



## PALLIATIVE CARE CASE OF THE MONTH

### “Central Post-stroke Pain”

by

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**Case:** SB is a 61-year-old man with multiple myeloma complicated by thoracic compression fractures status post kyphoplasty and radiation therapy, as well as a left basal ganglia/thalamic hemorrhagic stroke one year prior to presentation, who presented with worsening right-sided pain. He described the pain as a “paralyzing compression” on his right shoulder, hand, and foot, accompanied by numbness. Allodynia was noted on exam. He had previously taken gabapentin, which he did not feel was helpful, and he was currently taking duloxetine 60 mg daily and oxycodone 10-15 mg PRN. Imaging on admission showed a pneumonia and new thoracic compression fractures without cord compromise. Neurosurgery and Neuro-Oncology were consulted and thought he had a central pain syndrome related to his prior hemorrhagic stroke.

**Presentation and Diagnosis:** Chronic pain occurs in about 50% of patients after stroke and is often under-recognized.<sup>1</sup> The pain may be mechanical, as a result of spasticity or decreased movement of a limb, frequently the shoulder, or it may be neuropathic. Central post-stroke pain (CPSP) is a particular, difficult to treat subset of pain occurring in anywhere from 1-12% of patients after stroke.<sup>2</sup> This syndrome most commonly occurs after thalamic or lateral medullary strokes, though it may occur after stroke affecting any portion of the somatosensory tract. Onset typically occurs in the first six months after a stroke, but CPSP has been reported even years later. It can be exacerbated by stress or cold weather.

CPSP is a diagnosis of exclusion, though certain features are more typical. Patients describe the pain as burning, aching, prickling, freezing, or squeezing. The pain can be localized or hemi-body, though the trunk and face are often spared. The pain is often accompanied by impairments in pain or temperature sensation, but proprioception or touch may also be impaired, or sensation may be completely intact. Allodynia and hyperalgesia are commonly present. Diagnostic criteria include 1) pain onset after a stroke 2) corresponding to the area where the lesion occurred where 3) other causes of the pain are unlikely. Additional criteria suggestive of the diagnosis include: 1) pain not related to inflammation or tissue damage, 2) pain described as burning, cold, electric, aching, pressing, stinging, or pins and needles, and 3) presence of allodynia or dysesthesia.<sup>2</sup>

**Treatment:** CPSP can be very challenging to treat.<sup>3</sup> The scarce number of therapeutic trials are limited by small population and biased methodology. Many of the treatment options are extrapolated from studies of neuropathic pain, which often include a very low percentage of CPSP patients. Non-randomized or blinded studies have suggested that gabapentin and duloxetine may be effective,<sup>4,5</sup> and one small non-randomized study suggested that a steroid taper might help.<sup>6</sup>

A study of pregabalin in central neuropathic pain more generally showed that it could be helpful,<sup>7</sup> but only 12 of the patients had CPSP, and another trial focused more specifically on patients with CPSP found that pregabalin helped with sleep and anxiety but did not improve pain.<sup>8</sup> Amitriptyline and lamotrigine have also been shown to be helpful.<sup>9,10</sup> Opioids, overall, seem to be less helpful than other medicines, though trials are limited.<sup>2</sup> Acknowledging the limitations of available evidence, one recent clinical review suggested using tricyclic antidepressants or gabapentin as first line treatment, and moving on to SNRIs, lamotrigine, or opioids as second line treatments.<sup>2</sup>

Non-medical treatments may also be helpful for CPSP, though studies are similarly burdened by poor blinding or lack of controls. Repetitive transcranial magnetic stimulation may help, but the effects seem to be short-lived.<sup>11</sup> For more invasive interventions, one small, non-randomized trial of deep brain stimulation showed that it could be effective.<sup>12</sup> Finally, a large case series of motor cortex stimulation indicated that it was effective in about half of patients.<sup>11</sup>

**Case Resolution:** SB likely had CPSP exacerbated by his infection. He was started on an increased dose of oxycodone and resumed on gabapentin. His pneumonia was treated while in the hospital. He noted improvement in his pain on discharge. When seen on follow-up, his pain had continued to improve and was primarily manifested as aching in his right shoulder.

**Summary:** Central post-stroke pain occurs in close to 10% of patients after stroke and can be an unrecognized source of distress. It can occur on a variable timeframe after a stroke and presents as neuropathic pain loosely in the distribution of the stroke. CPSP can be very challenging to manage. In general, it should be treated similarly to other neuropathic pain syndromes, though this is based on limited, poor-quality evidence.

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*Personal details in the case published have been altered to protect patient privacy.*

For palliative care consultations please contact the Supportive and Palliative Care programs at PUH/MUH, 412-647-7243, pager # 8511, Shadyside, 412-647-7243, pager # 8513, Perioperative/ Trauma Pain, 412-647-7243, pager # 7246, UPCI Cancer Pain Service, pager 412-644-1724, Magee Women's Hospital, pager 412-647-7243 pager # 8510, VA Palliative Care Program, 412-688-6178, pager # 296. Hillman Outpatient: 412-692-4724. For ethics consultations at UPMC Presbyterian-Montefiore and Children's pager 412-456-1518

With comments about “Case of the Month” call Dr. Robert Arnold at (412) 692-4834.



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