A Case of Brachioradial Pruritus Treated with Chiropractic and Acupuncture

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Abstract
This case report discusses the treatment of brachioradial pruritus (BRP) in a 57-year-old white male veteran with chiropractic and acupuncture. The patient presented with findings consistent with a diagnosis of BRP to include sharp pain, burning, and itching at the bilateral upper extremities over the C5 and C6 dermatomes with acquired excoriations over the affected regions. The only known palliative measure was applying ice packs. Plain film radiographs revealed mild degenerative change at the C4–C5 and C5–C6 levels and postural evaluation observed anterior head carriage with forward-rounded shoulders. He had pain upon palpation and motion restriction in the cervical spinal region. His trial of treatment consisted of manual cervical and thoracic spinal manipulation, manual cervical traction, prescription of a home exercise program, and acupuncture. At the conclusion of this trial, the patient’s symptoms resolved and his acquired excoriations began to show signs of healing. A proposed etiology of BRP is cervical spine disease. There are limited case reports and retrospective studies in the literature that examine conservative care options targeting cervical spinal disease for the treatment of BRP. This case study reviews a patient diagnosed with BRP and confounding cervical spine disease who was treated with chiropractic and acupuncture, experiencing relief from his symptoms.
Introduction

Brachioradial pruritus (BRP) is a rare localized neuropathic disorder affecting the dorso-lateral upper extremities [1]. The exact etiology of BRP is unknown; however, it is thought that one cause may be cervical spine pathology between C5 and C8 [1, 2]. Patients affected by BRP will most commonly experience painful dysesthesias such as burning, tingling, and itching in the distribution of the C5 and C6 dermatomes along the neck, shoulders, and upper arms. The condition is known to affect the bilateral upper extremities about 75% of the time [1, 3]. Primary skin lesions are not typically observed, yet constant itching and scratching of these regions due to the dysesthesia can lead to secondary lesions such as excoriations, prurigo nodules, or lichenification [1]. Diagnostic criteria of BRP are limited; however, one pathognomonic sign to help distinguish this condition is the “ice pack sign,” or the reduction in symptoms with application of ice [1, 4].

Case Report

A 57-year-old white male veteran was referred by dermatology to the chiropractic/acupuncture clinic for evaluation and treatment of BRP. The patient initially presented to dermatology with pruritus on his left lateral elbow, which was accompanied by significant sharp pain, burning, and itching. Five months after the initial onset, his symptoms progressed to include the bilateral dorsolateral upper extremities at the C5 and C6 dermatomes. His discomfort had a diurnal variation, as it would become worse at night and disturb his sleep. He was unsure of any provocative measures and his only relief came from applying ice packs on his arms to ease symptoms long enough to induce sleep. The patient denied ever having any other type of rash or skin change in the affected regions, but he did acquire excoriations secondary to constant scratching of his skin in an attempt to relieve the itch. He had no other relevant past medical history with the exception of intermittent mild cervical spine discomfort and a history of eczema while serving in the military. There was no family history of anything similar. He was given a diagnosis of BRP based on his presentation. When presenting to the chiropractic clinic 10 months after onset, he was not using any topical or oral medication to treat his condition. He explained that his entire life was being affected by his condition and he felt exhausted from pain-induced insomnia.

A chiropractic exam was performed to include a review of available imaging. Plain film radiographs revealed mild degenerative arthritis with mild posterior narrowing of the disc space at the C4–C5 and C5–C6 levels. Postural evaluation observed anterior head carriage with forward rounded shoulders. He had restricted cervical spine range of motion with reported tightness and pain upon palpation at all cervical spinal levels. Additionally, he had increased local neck pain with maximum foraminal compression. Upper extremity sensation, muscle stretch reflexes, and muscle strength were all symmetrical and within normal limits. Initial outcome measure scores were recorded to include a PEG (pain, enjoyment, and general activity) score of 6 and a Patient-Reported Outcomes Measurement Information System 6b t-score of 65.5.

The patient was determined to be a candidate for a trial of chiropractic care and was concurrently prescribed a home exercise program consisting of postural corrective exercise. Treatment consisted of manual cervical and thoracic spinal manipulation and manual cervical traction. He underwent 8 treatments in 5 weeks while he performed the home exercise program. His condition showed improvement, but his progress did plateau. Acupuncture was then added to the plan with point placement at bilateral LI11 and local ashi (tender) points throughout the bilateral upper extremities in the C5 and C6 dermatomal distributions.
Five treatments of acupuncture combined with chiropractic care were applied over a time span of 8 weeks. As a result of this care, the patient reported significantly decreased discomfort. For the first time in over a year, he slept through the night without being woken up by dysesthesia in his arms or from needing an icepack to help relieve his nighttime discomfort. He was no longer frequently scratching his skin due to itching, and his excoriations started to heal. His final PEG score improved by 50% and his Patient-Reported Outcomes Measurement Information System 6b pain interference score improved from 65.5 to 55.0. At 10-month follow-up, the patient continued to feel well and his scars showed continued healing.

