CORRESPONDENCE

Pain exposure physical therapy in complex regional pain syndrome: promising enough to warrant further investigation

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To the Editor,

We wish to comment on the recent review article by Duong *et al.* discussing the evidence surrounding various treatments for patients with complex regional pain syndrome.¹ Besides addressing different pharmaceutical agents and other non-pharmaceutical therapies, they also discuss the merits of various forms of physical therapy for this often disabling and treatment-resistant disorder. In their discussion of our own trial ($n = 56$) on the effects of pain exposure physical therapy (PEPT) *vs* conventional treatment,² the authors conclude there is no evidence favoring PEPT based on the results of our published intention-to-treatment analysis. While this may seem a justified conclusion based on a quick review of our data, we believe a more nuanced interpretation of the study's results is warranted. Unfortunately, that trial suffered from an important weakness—i.e., shortly after randomization, a substantial number of participants (27%) switched groups

thereby diluting the potential treatment effect. Nevertheless, the per-protocol analysis showed a significant (and positive) between-group effect of PEPT on impairment, pain, self-reported (and objectively measured) disability, and quality of life.² In a more recent paper using an intention-to-treat analysis, we further showed that PEPT is less expensive and thereby more cost-effective than conventional treatment.³ In that study, patients who received PEPT had fewer visits to physical therapists and other healthcare providers.

In another trial in patients with complex regional pain syndrome, the effects of a similar exposure-based intervention *versus* conventional treatment were studied with positive results found for disability, pain, pain catastrophizing, perceived harmfulness of activities, and quality of life.⁴ This study⁴ was different from our study² since the intervention was targeted to patients with moderate pain-related fears, was supervised by a psychologist, and followed a more strict hierarchical exposure-*in vivo* protocol aimed at movements perceived as threatening.⁴ The PEPT intervention that we used consisted of five physical therapy sessions provided by two physical therapists. Patients were directly exposed to painful stimuli (i.e., activities) and told to ignore the pain.² Despite these differences, both interventions have much in common as well. They share the theory of exposure to pain and stimulated use of the affected limb being beneficial in complex regional pain syndrome.^{2,4}

Although a firmer evidence base is definitely required, the results of exposure-based treatments so far hold promise and suggest that activity and function-centred strategies deserve a place in the treatment of complex regional pain syndrome like what they have in other musculoskeletal pain conditions.⁵

This letter is accompanied by a reply. Please see Can J Anesth 2019; 66: this issue.

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References

1. Duong S, Bravo D, Todd KJ, et al. Treatment of complex regional pain syndrome: an updated systematic review and narrative synthesis. *Can J Anesth* 2018; DOI: <https://doi.org/10.1007/s12630-018-1091-5>.
2. Barnhoorn KJ, van de Meent H, van Dongen RT, et al. Pain exposure physical therapy (PEPT) compared to conventional treatment in complex regional pain syndrome type 1: a randomised controlled trial. *BMJ Open* 2015; 5: e008283.
3. Barnhoorn K, Staal JB, van Dongen RT, et al. Pain exposure physical therapy versus conventional treatment in complex regional pain syndrome type 1-a cost-effectiveness analysis alongside a randomized controlled trial. *Clin Rehabil* 2018; DOI: <https://doi.org/10.1177/0269215518757050>.
4. den Hollander M, Goossens M, de Jong J, et al. Expose or protect? A randomized controlled trial of exposure in vivo vs pain-contingent treatment as usual in patients with complex regional pain syndrome type 1. *Pain* 2016; 157: 2318-29.
5. Foster NE, Anema JR, Cherkin D, et al; *Lancet Low Back Pain Series Working Group*. Prevention and treatment of low back pain: evidence, challenges, and promising directions. *Lancet* 2018; DOI: [https://doi.org/10.1016/s0140-6736\(18\)30489-6](https://doi.org/10.1016/s0140-6736(18)30489-6).