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DEXAMETHASONE EFFECTIVELY REDUCES THE INCIDENCE OF POST-NEUROTOMY NEUROPATHIC PAIN: A RANDOMIZED CONTROLLED PILOT STUDY

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Introduction

Radiofrequency neurotomy (RFN) of facet or sacroiliac joints is widely used for the treatment of chronic axial spine pain and can provide long-term pain relief in well selected patients. The most common side effect is transient neuropathic pain at the paravertebral level of lesion described as a "burning," "numbness", and "shooting" sensation (1). Pain physicians commonly administer corticosteroid post-neurotomy to reduce the risk of post-neurotomy neuropathic pain (PNN), yet it remains unclear if this provides a true reduction in incidence.

Following lumbar facet and sacroiliac joint RFN, PNN has been documented at a rate ranging from 0.5% to 9.2% per lesion (1). The reported incidence (19%) of PNN is higher in patients who have undergone cervical facet RFN (2). Two previous retrospective reviews demonstrated conflicting views regarding the benefit of steroid administration after neurotomy. However, both studies discussed the need for a large prospective trial to make a sound recommendation (3,4). To date, only one small randomized controlled trial suggested the benefit of pentoxifylline or methylprednisolone administration after lumbar medial branch neurotomy to reduce PNN (5). Therefore, a prospective study is warranted to show efficacy of a common practice.

Materials and Methods

A randomized, placebo-controlled, double-blind prospective study was developed to determine the efficacy of corticosteroid administration post-lesion in preventing the development of post-neurotomy neuropathic pain after cervical, thoracic, lumbar, and sacroiliac joint radiofrequency denervation. Participants included were patients from a tertiary hospital system seen in the pain clinic within the Department of Physical Medicine & Rehabilitation.

This trial is registered on ClinicalTrials.gov (NCT03247413). Permission to conduct human research was obtained from the Institutional Review Board. Eligible participants included patients with cervical, thoracic, or lumbar facet or sacroiliac joint pain who had positive concordant medial branch blocks, and thus scheduled for bilateral radiofrequency neurotomy; at least 18 years of age; and English-speaking.

Radiofrequency neurotomy was completed under current accepted standards of care using the Stryker

Multigen 2 radiofrequency generator and 18-gauge 150mm radiofrequency Venom cannulas (Stryker, USA). Participants received dexamethasone (4mg/ml) vs. saline (control) at each lesion site, serving as their own control based on laterality (e.g. after randomization, one side received dexamethasone post-neurotomy, the other side received saline). Follow-ups were completed at 4- and 8-weeks post-intervention to evaluate the incidence of post-procedure pain (via self-reported questionnaire) and function using the Oswetry Disability Index (ODI) or the Neck Disability Index (NDI).

Results/Case Report

35/63 participants completed the study protocol at time of data analysis. There was a statistically significant reduction in the incidence of post-neurotomy pain in the steroid group vs. the control group (20/35 control group vs. 3/35 steroid group, $p<0.001$). ODI/NDI scores changed differently over time depending on the spinal level of neurotomy, showing statistically significant improvement in ODI/NDI in the cervical sub-group and lumbar sub-group at 4-week ($p= 0.05$) and 8-week time points ($p<0.01$), respectively. There was no improvement of ODI scores in the sacral sub-group. The incidence of post-neurotomy neuropathic pain was not significantly different among patients with different spinal levels of neurotomy. Patients who developed post-neurotomy neuropathic pain did not differ in ODI/NDI scores at any time point.

Discussion

This study has several limitations, most notably the number of patients lost to follow-up, the use of a single corticosteroid, and the use of laterality for incidence reporting. Additionally, all procedures were performed by a single interventionalist using one neurotomy system.

A statistically significant reduction in post-neurotomy pain was observed in the steroid group. This protocol can be feasibly conducted in an effective and resource-efficient manner. Additional research is needed to increase the power of the study.

