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5. SURGERY

Fusion after previous surgery

Int Orthop. 2014 Apr; 38(4): 811–815. Published online 2013 Nov 20. doi: 10.1007/s00264-013-2167-z PMID: PMC3971282

Failed less invasive lumbar spine surgery as a predictor of subsequent fusion outcomes

Douglas M. Gillard, Donald S. Corenman, and Grant J. Dornan

Purpose

It is not uncommon for patients to undergo less invasive spine surgery (LISS) prior to succumbing to lumbar fusion; however, the effect of failed LISS on subsequent fusion outcomes is relatively unknown. The aim of this study was to test the hypothesis that patients who suffered failed LISS would afford inferior subsequent fusion outcomes when compared to patients who did not have prior LISS.

Methods

After IRB approval, registry from a spine surgeon was queried for consecutive patients who underwent fusion for intractable low back pain. The 47 qualifying patients were enrolled and split into two groups based upon a history for prior LISS: a prior surgery group (PSG) and a non-prior surgery group (nPSG).

Results

Typical postoperative outcome questionnaires, which were available in 80.9 % of the patients (38/47) at an average time point of 40.4 months (range, 13.5–66.1 months), were comparatively analysed and failed to demonstrate significant difference between the groups, e.g. PSG v. nPSG: ODI— 14.6 ± 10.9 vs. 17.2 ± 19.4 ($P = 0.60$); SF12-PCS— 10.9 ± 11.0 vs. 8.7 ± 12.4 ($p = 0.59$); bNRS—3.0 (range –2–7) vs. 2.0 (range –3–8) ($p = 0.91$). Patient satisfaction, return to work rates, peri-operative complications, success of fusion and rate of revision surgery were also not different.

Conclusions

Although limited by size and retrospective design, the results of this rare investigation suggest that patients who experience a failed LISS prior to undergoing fusion will not suffer inferior fusion outcomes when compared to patients who did not undergo prior LISS.

7. PELVIC ORGANS/WOMAN'S HEALTH

Steroid use and reproduction

Sports Med. 2017 Mar 4. doi: 10.1007/s40279-017-0709-z.

Effects of Anabolic Androgenic Steroids on the Reproductive System of Athletes and Recreational Users: A Systematic Review and Meta-Analysis.

Christou MA^{1,2}, Christou PA¹, Markozannes G², Tsatsoulis A¹, Mastorakos G³, Tigas S⁴.

BACKGROUND: Anabolic androgenic steroids (AAS) are testosterone derivatives used by athletes and recreational users to improve athletic performance and/or enhance appearance. Anabolic androgenic steroids use may have serious and potentially irreversible adverse effects on different organs and systems, including the reproductive system.

OBJECTIVE: This systematic review and meta-analysis aimed to critically assess the impact of AAS use on the reproductive system of athletes and recreational users.

METHODS: An electronic literature search was conducted using the databases MEDLINE, CENTRAL, and Google Scholar. Studies were included when the following criteria were fulfilled: participants were athletes or recreational users of any age, sex, level or type of sport; AAS use of any type, dose, form or duration; AAS effects on the reproductive system were assessed as stated by medical history, clinical examination, hormone and/or semen analysis. Random-effects meta-analysis was performed to assess the weighted mean difference (WMD) of serum gonadotropin (luteinizing hormone, follicle-stimulating hormone) and testosterone levels compared with baseline, during the period of AAS use, as well as following AAS discontinuation.

RESULTS: Thirty-three studies (three randomized clinical trials, 11 cohort, 18 cross-sectional, and one non-randomized parallel clinical trial) were included in the systematic review (3879 participants; 1766 AAS users and 2113 non-AAS users). The majority of the participants were men; only six studies provided data for female athletes. A meta-analysis (11 studies) was conducted of studies evaluating serum gonadotropin and testosterone levels in male subjects: (1) prior to, and during AAS use (six studies, n = 65 AAS users; seven studies, n = 59, evaluating gonadotropin and testosterone levels respectively); (2) during AAS use and following AAS discontinuation (four studies, n = 35; six studies, n = 39, respectively); as well as (3) prior to AAS use and following AAS discontinuation (three studies, n = 17; five studies, n = 27, respectively). During AAS intake, significant reductions in luteinizing hormone [weighted mean difference (WMD) -3.37 IU/L, 95% confidence interval (CI) -5.05 to -1.70, p < 0.001], follicle-stimulating hormone (WMD -1.73 IU/L, 95% CI -2.67 to -0.79, p < 0.001), and endogenous testosterone levels (WMD -10.75 nmol/L, 95% CI -15.01 to -6.49, p < 0.001) were reported. Following AAS discontinuation, serum gonadotropin levels gradually returned to baseline values within 13-24 weeks, whereas serum testosterone levels remained lower as compared with baseline (WMD -9.40 nmol/L, 95% CI -14.38 to -4.42, p < 0.001). Serum testosterone levels remained reduced at 16 weeks following discontinuation of AAS. In addition, AAS abuse resulted in structural and functional sperm changes, a reduction in testicular volume, gynecomastia, as well as clitoromegaly, menstrual irregularities, and subfertility.

