

## **IVPAM Case presentation by Marie Bartling, DVM (IVECCS conference 2019)**

**Introduction:** A 6 yr-old MN Chihuahua mix presented for exam after knee surgery for luxating patella correction and simultaneous TPLO. Multimodal analgesia and regenerative medicine via extracorporeal shockwave therapy (ECSWT) and rehabilitation were instrumental in restoring his physical health over 60 days.

**Signalment:** 6 yr MN Chihuahua Mix

**Presenting complaint:** Lameness left pelvic limb post surgical ACL and MPL repair

**Relevant physical findings:** He displayed lameness (grade 3/5) in the left pelvic limb, atrophy of the thigh, hyperextension of the stifle in weight bearing. He was painful with extension of the lumbosacral spine, and his posture was weight-shifted forward with carpal hyperextension in his thoracic limbs.

**Pain diagnosis:** inflammatory pain, central sensitization, and joint laxity with chronic muscle strain leading to maladaptive back pain and muscle weakness.

**Pain management treatment plan:** 1) Reduce peripheral sensitization from inflammation through NSAIDS and supplements, laser and Pulsed Electromagnetic Field (PEMF), and manual therapy 2) Modulate of central sensitization through opioids, gabapentin, amantadine 3) Reduce myofascial pain using ECSWT with rehabilitation through specific exercise

**Final Outcome:** Elimination of pain, lameness and medications over 60 days. Return to muscle building and restoration of weight bearing, normal posture, and family activities.

**Discussion:** NSAIDS reduce cytokine and COX activity peripherally as well centrally, they were used to treat his stifle arthritis and facet arthritis. Gabapentin modulates central sensitivity and neuropathic allodynia via reduced Ca<sup>2+</sup> neuronal influx, and Amantadine blocks NMDA receptors for central modulation, they were used to treat his back pain and potential sciatic pain. PEMF reduces peripheral sensitization and modulates neuropathic pain, potentially via cellular respiration; it was used on his lumbosacral spine. Methadone inhibits transmission of nociceptive input and activates descending modulatory pathways of pain perception via opioid receptors, and was added after a refractory period of pain. Finally, ECSWT was used to modulate peripheral nerve sensitivity, to restore flexibility and relieve muscle spasm, and range of motion to his hip. In rehabilitation, he was cared for with laser, massage, manual therapy, and hydrotherapy and underwater treadmill.

**Conclusion:** Pain prevented this patient from physical recovery. He made his biggest gains within a week of extracorporeal shockwave therapy. Physical restrictions in the body are a constant source of mechanical nociceptor stimulation and should be addressed in animals that require consistent pain medications after an injury or early stage arthritis has started to create other physical compensations.