TSA – Recently Published Papers

Psychophysic-psychological dichotomy in very early acute mTBI pain: A prospective study.

Kuperman P, Granovsky Y, Granot M, Bahouth H, Fadel S, Hyams G, Ben Lulu H, Aspis O, Salame R, Begal J, Hochstein D, Grunner S, Honigman L, Reshef M, Sprecher E, Bosak N, Sterling M, Yarnitsky D.

Neurology. 2018 Sep 4;91(10):e931-8. (Haifa, Israel)

OBJECTIVE:

To characterize the pain-related somatosensory and psychological presentation of very early acute patients with a mild traumatic brain injury (mTBI).

METHODS:

Patients with an mTBI participated in a prospective observational study undergoing clinical, psychophysic, and psychological assessment within 72 hours after the accident. Healthy controls underwent similar protocol.

RESULTS:

One hundred acute patients with an mTBI (age 36 ± 12.5 [SD] years, range 19-67 years, 42 women) and 80 healthy controls (age 43 ± 14.3 years, range 24-74 years, 40 women) participated. Patients with an mTBI demonstrated a pronociceptive psychophysic response in most tests such as less efficient pressure-pain threshold-conditioned pain modulation (0.19 ±0.19±.09 vs. 0.91±.10 kg, $p < 0.001$) and lower temperature needed to elicit a Pain50 response (44.72 ± 0.26°C vs 46.41 ± 0.30°C, $p < 0.001$). Their psychophysic findings correlated with clinical pain measures, e.g., Pain50 temperature and mean head ($r = -0.21$, $p = 0.045$) and neck ($r = -0.26$, $p = 0.011$) pain. The pain-catastrophizing magnification subscale was the only psychological variable to show a difference from the controls, while no significant correlations were found between any psychological measures and the clinical or psychophysic pain measures.

CONCLUSIONS:

There appears to be a dichotomy between somatosensory and psychological findings in the very early acute post-mTBIstage; while the first is altered and is associated with the clinical picture, the second is unchanged. In the context of the ongoing debate on the pathophysiologic nature of the post-mTBI syndrome, our findings support its "physical" basis, free of mental influence, at least in the short time window after the injury.

https://www.ncbi.nlm.nih.gov/pubmed/30068635

Quantitative sensory testing after macroreplantation: evidence for a specific somatosensory profile.

Blume KR, Racz J, Franz M, Dietrich C, Puta C, Friedel R, Hofmann GO, Miltner WH, Weiss T.

Pain. 2018 Jul 1;159(7):1289-96. (Jena, Germany)

A comprehensive functional recovery is one of the criteria for successful replantation of an amputated limb. Functionality of a replanted limb is strongly dependent on its regained sensibility. In previous studies concerning the sensibility of replanted limbs, only a few somatosensory submodalities were examined in small samples. The purpose of this study is to provide a full pattern of somatosensory symptoms afterreplantation. Quantitative sensory testing was performed according to a standardized protocol in a sample of 15 patients who underwent replantation of their upper limb proximal to the radiocarpal joint (macroreplantation). Results indicate that most of these patients showed a specific somatosensory profile characterized by thermal and mechanical hypoesthesia and hyperalgesia in response to pressure pain, whereas no single case of hyperalgesia to heat pain occurred. This distinct profile of impaired somatosensation shares some features of the somatosensory profile of neuropathic pain syndromes. Patients' limbs that were replanted many years before the present quantitative sensory testing showed more sensory deficits than patients with more recent replantations. This knowledge might be helpful in the development of more specific and more successful rehabilitation programs with replanted patients and improves the behavioral function of the replanted limb.

https://www.ncbi.nlm.nih.gov/pubmed/29554015

Chronic pain in pachyonychia congenita: evidence for neuropathic origin.

Brill S, Sprecher E, Smith FJ, Geva N, Gruener H, Nahman-Averbuch H, Defrin R.

British Journal of Dermatology. 2018 Jul;179(1):154-62. (Tel Aviv, Israel)

BACKGROUND:
Pachyonychia congenita (PC) is a rare autosomal dominant skin disease, with chronic pain being the most prominent complaint. Histological studies showing alterations in sensory innervation, along with reports on alterations in mechanical sensitivity, suggest that PC may be a form of neuropathy.

OBJECTIVES:
Here, for the first time, we aim to evaluate systematically the sensory function of patients with PC vs. controls, in order to investigate the pathophysiology of PC.

METHODS:
Patients (n = 62) and controls (n = 45) completed the McGill and Douleur Neuropathique-4 (DN4) questionnaires. Sensory testing included detection and pain thresholds, pathological sensations, conditioned pain modulation (CPM) and temporal summation of pain.

