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Use of Nanocapacitor-Based technology for the treatment of musculoskeletal pain

Abstract:

Alternative and complementary techniques are increasingly considered for the treatment of pain as an alternative to opioids and anti-inflammatory drugs to decrease the risk of addiction and side effects associated with the use of these drugs. The introduction of nanotechnology in medicine has led to the development of Nano-transporters allowing to prolong drug effectiveness and safety. It has also led to development of nanocapacitors based devices/patches. Evidence suggests that the use of nanocapacitors may represent an alternative to biological capacitor in the case of trauma local. Thus, it is well established that membranes maintain the electrical cellular equilibrium and that in case of trauma membranes are destroyed and the equilibrium is altered. This leads to a decrease in local pH, increase in inflammation and pain. 1-4 Evidence suggests that nanocapacitors devices/patches may play the role of an external capacitor and therefore allow to reduce pain. This hypothesis is supported by not only anecdotal reports of the effectiveness of the NeuroCuple™ device/patch (nCap Medical LLC; Heber City, Utah, USA) to reduce postoperative pain and opioid consumption following a unilateral total knee arthroplasty, but also the effectiveness of the Kailo™ device/patch (Kailo Labs LLC, Sandy, Utah, USA) to reduce pain and analgesic consumption in patients with chronic pain related to arthritis, neuropathy or radiculopathy pain, and myofascial or musculoskeletal pain or spasm at the level of the hands, feet, hips, knees, neck, shoulders, and back.

Conclusion: Recent progress in nanotechnology may also offer an interesting alternative to the management of acute and chronic pain

Biography

Chelly Jacques E is an MD, PhD, MBA. He graduated from Medical School in 1976. He is Board Certified in Anesthesiology and Intensive Care from Paris France. He completed his PhD and MBA from the University of Houston, Tx. Currently he is Professor in the department of Anesthesiology and Perioperative Medicine and in the department of Orthopedic Surgery, University of Pittsburgh, Pittsburgh, PA, USA. He is the author of over 225 peer review articles, 350 abstracts and has presented his work and research in over 200 national and international meetings. He edited or co-edited 8 text books.