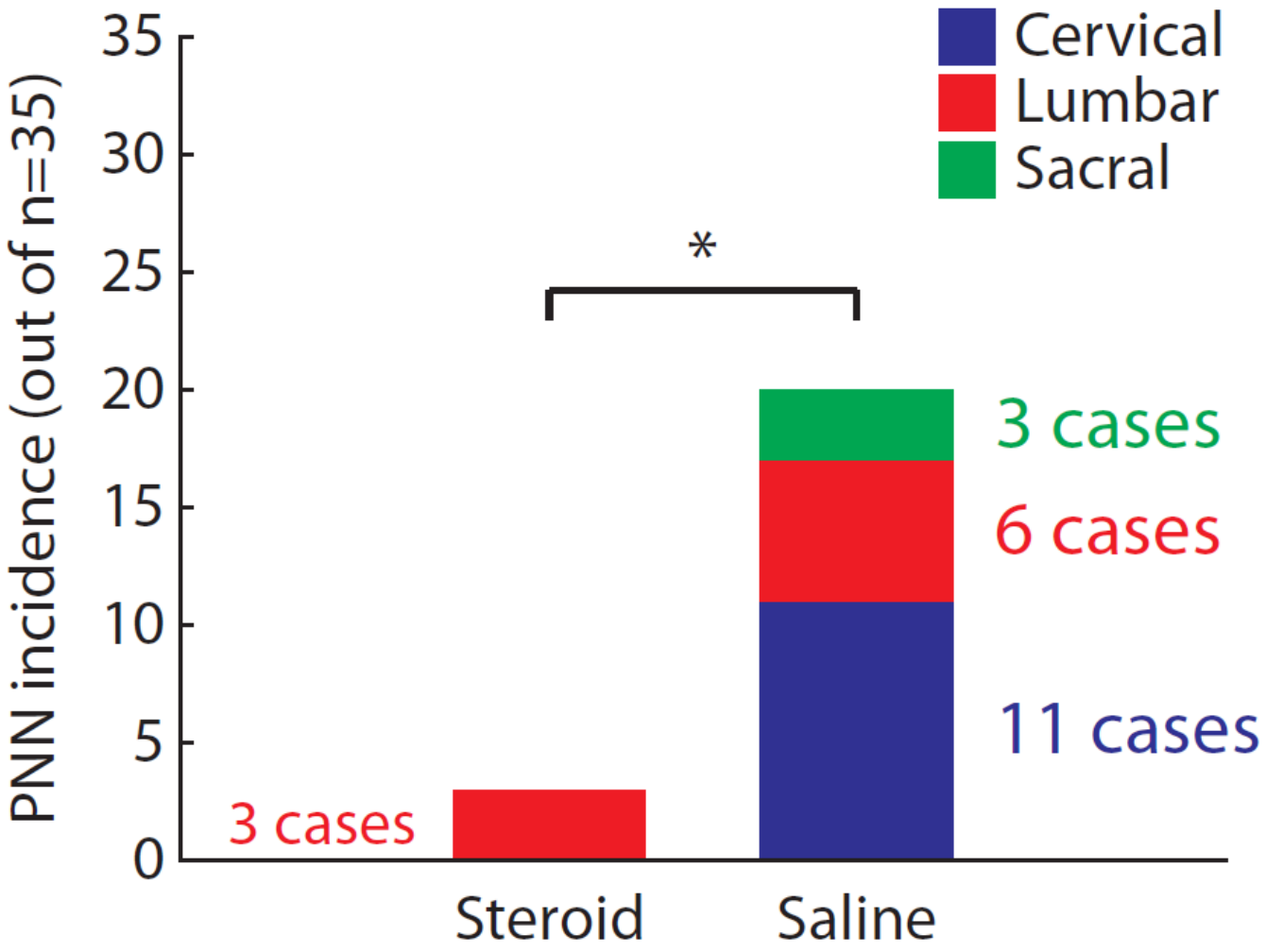
References

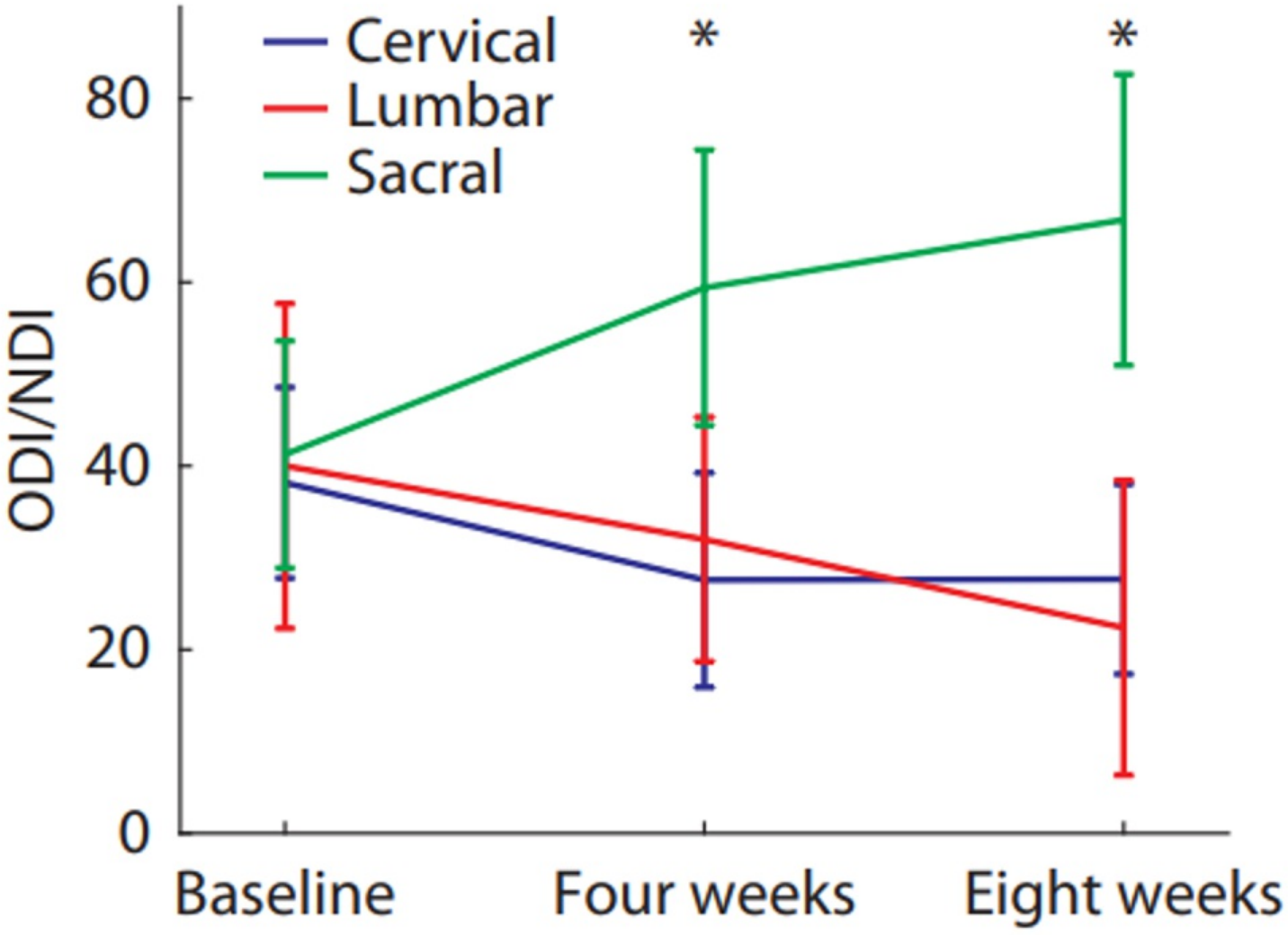
1. Stolzenberg D, Gordin V, Vorobeychik Y. Incidence of neuropathic pain after cooled radiofrequency ablation of sacral lateral branch nerves. Pain Med. 2014;15(11):1857-1860. doi:10.1111/pme.12553
2. Gazelka HM, Knievel S, Mauck WD, et al. Incidence of neuropathic pain after radiofrequency denervation of the third occipital nerve. J Pain Res. 2014;7:195-198. doi:10.2147/JPR.S60925
3. Singh JR, Miccio VF Jr, Modi DJ, Sein MT. The Impact of Local Steroid Administration on the Incidence of Neuritis following Lumbar Facet Radiofrequency Neurotomy. Pain Physician. 2019;22(1):69-74.
4. Odonkor, C.A., Shin, B.C. & Cohen, S.P. The Effect and Role of Steroids in Facet Joint Radiofrequency Denervation: a Narrative Review. Curr Phys Med Rehabil Rep 5, 180–185 (2017). https://doi.org/10.1007/s40141-017-0164-7
5. Dobrogowski J, Wrzosek A, Wordliczek J. Radiofrequency denervation with or without addition of pentoxifylline or methylprednisolone for chronic lumbar zygapophysial joint pain. Pharmacol Rep. 2005;57(4):475-480.

