Abstract ID: 92938

Student: Klivinyi Christoph

Area of Research: Neuroscience and orthopaedic science

PhD Programme: NA

Semester: 6

Use of a capsaicin transdermal patch to induce central and peripheral sensitization: proposition of a human pain model

Christoph Klivinyi; Kordula Lang-Illievich; Gudrun Rumpold-Seitlinger; Christian Dorn; Helmar Bornemann-Cimenti

Introduction Capsaicin is a natural occurring alkaloid and acts on transient receptor potential vanilloid type 1 (TRPV1) ion channels. It has been extensively used in human pain models to induce central and peripheral mechanisms of pain. When capsaicin is applied locally to the skin, it induces local neurogenic inflammation by stimulating TrpV1 receptors on dermal sensory nerve endings 3. In the past, capsaicin was preferably applied by intradermal injection, which is considered an invasive procedure but allowed for precise dosing. On the contrary, capsaicin-containing ointments and self-manufactured skin patches have lately been preferably used to circumvent invasive application but leading to imprecise dosing and standardization 1. Qutenza capsaicin skin patches contain a standardized amount of capsaicin (640µg/cm²) and have been safely and effectively used to treat certain entities of pain in clinical practice. We propose Qutenza skin patches as an easy applicable, non-invasive and reliable human pain model, which could be used in future experimental studies. Methods We used Qutenza to induce pain and peripheral and central sensitization in ten healthy human subjects. Qutenza skin patches were applied on the volar side of both forearms for 60 minutes. Main concern of the study was the effect of low-level light therapy on sensitization processes, however basic characteristics of Qutenza as a human pain model were recorded. Quantitative sensory testing was used to evaluate its effects. Results Qutenza reliably induced pain (numeric rating scale, mean 2,15, 95% CI 1,006 - 3,294, p= <0,01) and increased wind-up as a marker of central sensitization (mean 4,4, 95% CI 3,631 - 5,169, p= <0,01). Discussion Qutenza capsaicin skin patches induced pain and increased a marker for central sensitization. Its use is furthermore a safe and standardized alternative to invasive application methods and should be evaluated and validated as a human pain model in detail.