RESULTS:
A moderate-to-severe chronic pain in the feet, throbbing and stabbing in quality, was highly prevalent among patients with PC (86%) and was especially debilitating during weight bearing. In addition, the majority of patients had a DN4 score ≥ 4 (62%), static allodynia (55%) and tingling (53%) in the feet. Compared with controls, patients with PC exhibited thermal and mechanical hypoaesthesia and mechanical hyperalgesia in the feet. CPM was reduced among the patients, and was associated with more enhanced mechanical hyperalgesia in the feet. The specific gene and nature of the causative mutation did not affect any of these features.

CONCLUSIONS:
Although thermal and mechanical hypoaesthesia may result from thicker skin, its presentation in painful regions, along with mechanical hyperalgesia and allodynia, point towards the possibility of neuropathic changes occurring in PC. The clinical features and DN4 scores support this possibility and therefore neuropathic pain medications may be beneficial for patients with PC.

https://www.ncbi.nlm.nih.gov/pubmed/29210461

Not just a matter of pain intensity: Effects of three different conditioning stimuli on conditioned pain modulation effects.

da Silva VA, Galhardoni R, Teixeira MJ, de Andrade DC.

Neurophysiologie Clinique. 2018 Oct 1;48(5):287-93. (Sao Paulo, Brasil)

INTRODUCTION: Heterotopic conditioned pain modulation (CPM) has provided potentially useful clinical information such as response to medication in neuropathic pain or the prediction of pain after surgical procedures. Despite these advances, several methodological aspects of CPM remain to be determined, such as the impact of the conditioning stimulus (CS) type upon CPM, if its evoked-pain intensity is controlled for [measured on a visual analogue scale (VAS: 0-100mm)].

OBJECTIVES: To explore potential differential effects of CPM using three distinct CS (having similar evoked-pain intensity) in the same individuals.

METHODS: We conducted a cross-over randomized study in healthy volunteers (HV) and looked-for differences in the CPM effect evoked by three differing CS [cuff-pressure pain stimulation (CuPS), cold pressor test (CoPT), and thermode-based cold painful stimulation (TCPS)] on the same test stimulus [(TS)-supra-threshold heat pain stimulation with a contact-heat thermode). CPM was calculated as a ratio: [conditioned TS VAS - unconditioned TS VAS]/[unconditioned TS VAS]. Importantly, the range of pain evoked by the unconditioned-TS and by the CS was controlled for. Also, the unpleasantness evoked by the CS [visual analogue scale (VAS: 0-100mm)] was measured before the initiation of the conditioned-TS.

RESULTS: Pain intensity VAS of the three unconditioned-TSs were similar between the three sessions. CPM was significantly different between the three types of CS (CoPT=-0.43±0.29; CuPS=-0.25±0.24; and TCPS=-0.23±0.35; P=.005): CoPT induced significantly more robust CPM compared to CuPS (P=.004) and TCPS (P=.005).

CONCLUSIONS: Significantly different intensities of CPM can be evoked on the same individual according to the nature of the CS, even when controlling for the intensity of the unconditioned-TS, and the pain evoked by the CS. This may have implications for the design of future recommendations and may impact the translation of CPM from the laboratory to clinical practice.

https://europepmc.org/abstract/med/29954673

Reduced pain thresholds and signs of sensitization in women with persistent pelvic pain and suspected endometriosis.

Grundström H, Gerdle B, Alehagen S, Berterö C, Arendt-Nielsen L, Kjølhede P.

Acta obstetricia et gynecologica Scandinavica. 2019 Mar;98(3):327-36.(Norrköping, Sweden)

INTRODUCTION:

Endometriosis is a gynecological disorder that may cause considerable pelvic pain in women of fertile age. Determining pain mechanisms is necessary in order to optimize the treatment of the disease. The objective of the study was to
evaluate pain thresholds in women with persistent pelvic pain with and without
confirmed endometriosis, and healthy, unaffected controls, and analyze how painthresholds in these cohorts related to duration of pelvic pain, quality of life, and symptoms of anxiety and depression.

MATERIAL AND METHODS:

Pain thresholds for heat, cold and pressure were assessed with quantitative sensory testing on six locations on a reference group of 55 healthy women and on
37 women with persistent pelvic pain who had been admitted for diagnostic laparoscopy on the suspicion of endometriosis. Validated instruments were applied to assess quality of life and symptoms of anxiety and depression. Data were analyzed by means of uni- and multivariate analysis of variance and Spearman's rank-order correlation.

