

## Notalgia Paresthetica: Successful Treatment with Exercises

Anne B. Fleischer<sup>1</sup>, Tammy J. Meade<sup>1</sup> and Alan B. Fleischer<sup>2\*</sup>

Departments of <sup>1</sup>Physical and Occupational Therapy and <sup>2</sup>Dermatology, Wake Forest University Health Sciences, 131 Miller Street, Winston-Salem, NC 27103, USA. \*E-mail: abfleisc@wfubmc.edu

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Notalgia paresthetica (NP) presents typically as a unilateral localized itch in the midscapular area. Although the pathogenesis of NP has not been fully elucidated, it is widely believed to be a neurogenic itch resulting from spinal nerve impingement or chronic nerve trauma (1, 2). Massey & Fleet (3) postulate that spinal nerves from T2 to T6 emerge through the multifidus spinae muscle at right angles and are therefore exposed to chronic trauma. Further evidence supporting this neurologic causation resides in the reported effective treatment options, which include typical neuralgia therapies, such as topical capsaicin (4), gabapentin (5), oxcarbazepine (6), and botulinum toxin type A (7). In addition, Savk et al. (8) demonstrated the use of transcutaneous electrical nerve stimulation to reduce the symptoms of 15 adults with NP. We describe here two cases in which the condition was improved by exercises involving non-pharmacologic active range of motion and strengthening of the scapular muscles as well as stretching of the pectoral muscles.

### RESULTS

*Case 1.* One author (ABF) developed chronic itch sensations inferior/medial to the right scapula typical for notalgia paresthetica. These sensations were particularly noticeable toward the end of the day. Her medical history was significant for Stage 1 breast cancer, diagnosed in 1998. Treatment included lumpectomy, axillary node dissection, radiation, and chemotherapy. She has been in remission since 1998.

Approximately 4 weeks prior to this itch sensation, she had discontinued weight-lifting due to lack of time. She described these sensations to her husband and co-author, who noted the absence of any skin eruption. However, the itch was most likely due to the fact that her spinal nerves from T2 to T6 emerge through multifidus spinae muscle at right angles and had been exposed to chronic trauma, resulting in an itch sensation.

With this in mind, we also considered the relationship of these spinal nerves with the muscles surrounding these nerves. Anatomically, the six upper cutaneous branches of the posterior division of the dorsal nerves first pass backward between the transverse processes then pierce the rhomboids and trapezius, before becoming cutaneous nerves at the side of the spinous processes. In addition, the six lower cutaneous nerves pierce the posterior inferior serratus and the latissimus dorsi in line with the angles of the ribs (9).

Considering this anatomy, ABF noted that she sat with rounded shoulders, which protracted and elevated her scapulae and flexed her head and spine. Within this position, the cutaneous spinal nerves are under constant stretch, which causes the spinal nerve angles to become more severe.

Knowing that the nerves first pierce the rhomboid and trapezius muscles prior to becoming cutaneous nerves, ABF thought that she may be able to lessen this nerve angle if she strengthened her rhomboids and latissimus dorsi muscles as well as stretched the pectoral muscles (Fig. 1). By completing these exercises and stretches, her posture changed from having

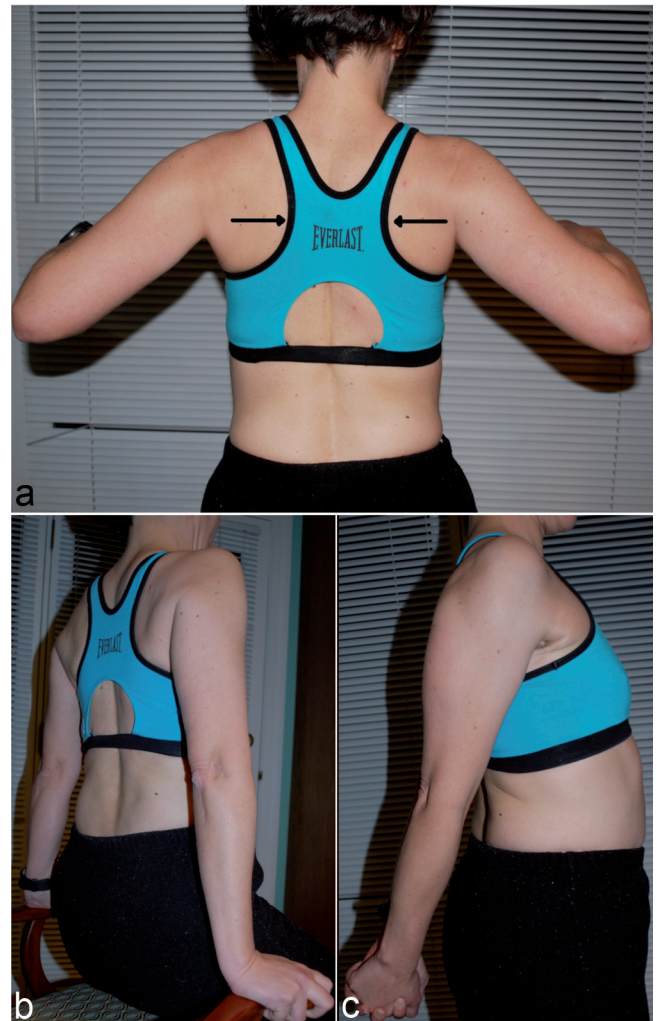


Fig. 1. a) Shoulder retraction. b) Latissimus dorsi strengthening. c) Stretching pectoral muscles.

