

## CLINICAL VIGNETTE

# Peripheral Neuropathy

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An 81-year-old female with treated breast cancer complicated by chemotherapy induced dilated cardiomyopathy presented with paresthesias in her extremities, which started after chemotherapy in 2013. She was diagnosed with right breast cancer in 1986. She had moderately to poorly differentiated infiltrating ductal carcinoma, which was weakly ER positive, and PR+ HER2/neu negative. She underwent a right lumpectomy and radiation. In 1991, the breast cancer reoccurred, and she underwent right mastectomy. In 2013, she was diagnosed with invasive lobular carcinoma, ER/PR+, and HER2/neu positive. She underwent left mastectomy followed by paclitaxel, trastuzumab, and then aromatase inhibitor, which was discontinued after several years due to intolerance. Since receiving paclitaxel, she reported tingling in the tips of her fingers and bottom of her feet without a burning sensation or pain. Her symptoms were worse with walking. Toxic sequelae of chemotherapy and mild glucose intolerance were felt to be contributory. Gabapentin provided no relief.

Current medications and supplements included: amlodipine, olmesartan, vitamin D2, levothyroxine, and rivaroxaban.

Physical examination was notable for decreased sensation in the tips of fingers and soles of her feet, palpation tenderness of soft tissues in the lower extremities to below the knees and in the neck and shoulders, and mild chronic venous insufficiency in the lower extremities. Laboratory evaluation demonstrated mild glucose intolerance with hemoglobin A1c of 6.1, complete blood count, comprehensive metabolic panel, serum vitamin D25-OH and B12 levels, and thyroid function tests were without abnormality.

Over the ensuing six months, her treatment regimen included acupuncture, lidocaine trigger point injections, lifestyle evaluation and recommendations, and instruction in self-care activities. Acupuncture points included: GB 34, LI 10, LI 11, Sp 4-6-9-10, Li 4, Liv 3, St 36, Yintang, GB 20, GB 21, UB 63, Kd 1, Kd 2, Kd 3, SJ 5, GB 41, Baxie, and Bafeng. After the first three visits, the gauge of the acupuncture needles was increased for more stimulation from 36 to 34. At the seventh visit, electrical stimulation was added with the larger gauge (34) acupuncture needles. Trigger point injections with 1% lidocaine were administered in the lower extremities at the soleus and gastrocnemius muscles and in the neck and shoulder region at the trapezius muscle. In addition, there was a detailed discussion of physical activity, dietary habits, and sleep patterns throughout the treatment course. Both past and present stressors were identified and reviewed. Daily self-care

activities were prescribed, which included nightly warm foot soaks with epsom salts, daily acupressure, self-massage, and stretching exercises. Dietary recommendations emphasized more cooked whole foods with moderation and variety along with her own attempts to limit intake of sugar and alcohol.

Over six months, she received eleven treatment sessions consisting of acupuncture and trigger point injections with lifestyle and self-care advice and noted substantial improvement in her symptoms. At the last visit, she reported only intermittent numbness in her heels and fingers. She stated that she was able to walk better and at times felt that she was almost back to baseline. Overall, the patient noted improvement after the initial visit with significant improvement at the eighth and final visit.

### Discussion

Peripheral neuropathy occurs when there is disease or damage to the peripheral nerves. This typically results in impaired sensation (numbness) or abnormal sensation (tingling, cramping, or burning pain). Peripheral neuropathy can be due to inflammation, toxins, vitamin deficiency, medications, infection, immune system disease, trauma due to an injury, radiation therapy, diabetes, and environmental factors such as prolonged cold exposure, or excessive alcohol use.<sup>1</sup> It can also be idiopathic or genetic. Although data are lacking, up to 25% of cases are considered idiopathic.<sup>2,3</sup> Peripheral neuropathy can occur acutely or can progress slowly with a more chronic presentation.

Management should address underlying processes, which includes reducing exposure to endogenous or exogenous toxins and/or treatment of underlying illnesses (e.g., connective tissue disorders or endocrinopathies). For example, when diabetes is the cause of peripheral neuropathy, blood sugar control is an essential component of treatment. Thyroid supplementation will likely be of benefit in patients with hypothyroid polyneuropathy.

While treatment of the underlying disease is paramount, alleviation of symptoms and prevention of complications plays a significant role in management as well. Medications such as gabapentin, pregabalin, and tricyclic antidepressants may be effective at reducing pain and are typically well tolerated.<sup>4</sup> Other potentially useful medications include carbamazepine, phenytoin, topiramate, baclofen, mexiletine, dextromethorphan, duloxetine,<sup>5</sup> although definitive evidence

comparing their effectiveness is lacking. Pain medications such as tramadol, NSAIDs, and low-dose opioids can be effective for breakthrough pain. Medications can be useful but can potentially add to financial and physiological burdens especially with potential toxicities and increased risk of adverse drug interactions.

Acupuncture and electroacupuncture have been shown to be a potential therapy to improve peripheral neuropathy.<sup>6</sup> It is likely that acupuncture stimulates the production of endorphins in the nervous system. These endorphins are thought to be involved in the pathogenesis of neuropathy.<sup>7</sup> There have been several studies exploring the effect of acupuncture as treatment for various types of peripheral neuropathy including chemotherapy-induced,<sup>8,9</sup> diabetic, HIV-associated, and neuropathy of mixed origin.<sup>10</sup> In randomized controlled studies, sham studies, and case series, acupuncture was shown to decrease pain and numbness and improve nerve conduction velocity.<sup>11</sup> The deactivation of myofascial trigger and tender points, which sometime overlap with acupuncture points, can be useful in the treatment of both pain and non-pain symptoms and conditions. Myofascial pain syndromes and fibromyalgia, which occupy opposite ends of the spectrum as localized and generalized forms of soft tissue dysfunction, are exceedingly common but not widely recognized by many clinicians.

### Conclusion

An integrative East-West medical approach, comprising judicious incorporation of principles and therapeutic modalities of traditional Chinese medicine (TCM), a biopsychosocial perspective, enhanced appreciation of the role of the soft tissues in health and disease, and a sharp focus on disease prevention and health promotion can be useful in the management of symptoms related to peripheral neuropathy. This allows for a broad approach to healing that offers comprehensive patient centered care in addressing a patient's symptoms and health—and ultimately, their quality of life. The integrative East-West medical approach can be considered as a treatment option when managing peripheral neuropathy.

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