RESULTS:

The women with persistent pelvic pain had significantly lower pain thresholds compared with the reference women. In the womenwith pain, no differences were observed
in pain thresholds between women with (n = 13) and women without (n = 24) biopsy-proven endometriosis. The duration of pelvic pain correlated significantly positively
with reduced pain thresholds, ie, the longer the duration, the more sensitization. In
the persistent pelvic pain group, pain thresholds for heat correlated significantly with the Short Form Health Survey 36 dimension of bodily pain, and thresholds for cold correlated with Short Form Health Survey 36 bodily pain and with symptoms of depression.

CONCLUSIONS:

Our results showed widespread alterations
in pain thresholds in women with persistent pelvic pain that are indicative of
central sensitization and a time-dependent correlation. Women with pelvic pain and suspicion of endometriosis should probably be treated more thoroughly to prevent or at least minimize the concomitant development of central sensitization.

https://www.ncbi.nlm.nih.gov/pubmed/30472739

Somatosensory profiles in acute herpes zoster and predictors of postherpetic neuralgia.

Kramer S, Baeumler P, Geber C, Fleckenstein J, Simang M, Haas L, Schober G, Pfab F, Treede RD, Irnich D.

Pain. 2019 Apr 1;160(4):882-94. (Munich, Germany)

This prospective cohort study aimed to characterize the sensory profile during acute herpes zoster (AHZ) and to explore sensory signs as well as physical and psychosocial health as predictors for postherpetic neuralgia (PHN). Results of quantitative sensory testing of 74 patients with AHZ at the affected site and at the distant contralateral control site were compared to a healthy control group. Pain characteristics (Neuropathic Pain and Symptom Inventory and SES), physical functioning, and psychosocial health aspects (Pain Disability Index, SF-36, and STAI) were assessed by questionnaires. Patients with PHN (n = 13) at 6-month follow-up were compared to those without PHN (n = 45). Sensory signs at the affected site were thermal and vibratory hypesthesia, dynamic mechanical allodynia (DMA), pressure hyperalgesia, and high wind-up (18%-29%), as well as paradoxical heat sensations and pinprick hypalgesia (13.5%). The unaffected control site exhibited thermal and vibratory hypesthesia, DMA, and pressure hyperalgesia. Dynamic mechanical allodynia and pinprick hypalgesia were mutually exclusive. Postherpetic neuralgia was associated with DMA (38.5% vs 6.7%; P = 0.010) and vibratory hypesthesia (38.5% vs 11.1%; P = 0.036) at the control site, with mechanical gain and/or loss combined with normal thermal detection (affected site: 69.2% vs 31.1%; P = 0.023; control site: 53.8% vs 15.5%; P = 0.009). Pain Disability Index (P = 0.036) and SES affective pain perception scores (P = 0.031) were over 50% higher, and 6 of 8 SF-36 subscores were over 50% lower (P < 0.045) in PHN. Sensory profiles in AHZ indicate deafferentation and central but not peripheral sensitization. Sensory signs at distant body sites, strong affective pain perception, as well as reduced quality of life and physical functioning in the acute phase may reflect risk factors for the transition to PHN.

https://www.ncbi.nlm.nih.gov/pubmed/30585985

Quantitative sensory testing in children with sickle cell disease: additional insights and future possibilities.

Miller RE, Brown DS, Keith SW, Hegarty SE, Setty Y, Campbell CM, McCahan SM, Gayen-Betal S, Byck H, Stuart M.

British Journal of Haematology. 2019 Mar. (Wilmington, DE, USA)

Quantitative sensory testing (QST) is used in a variety of pain disorders to characterize pain and predict prognosis and response to specific therapies. In this study, we aimed to confirm results in the literature documenting altered QST thresholds in sickle cell disease (SCD) and assess the test-retest reliability of results over time. Fifty-seven SCD and 60 control subjects aged 8-20 years underwent heat and cold detection and pain threshold testing using a Medoc TSAII. Participants were tested at baseline and 3 months; SCD subjects were additionally tested at 6 months. An important facet of our study was the development and use of a novel QST modelling approach, allowing us to model all data together across modalities. We have not demonstrated significant differences in thermal thresholds between subjects with SCD and controls. Thermal thresholds were consistent over a 3- to 6-month period. Subjects on whom hydroxycarbamide (HC) was initiated shortly before or after baseline testing (new HC users) exhibited progressive decreases in thermal sensitivity from baseline to 6 months, suggesting that thermal testing may be sensitive to effective therapy to prevent vasoocclusive pain. These findings inform the use of QST as an endpoint in the evaluation of preventative pain therapies.

https://www.ncbi.nlm.nih.gov/pubmed/30924134