CLINICAL VIGNETTE

Chronic Arm Pruritus

Lorraine Anderson, MD and Samantha Swain, MD

A 48-year-old female with right-sided sciatica and genital herpes on suppressive acyclovir presented to the Allergy Immunology for evaluation of allergic etiology of pruritus localized to the bilateral dorsolateral forearm from elbow to wrist. The pruritus first occurred four years ago, lasted for four months, then recurred intermittently with worsening fourteen months prior to presentation. Symptoms include stinging, burning pain, with pins and needle sensation. She denied associated skin changes, or rashes, including urticaria, atopic dermatitis, mouth/throat pruritus, tongue/throat angioedema, shortness of breath, nausea, vomiting, diarrhea, dysphagia, and food impaction. Past medical history was notable for sciatica which began 2 years ago and frequent UV tanning bed use. Social history was notable for avid hiking without consistent sun protection. She tried topical diphenhydramine, topical 1% hydrocortisone, oral diphenhydramine 25-50mg, oral cetirizine 10mg, oral fexofenadine 180mg, oral acetaminophen 650mg, and oral ibuprofen 500mg without symptom relief. She reported that use of an ice pack is most helpful and provides immediate relief of symptoms. However, symptoms return when the ice pack is removed.

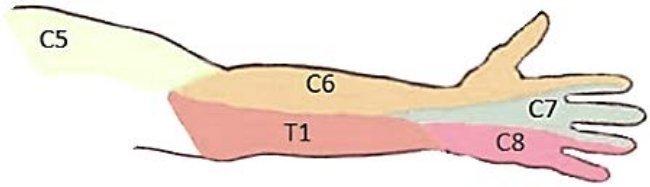
Her physical exam was unremarkable except for evidence of sun damaged skin and excoriations at the bilateral dorsolateral forearms. The patient was most interested in determining what she was allergic to as the cause of her pruritus.

Chronic pruritus is defined as pruritus occurring for more than six weeks. The sensation of pruritus or itching can originate in the skin and associated tissues as in atopic dermatitis/eczema. However, pruritus may also originate in the peripheral nervous system in diabetic neuropathy or in the central nervous system following a stroke. While pruritus and pain are distinct sensations, they often interact and may occur together, depending on the disease process. Chronic pruritus can be associated with skin conditions, including: urticaria, prurigo nodularis, atopic dermatitis, bullous pemphigoid. It may represent a symptom of systemic diseases including: hepatic-cholestasis; renal-uremia; endocrine-diabetes mellitus, thyroid disease; infectious-HIV, parasitosis; rheumatologic; malignant- Polycythemia vera rubra, Hodgkin's lymphoma; neuropathic; iatrogenic- chemotherapy or may be idiopathic. Generalized pruritus without primary skin lesions is unlikely to be related to allergies such as food allergy, environmental allergy, contact dermatitis in the absence of other symptoms and physical exam findings to suggest an allergic etiology. Localized pruritus in the absence of a skin eruption suggests the possibility of neuropathic or psychogenic itch. Neuropathic pruritus represents 8% of chronic pruritus cases.[1]

Examples of neuropathic pruritus include post herpetic neuralgia, multiple sclerosis, notalgia parasthetica and Brachioradial pruritus (BP). BP is a specific localized subtype of neuropathic pruritus and dysesthesia common in middle-aged fair skinned women, especially Fitzpatrick type 1 and II skin types.[2,3] BP is seen in women three times more than men, with a mean age of 59 and most commonly presents as localized pruritus of the proximal dorsolateral forearm. Symptoms may be intermittent, unilateral or bilateral and in some cases extend to the upper arm, shoulder, neck or upper trunk.[4] Diagnosis is made through history and physical exam though the "ice-pack sign" is considered pathognomonic. Testing involves placing an ice-pack to the affected area and the patient should affirm immediate improvement in pruritus, which returns shortly after removal of the ice-pack.[4]