**Discussion**

The etiology of BRP remains uncertain in the literature; however, two proposed mechanisms of cause exist. These include cervical spine disease and sunlight exposure [5]. The first is thought to cause cervical radiculopathy, resulting in BRP. Cervical radiculopathy results from various pathologies, most commonly herniated intervertebral discs and degenerative disc disease, which may result in nerve root compression and inflammation. Motor and/or sensory fibers can be affected, resulting in pain, paresthesia, or motor weakness in the corresponding dermatome [6, 7]. The second is thought to be a contributing factor to BRP because excessive exposure to UVR can cause damage to and cause a reduction in a subset of histamine-sensitive C-fibers which are responsible for the transmission of pruritus. It has been found that even though there is a reduction in cutaneous C-fiber number, increased pruritus has been reported in patients with BRP. Microscopically, BRP includes actinic elastosis and a decreased number of epidermal and dermal nerve fibers. Actinic elastosis is consistent with excessive exposure to UVR, and the decreased density of epidermal and dermal nerve fibers can be seen with phototherapy treatment and therefore would be consistent with these microscopic findings of BRP [1].

Case reports and retrospective studies that examine conservative care options for the treatment of BRP show that targeting cervical spinal disease with modalities such as TENS, massage, chiropractic, physical therapy, and acupuncture has shown benefit [2, 8]. These treatments are known to improve pain and functional abnormalities due to multilevel degenerative changes and spondyloarthropathies in the cervical spine, and acupuncture specifically can decrease itch intensity [2, 8–12]. Manual therapies consist of traction, joint mobilization, manipulation, soft tissue manipulation, and neurodynamic mobilizations. Although no particular manual therapy has been found to be superior for cervical radiculopathy, traction is the most frequently used. The purpose of joint-oriented techniques is to treat joint dysfunction and relieve nerve root compression, thus centralizing the symptoms [6, 13]. The mechanism by which acupuncture is thought to work is such that microtrauma created by the needle puncture deforms connective tissues and alters fibroblastic structures, resulting in the release of ATP. ATP is then reduced to adenosine and other purines which can bind onto purinergic receptors, thereby acting as antinociceptive agents [12].

Other treatment options for BRP found in the literature include avoiding UVR, topical medications, systemic medications, and in certain cases, surgery. Topical medications include capsaicin, mild steroids, anesthetics, antihistamines, and amitriptyline/ketamine. Oral medications prescribed for this condition include oral tricyclic antidepressant, amitriptyline, gabapentin, risperidone, fluoxetine, chlorpromazine, and hydroxyzine [1]. Gabapentinoids have been recently highlighted in the literature as efficacious for treating prurigo nodules and include microgabalin and pregabalin [1, 3, 14]. Microgabalin acts on calcium channels on the sensory
neurons to modulate their signaling [14]. Pregabalin is known to work on presynaptic glutamate-release suppression [3]. Systemic antihistamine therapy has not been found effective for treating this condition, for unknown reasons. Surgery is sometimes performed as a last resort in those who are found to have a correctible pathological target seen on imaging in the cervical spine [3]. The veteran treated in this case study experienced improvement in his presentation of BRP following a trial of treatment with chiropractic care, a home exercise program, and acupuncture.

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**Statement of Ethics**

Written and informed consent was obtained from the patient for publication of the details of their medical case and any accompanying images. Ethical approval was not required for this study in accordance with local/national guidelines. The local privacy officer and Research Development Committee also provided approval for publication of this report.

**Conflict of Interest Statement**

The authors have no conflict of interest to declare.

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**Author Contributions**

Kathryn J. Golden was the main author on this study. She decided on a treatment plan for this veteran based on research performed prior to his initial visit. She did initial exam and conducted the treatment. Ryan M. Diana helped to interpret the work of Kathryn J. Golden and together they came to the conclusion of this study. Both the authors drafted this manuscript and made edits to create the final approved version to be published. Both the authors agree to be accountable for all aspects of this work.

**Data Availability Statement**

The data for this study is unavailable as it exists within a veteran patient’s private medical health record and is not publicly available. The chart notes which exist for this patient’s case are located within the Veterans Health Administration electronic medical records. Further inquiries can be directed to the corresponding author.
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