Co-Activation of Substance P And Opioid Receptors with The Novel Combinatorial Peptide, ESP7

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*Delivered as part of Abstracts. To view the full abstract, please refer to the conference proceedings.*

(603) Hyperalgesia in Outpatients with Dermal Injury: Quantitative Sensory Testing versus a Novel Simple Technique

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*Abstract Summary: To quantify tactile and thermal hyperalgesia in outpatients with dermal injury using standard methods and two novel, simple assessment devices.*

*Materials and Methods: After IRB approval, 40 evaluable subjects were enrolled. All had acute thermal, chemical, mechanical, or infectious skin injury. Subjects were tested (0–100 mm VAS) at the injured site, the “mirror” site, and a noninjured ipsilateral control site. Quantitative sensory testing (MEDOC) was followed by 5-second applications (random sequence) of copper rods preheated to 40°C, 43°C, 46°C and 49°C (CLINTHERM, Adolor). Pressure testing was conducted with a 1.5-inch diameter gauge.*

*Results: Rest pain was 22.1 ± 3.87 (SEM). Expected pain on touch was 50.7 ± 4.44 (P < .001 vs rest) and on application of heat or cold was 44.4 ± 4.45 (P < .001 vs rest). Thermal discomfort threshold was 47.5°C ± 0.66 (control site); at the mirror site it was 46.4°C ± 0.50 (P < .05 vs control) and at the injured site 40.7°C ± 0.66 (P < .001 vs control). Pressure discomfort thresholds followed a similar pattern. All 4 challenge temperatures elicited VAS scores markedly greater at injured than at mirror or control sites (P < .001 vs control).*

*Conclusions: Hyperalgesia (manifest as increased perception of pain to threshold stimuli) is common in routine dermal injury. Quantitation of contribution of thermal and tactile hyperalgesia, and assessment of the antihyperalgesic effects of pain therapy, is feasible using simple, rugged, low-tech, low-cost methods. Intersubject variation was remarkably low.*

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Aim of Investigation: The co-administration of several medications with different pharmacological profiles has gained popularity as a means of overcoming tolerance and side effects to classical pain medications. Novel single molecules that possess multiple analgesic targets may offer the advantage of weaker side effects and delayed tolerance, and overcome the need to dose with separate medications. Previous research suggests that substance P can slow the development of tolerance to the analgesic effects of morphine. As a result, in the present study we tested ESP7, a novel compound, which was designed to bind to both opioid and Substance P receptors.

Methods: After Animal Research Committee approval, male Sprague-Dawley rats (200g–250g) were implanted with chronic indwelling IT catheters (tips at T13-L1). For measurement of the thermal antinociceptive properties of ESP7, the tail flick apparatus was employed (baseline latency approximately 3 sec, cutoff 10 sec). Responses were expressed as % maximum possible effects (%MPE): % MPE = (post-treatment latency B baseline latency)/cut off time B baseline latency) × 100%.

Results and Conclusions: We have previously shown that a hybrid peptide containing both beta-casomorphin-like and substance P-like structural characteristics possessed an antinociceptive effect after intrathecal administration (2). The preliminary data on ESP7 are very promising. ESP7 at graded doses produces antinociceptive responses in the rat after daily repeated intrathecal administration. Naltrexone (HCL) blocks the effects of ESP7, indicating that the analgesia is opioid in nature. Intriguingly, no significant tolerance develops to ESP7 over a 5-day period. The novel peptide may have potential therapeutic value for the treatment of acute and chronic pain.

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SF-36 Versus SF-12 Scores in Persons at Home 1 Month After Surgery

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The effects of postoperative pain on functioning in persons at home after surgery are not well understood. Improved understanding of postoperative pain from the patient’s perspective may help clinicians to address patient’s unmet pain-related needs. The purpose of this study was to evaluate health-related quality of life (HRQL) for persons at home 1 month after orthopedic or urologic surgery. Participants completed the SF-36, a subset of which is the SF-12, 1 month after total hip or knee replacement or radical prostatectomy. The SF-36 covers 8 generic health concepts. The SF-12 provides norm-based scores for a physical and mental component summary scale (PCS, MCS). Values for both instruments range from 0–100. Patient’s scores for each instrument were compared to US norms.

*Pain was a significant cause of decreased HRQL in persons at home one month after surgery. Measures of physical health were significantly lower than US norms on both the SF-36 and SF-12. Measures of mental health were significantly lower than US norms on the SF-36, but not the SF-12. The SF-36 provided more detail about the effects of recent orthopedic or urologic surgery on HRQL. The SF-12 may be preferable when a shorter instrument is desirable.

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(606) NeuroModulation of Pain Perception Through Neurofeedback Training: Long Lasting Effects on Pain Control

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Aim of the Investigation: Follow-up studies to determine the efficacy of the long lasting effects of Neurofeedback training in patients with different chronic pain syndromes.

Methods: A standard evaluation procedure was done pre-training, after 20 consecutive sessions, and 1–2 years postinterruption of training. The evaluation consisted of a Psychophysiological Profile and electromyography over the affected muscle groups, and an electroencephalography over the sensory motor area of the brain. The Neurofeedback training was designed according to peripheral localization of the chronic pain. Varying numbers of 45-minute sessions were completed.