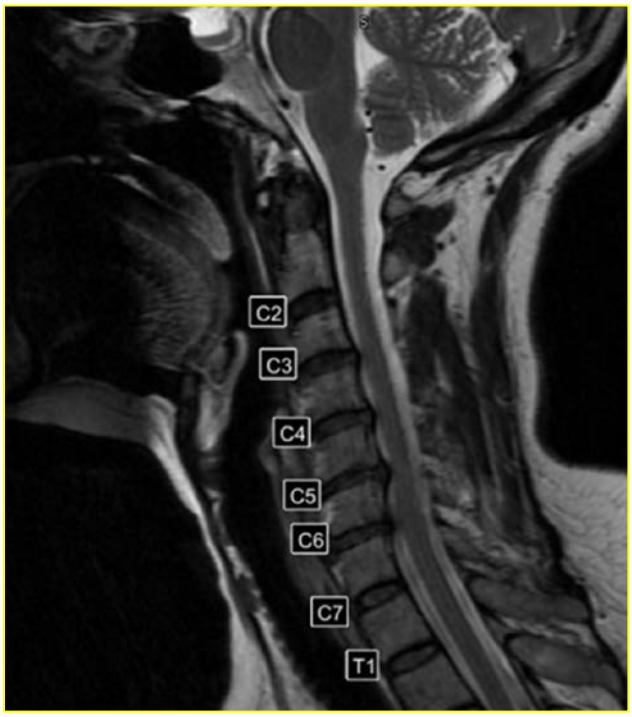
The pathogenesis of BP is not well understood. In general, disturbances at any level of the somatosensory system, from peripheral fibers to central nervous system, can lead to neuropathic itch. Recent studies suggest that BP involves both cervical nerve root irritation or impingement at the levels of C5 to C8 (Figure 1)[2] as a predisposing factor and ultraviolet radiation of the affected area as an exacerbating factor. This is supported by retrospective studies showing the majority of patients diagnosed with BP have imaging (CT or MRI) positive for one or more cervical spine abnormalities, including osteoarthritis, foraminal stenosis, degenerative joint disease (DJD) and cervical nerve impingement due to disk herniation. DJD was noted in 93% of patients diagnosed with BP who underwent cervical spine imaging (Figure 2).[2-4] Of note, absence of radiographically visible cervical nerve irritation or impingement does not rule out the diagnosis of BP. Observational data report BP patients tend to be middle-age, fair-skinned women, residing in sunny climates and frequently engage in outdoor sports and activities. Additionally, the condition frequently worsens in the summer and is relieved during the winter months and with sun protection.

Figure 1. Cervical dermatomes



Adapted from Berger AA et al 2019[2]

Figure 2. MRI cervical spine corresponding to cervical dermatomes



There are no evidence-based guidelines specifying the best practices for treatment of brachioradial pruritus. Systemic antihistamines are often ineffective in the treatment of BR.[5]

Other treatments include avoidance of UV radiation with use of long-sleeved UV protective clothing, sunscreen, topical capsaicin, topical antihistamines, topical anesthetics, mild-medium potency topical steroids, topical amitriptyline, and ketamine. Oral medications include anticonvulsant (gabapentin, pregabalin), antidepressants (fluoxetine, doxepin, amitriptyline), and antipsychotics (risperidone, chlorpromazine). Targeted interventional injections include CT guided cervical nerve root blocks, Trans foraminal epidural steroid injections and other interventional pain procedures. Surgery is rare and reserved for patients with radiographically evident correctable cervical spinal abnormalities.

An allergic etiology was unlikely in this patient. She lacked a history of atopic disease, her physical exam was negative for primary skin lesions and her environmental allergy skin test was negative. We advised referral to Neurology for evaluation of clinical or radiographic evidence of cervical spine or cervical nerve root pathology. The patient was seen by Neurology, and the subsequent MRI of her cervical spine was unremarkable. She was started on gabapentin and reported satisfactory response. She also continues to limit her exposure to UV radiation.

This case demonstrates the importance of a multidisciplinary approach to the evaluation of pruritus. Chronic pruritus is documented as a difficult to diagnose and treat condition associated with anxiety, depression, insomnia, and decreased quality of life. While our patient responded well to oral gabapentin, none of the hundreds of treatments for BP has shown to be more efficacious than the others. Clinicians should have a low threshold to refer patients to Pain Specialists for severe neuropathic pain and Psychiatry for symptoms of anxiety and depression as BP can have lasting consequences and adversely affect quality of life.

REFERENCES

1. **Pereira MP, Lüling H, Dieckhöfer A, Steinke S, Zeidler C, Ständer S**. Brachioradial Pruritus and Notalgia Paraesthetica: A Comparative Observational Study of Clinical Presentation and Morphological Pathologies. *Acta Derm Venereol*. 2018 Jan 12;98(1):82-88. doi: 10.2340/00015555-2789. PMID: 28902951.
2. **Berger AA, Urits I, Orhurhu V, Viswanath O, Hasoon J**. Brachioradial pruritus in a 52-year-old woman: A case report. *Case Rep Womens Health*. 2019 Oct 31;24:e00157. doi: 10.1016/j.crwh.2019.e00157. PMID: 31763184; PMCID: PMC6861558.
3. **Robbins BA, Schmieder GJ**. Brachioradial Pruritus. 2021 Sep 14. In: *StatPearls [Internet]*. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. PMID: 29083620.
4. **Fazio SB**. Pruritus: Etiology and patient evaluation pruritus. In: *UpToDate*, Post TW (Ed), *UpToDate*, Waltham, MA. (Accessed on December 07, 2021). Available at: https://www.uptodate.com/contents/pruritus-etiology-and-patient-evaluation.
5. **Fazio SB**. Pruritus: Therapies for localized pruritus. In: *UpToDate*, Post TW (Ed), *UpToDate*, Waltham, MA. (Accessed on December 07, 2021). Available at: https://www.uptodate.com/contents/pruritus-therapies-for-localized-pruritus?search=brachioradial%20pruritus&topicRef=16589&source=see_link#H3478325334.