

Burst Spinal Cord Stimulation in a Rat Model of Chronic Neuropathic pain

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Burst Spinal Cord Stimulation in a Rat Model of Chronic Neuropathic Pain: Spinal and Supraspinal Mechanisms

Koen Meuwissen
5 December 2019

1. It is imperative that further insight is acquired into the relationship between the analgesic efficacy of burst Spinal Cord Stimulation (SCS) and its stimulation parameters. *(this thesis)*
2. Preclinical evidence shows that burst SCS has a delayed wash-in of its pain relieving effect in chronic neuropathic pain; this might have important consequences for the application of burst SCS in the clinical setting. *(this thesis)*
3. No one waveform will be optimal for all neuropathic pain patients, therefore the field of spinal cord stimulation will eventually move towards a more personalized waveform 'tailor made' for each patient. *(this thesis)*
4. Burst SCS and tonic SCS both induce pain relief by activating spinal GABAergic mechanisms. *(this thesis)*
5. The use of neuroimaging techniques can provide novel insights into the supraspinal mechanisms underlying pain relief with burst and tonic SCS. Future neuroimaging studies should aim to build a framework representative of the 'optimal pain relief signature' as related to present and new SCS-waveform design. *(this thesis)*
6. The use of operant testing for preclinical assessment of chronic neuropathic pain is desired and may provide novel insights into the mechanisms underlying SCS-induced pain relief. *(this thesis)*
7. All bursts are bursts.
8. To date, no data from clinical or preclinical studies support the claim that passive recharge burst is more effective than active recharge burst in pain relief and future studies aiming to directly compare active and passive recharge burst waveforms should be conducted in order to shed light upon this matter. *(Meuwissen, K.P.V., et al., Response to: Fundamental Differences in Burst Stimulation Waveform Design: Eliminating Confusion in the Marketplace. Neuromodulation, 2018. 21(7))*
9. The pain of the mind is worse than the pain of the body. *(Pubilius Syrus, roman author 1st century B.C.)*
10. Progression in science is only warranted when researchers remain completely objective.