the management of osteo-arthropathies.

Objectives.– Describe the effects of intramuscular and intra-articular BoNT-A in painfull arthropathies in PRM.

Method.– Literature review.

Results.– Literature data report that *intramuscular* injection of BoNT-A may represent an alternative for the management of reactive periarticular muscle contractures after joint replacement surgery or of agonist/antagonist muscle imbalance. The literature also reports some controlled randomized studies showing the higher analgesic effect of BoNT-A *intra-articular* injections compared to corticosteroids in chronic knee pain,chronic shoulder joint pain due to osteoarticular conditions or rheumatoid arthritis, sacroiliac joint pain and refractory pain after knee arthroplasty.

The effects of BoNT-A intra-articular injection have been investigated in animal models and suggests that BoNT-A slows may have a chondroprotective effect by limiting the alterations of the cartilage structures associated to analgesic effects through inhibition of pain mediators.

Conclusions.– BoNT-A represents an interesting therapeutic alternative both for intramuscular injection in case of periarticular muscle contractures and for intra-articular injection, although its intra-articular effects need to be better defined by further studies.

Further reading

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http://dx.doi.org/10.1016/j.rehab.2014.03.668

CO18-004-e

Botulinum toxin type a in palmar hyperhidrosis: The role of iontophoresis

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Keywords: Hyperhidrosis; Botulinum toxin type A; Iontophoresis

Introduction.– Palmar hyperhidrosis is a disease that has substantial impact upon affective, workplace and social relationships. This study aims to review the existing evidences about the effectiveness of botulinum toxin in the treatment of palmar hyperhidrosis and the role of iontophoresis as a drug delivery method.

Material and methods.– The expression "botulinum toxin" AND "palmar hyperhidrosis" AND "iontophoresis" was searched on PubMed, Cochrane and PEDro databases. Articles were chosen for full text reading by abstract evaluation.

Results.– Botulinum toxin type A is a valid treatment option in patients with severe sweating who have not responded to topical treatments. Benefits of using botulinum toxin type A to inhibit palmar hyperhidrosis were documented in several studies, however palmar injections are very painful. Previous studies demonstrate that botulinum toxin type A can be effectively delivered to the palms by iontophoresis.

Discussion.– Palmar hyperhidrosis can limit the patients' quality of life. Botulinum toxin type A iontophoresis is a non-invasive, inexpensive, safe and evidences, it is important to revise this unlabeled use.

Further reading

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http://dx.doi.org/10.1016/j.rehab.2014.03.669

CO18-005-e

Efficacy of transcutaneous electrical nerve stimulation (TENS) and kinesiotaping in patients with lateral epicondylitis

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Keywords: Lateral epicondylitis; Tennis elbow; Transcutaneous electrical nerve stimulation; Kinesiotaping

Introduction.– The aim of this study was to determine and compare the efficacy of TENS and kinesiotaping in lateral epicondylitis (LE).

Methods.– In this prospective-randomised, assessor blinded controlled trial, seventy eight patients were enrolled. Patients were allocated into 4 treatment groups: Group 1 received TENS and kinesiotaping (KT), group 2 received TENS + sham KT, group 3 received sham TENS + KT and group 4 received sham TENS + sham KT. TENS was applied for 10 sessions and KT for 4 times in 10 days. Outcome measures were pain-free grip strength, pressure pain threshold, pain severity and patient rated tennis elbow evaluation for functional status. Patients were assessed at randomization, on day 10 and at 12th week of follow-up.

Results.– On day 10, TENS, KT combination treatments were statistically superior to sham group ($P < 0.05$). At week 12, all groups had statistically significant improvements compared to pre-treatment, however there were no significant differences among groups.

Discussion.– To our knowledge, this is the first study that evaluates TENS and KT in LE. In this study we found that KT alone or in combination with TENS was not superior to TENS, sham TENS or sham KT. Further research is needed to confirm these results.

http://dx.doi.org/10.1016/j.rehab.2014.03.670

CO18-006-e

Association between aledronate, serum alkaline phosphatase level, and heterotopic ossification in individuals with spinal cord injury

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Introduction.– Only sparse evidence exists regarding the effectiveness of oral alendronate in the prevention of heterotopic ossification in patients with spinal cord injury. The objective is to investigate the protective effect of oral alendronate intake on the appearance of heterotopic ossification (HO) in patients with spinal cord injury (SCI).