Spinal Cord Stimulators and Opioid Use in Chronic Pain Patients

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Background

- 55 million US citizens live with chronic pain (Nadeau, 2021) .
- Treatments for chronic pain can include chronic opioid therapy (COT), spinal cord stimulation (SCS), physical therapy, acupuncture, surgery, injections.
- Between 2019-2020: opioid related deaths increased by 33% in adults aged 35-49 & 49% in 15–24-year-olds (Mann, 2021).
- SCS is an option when other treatment modalities have failed.
- Use of SCS can decrease pain, ultimately decreasing the number of opioids used and prescribed.

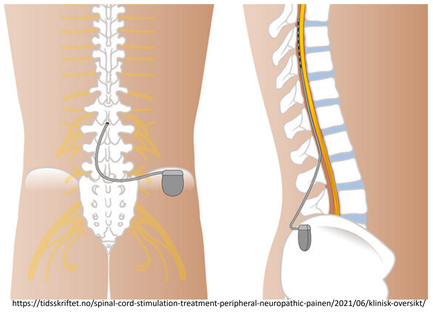
https://cornerstoneclinics.com/chronic-pain/

Definitions

- **Chronic pain:** pain lasting longer than 3 months; debilitating condition that effects individual's ability to live a high-quality life.
- **COT medications:** Morphine, Codeine, Oxycodone, Hydrocodone, Methadone, Tramadol, Fentanyl (CDC, 2021).
- **SCS:** device implanted into the epidural space, that when stimulated, provides tingling sensations to decrease pain (Johns Hopkins, 2022b).

Question

In patients with chronic pain that qualify for spinal cord stimulation, how do spinal cord stimulators compared to the use of opioids affect their pain level?



https://tidsskriftet.no/spinal-cord-stimulation-treatment-peripheral-neuropathic-painen/2021/06/klinisk-oversikt/

SCS Qualifications

- Complex regional pain syndrome
- Thoracic/lumbar radiculopathy
- Chronic pain throughout back and limbs
- Failed back surgery syndrome
- Reflex sympathetic dystrophy

https://www.google.com/search?q=oxycodone&tbm=isch&ved=2ahUKEwjzgPKI-pj2AhXZCc0KHShhAToQ2-cCegQIABAA&oq=oxycodone&gs_lcp=

Study	Description	Results
Discontinuation of Chronic Opiate Therapy After Successful Spinal Cord Stimulation is Highly Dependent Upon the Daily Opioid Dose, conducted by Simopoulous et al., 2019	❖ This level III, retrospective analysis examined the number of opioids taken after successful implantation of an SCS. ❖ Conducted over 16 years (1999-2015) in Boston, MA. ❖ Population: 214 patients. ❖ Follow up appointments were made for three years post implantation.	❖ Prior to implantation 78% patients were on COT. ❖ COT usage post-implantation of SCS: 15% discontinued & 30% significantly reduced. ❖ If the total amount of morphine milligram equivalent (MME) was less than 30mg/day prior to implantation, patients had a higher success rate of reducing or discontinuing COT after implantation of an SCS.
Association of Opioid Usage with Spinal Cord Stimulation Outcomes, conducted by Sharan et al., 2017	❖ This level III, retrospective analysis examined insurance claims in patients who used COT prior to and post implantation of an SCS. ❖ Conducted over 4 years (2010-2014). ❖ Population: 5,476 patients. ❖ Follow up appointments for at least one year post implantation.	❖ 46% reported pain relief with an SCS with 25% deceasing, 21% maintaining the same & 54% increasing COT. ❖ 8% had no pain relief from an SCS and had it explanted, leading to moderate (5-90mg/day) or severe (≥ 90mg) use of COT. ❖ Increased use of opioids prior to SCS implantation, lead to higher rates of explanations.
Improved Psychosocial and Functional Outcomes and Reduced Opioid Usage Following Burst Spinal Cord Stimulation, conducted by Falowski et al., 2020	❖ This level IV, correlational design study examined overall pain relief from implantation of an SCS after being on COT. ❖ Population: 269 patients. ❖ Follow up appointments for one year and anticipated follow ups at 18 and 24 months.	❖ Pain includes many factors: depression, anxiety, sleep, overall quality of life, making it difficult to stop COT. ❖ 6 month follow up: 212 patients continued the same & 88% decreased COT. ❖ 12 month follow up: 19% discontinued 57% decreased & 32% maintained same COT.

Conclusion

- Most patients experience increased pain relief from the implantation of an SCS.
- Some patients had more success with increased pain relief using both COT and an SCS.
- Some patients were able to discontinue COT, suggesting pain relief from the SCS, while most patients maintained some dose of opioids post SCS implantation.
- Pain should be considered a multifactorial issue since COT can impact the psychological state of patients.
- More research needs to be conducted on patients who were unable to discontinue COT after SCS implantation.

Application

- Chronic pain treatment includes varying specialties, which means that nurses will be in contact with chronic pain patients in many settings.
- Being aware of treatment options that are not opioids increases the success rate of treating patients and their pain.
- By alleviating patients' pain, they can live a higher quality of life.

This work is not original. This is a systematic review of published research conducted by professionals. Guidance was provided by Melissa Kukulski, professor of ACNU: 307: Evidence-Based Practice Research.