Disclosures

No

Tables / Images


PNN incidence (out of n=35)
35
30
25
20
15
10
5
0
Cervical
Lumbar
Sacral
*
3 cases
6 cases
11 cases
3 cases
Steroid
Saline



Post-ablation Neuropathic Pain Questionnaire

1. Do you/Did you have pain described as a burning or painful dysesthesia that is new since the procedure?
    a. If yes, when did it start?

    b. How long did it last?

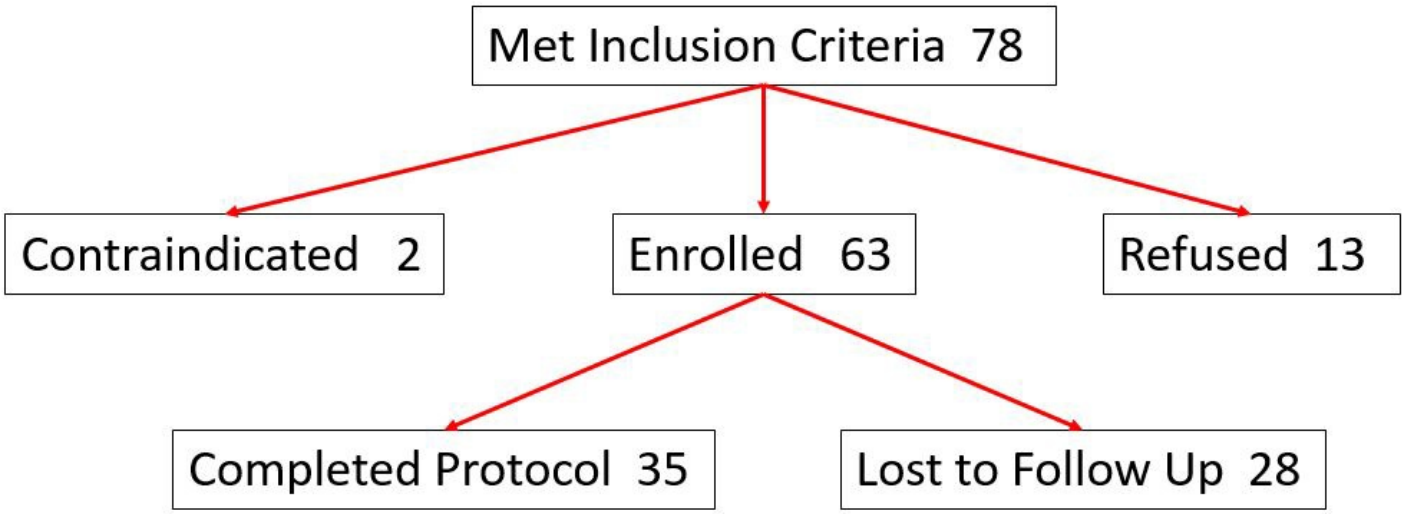
    c. Did it prevent you from completing normal acts of daily living?

Inclusion Criteria:

- Diagnosis of either cervical, thoracic, lumbar facet or sacroiliac joint pain who responded to concordant medial (or lateral for sacral level) branch blocks, and thus were scheduled for bilateral radiofrequency ablations.
- Greater than 18 years old
- English speaking.

Exclusion Criteria:

- Patients previously scheduled (within the last year) for radiofrequency ablation of the cervical, thoracic, lumbar facet joints, or sacroiliac joints at the same levels as those examined in this study
- Received any corticosteroid injection within three months leading up to the first RFA procedure.
- Anticoagulation
- Pacemaker
- Less than 18 years old
- Non-English speaking


Met Inclusion Criteria 78
Contraindicated 2
Enrolled 63
Refused 13
Completed Protocol 35
Lost to Follow Up 28