protracted elevated scapulae and flexed head and upper spine; to a position where the scapulae and spine were in a neutral position. Consequently, the rhomboid muscles were shortened and the trapezius muscles were lengthened; resulting in a reduction in the angle of the nerve as it passed through the muscles and a decrease in the sensation of itch.

Another possibility may be that the extension of the spine during these exercises may have reduced the angle of the nerve at the spinal level. As the cutaneous nerves made a sharp exit between the transverse processes, the extension of the spine may also reduce the pressure on the nerves at that level; therefore reducing the itch sensation.

Initially, ABF experienced temporary relief from the itch; however, within a week of completing these exercises daily and resuming her weight-lifting routine, which included strengthening of her upper body, her itch disappeared.

*Case 2.* A 76-year-old African-American woman, who was referred to occupational therapy for reduced bilateral shoulder range of motion secondary to right mastectomy, axillary node dissection, and radiation along with left lobectomy, also had similar symptoms. When she was regaining range of motion in her shoulders, she began experiencing itch medial to her scapula in a pattern consistent with notalgia paresthetica and there were no visible skin eruptions present. She also had reduced strength in her rhomboids and had pectoral muscle tightness. She completed the pectoral stretching; as well as rhomboid and latissimus dorsi strengthening exercises. Within a week of completing these exercises regularly, her itch also resolved.

## DISCUSSION

Although pharmacologic intervention may be beneficial in many patients with notalgia paresthetica, strengthening and stretching exercises could be considered a reasonable first-line or adjunctive treatment.

This intervention was applied to two individuals who were motivated to stretch and strengthen their muscles. The resulting reduction in itch may be explained by the placebo effect. However, the reduction could also be explained by the fact that the nerves were no longer being stretched and/or compressed.

Therapeutically, a similar technique has been used within physical therapy in order to relieve lower back pain caused by either derangement or dysfunctional syndromes. Patients who have these pain syndromes are taught different loading strategies, emphasizing lower back extension (using the McKenzie method), which are completed regularly for 3 weeks. Studies have shown that pain is relieved, in a significant number of individuals, within 1–3 weeks when regularly completing these exercises (10, 11). It is plausible that the exercises and stretches used in the two cases described here have a similar effect on the sensation of itch. This simple approach for relieving chronic itch deserves further exploration.

## REFERENCES

1. Eisenberg E, Barmer E, Bergman R. Notalgia paresthetica associated with nerve root impingement. *J Am Acad Dermatol* 1997; 37: 998–1000.
2. Savk O, Savk E. Investigation of spinal pathology in notalgia paresthetica. *J Am Acad Dermatol* 2005; 52: 1085–1087.
3. Massey EW, Fleet AB. Electromyographic evaluation of notalgia paresthetica. *Neurology* 1981; 31: 642.
4. Wallengren J, Klinker M. Successful treatment of notalgia paresthetica with topical capsaicin: vehicle-controlled, double-blind, crossover study. *J Am Acad Dermatol* 1995; 32: 287–289.
5. Loosemore MP, Bordeaux JS, Bernhard JD. Gabapentin treatment for notalgia paresthetica, a common isolated peripheral sensory neuropathy. *J Eur Acad Dermatol Venereol* 2007; 21: 1440–1441.
6. Savk E, Bolukbasi O, Akyol A, Karaman G. Open pilot study on oxcarbazepine for the treatment of notalgia paresthetica. *J Am Acad Dermatol* 2001; 45: 630–632.
7. Weinfeld P. Successful treatment of notalgia paresthetica with botulinum toxin type A. *Arch Dermatol* 2007; 14: 980–982.
8. Savk E, Savk O, Sendur F. Transcutaneous electrical nerve stimulation offers partial relief in notalgia paresthetica patients with a relevant spinal pathology. *J Dermatol* 2007; 34: 315–319.
9. Gray H. Gray's anatomy. In: Pick TP, Howden R, editors. Philadelphia, PA: Running Press; 1974.
10. Machado L, Maher C, Herbert R, Clare H, McAuley J. The effectiveness of McKenzie method in addition to first line care for acute low back pain: a randomized control trial. *BMC Medicine*, Epub 2010, DOI:10.1186/1741-7015-8-10 accessed 08/26/2010.
11. Skikic EM, Suad T. The effects of McKenzie exercises for patient with lower back pain, our experience. *Bosnian J Basic Med Sci* 2003; 3: 70–75.