CONCLUSION: The majority of AAS users demonstrated hypogonadism with persistently low gonadotropin and testosterone levels, lasting for several weeks to months after AAS withdrawal. Anabolic androgenic steroid use results in profound and prolonged effects on the reproductive system of athletes and recreational users and potentially on fertility.

Dysmenorrhea

Arch Gynecol Obstet. 2017 Apr;295(4):929-934. doi: 10.1007/s00404-017-4312-1. Epub 2017 Feb 25.

Serum heme oxygenase-1 levels in patients with primary dysmenorrhea.

Aksoy AN¹, Laloglu E², Ozkaya AL², Yilmaz EP³.

Author information

Abstract

PURPOSE:

Primary dysmenorrhea effects the life-quality of women negatively. The aim of this study was to evaluate heme oxygenase-1 (HO1) activity together with malondialdehyde (MDA) and nitric oxide (NO) levels in patients with primary dysmenorrhea.

METHODS:

A total of 28 nulliparous women with the diagnosis of primary dysmenorrhea and 26 healthy controls were included in this study. On the first day of menstruation, all patients underwent ultrasound examination to exclude pelvic pathology and the visual analogue scale was applied to patients. Patient's visual analogue scale (VAS) scores, age, body mass index (BMI), menstrual cycle length (day), length of bleeding (day) were recorded. In the same day, fasting blood samples were taken from each patient for biochemical analysis.

RESULTS:

Serum MDA, NO and HO1 levels were found to be higher in women with primary dysmenorrhea compared to healthy controls ($p = 0.012$, $p = 0.009$, $p < 0.001$, respectively). There were no correlation among serum levels of HO1, NO and MDA, age, BMI, cycle length, pain score and menses duration in both groups. In Pearson's correlation analysis, positive correlation was found between HO1 levels with the NO levels ($r = 0.316$, $p < 0.05$) and VAS scores ($r = 0.520$, $p < 0.01$). Also, positive correlation was found between MDA levels and VAS scores ($r = 0.327$, $p < 0.05$).

CONCLUSIONS:

Serum HO1, NO and MDA levels increase in patients with primary dysmenorrhea. Antioxidant support might be helpful to reduce pain severity in primary dysmenorrhea.

8. VISCERA

IBS mucosal

Am J Gastroenterol. 2017 Mar 21. doi: 10.1038/ajg.2017.48.

Constipation-Predominant Irritable Bowel Syndrome Females Have Normal Colonic Barrier and Secretory Function.

Peters SA¹, Edogawa S¹, Sundt WJ¹, Dyer RB², Dalenberg DA², Mazzone A³, Singh RJ², Moses N¹, Smyrk TC², Weber C⁴, Linden DR³, MacNaughton WK⁵, Turner JR⁶, Camilleri M¹, Katzka DA¹, Farrugia G¹, Grover M¹.

Author information

Abstract

OBJECTIVES:

The objective of this study was to determine whether constipation-predominant irritable bowel syndrome (IBS-C) is associated with changes in intestinal barrier and secretory function.

METHODS:

A total of 19 IBS-C patients and 18 healthy volunteers (all females) underwent saccharide excretion assay (0.1 g ¹³C mannitol and 1 g lactulose), measurements of duodenal and colonic mucosal barrier (transmucosal resistance (TMR), macromolecular and Escherichia coli Bio-Particle translocation), mucosal secretion (basal and acetylcholine (Ach)-evoked short-circuit current (Isc)), in vivo duodenal mucosal impedance, circulating endotoxins, and colonic tight junction gene expression.

RESULTS:

There were no differences in the in vivo measurements of barrier function between IBS-C patients and healthy controls: cumulative excretion of ¹³C mannitol (0-2 h mean (s.e.m.); IBS-C: 12.1 (0.9) mg vs. healthy: 13.2 (0.8) mg) and lactulose (8-24 h; IBS-C: 0.9 (0.5) mg vs. healthy: 0.5 (0.2) mg); duodenal impedance IBS-C: 729 (65) Ω vs. healthy: 706 (43) Ω; plasma mean endotoxin activity level IBS-C: 0.36 (0.03) vs. healthy: 0.35 (0.02); and in colonic mRNA expression of occludin, zonula occludens (ZO) 1-3, and claudins 1-12 and 14-19. The ex vivo findings were consistent, with no group differences: duodenal TMR (IBS-C: 28.2 (1.9) Ω cm² vs. healthy: 29.8 (1.9) Ω cm²) and colonic TMR (IBS-C: 19.1 (1.1) Ω cm² vs. healthy: 17.6 (1.7) Ω cm²); fluorescein isothiocyanate (FITC)-dextran (4 kDa) and E. coli Bio-Particle flux. Colonic basal Isc was similar, but duodenal basal Isc was lower in IBS-C (43.5 (4.5) μA cm⁻²) vs. healthy (56.9 (4.9) μA cm⁻²), P=0.05. Ach-evoked ΔIsc was similar.

CONCLUSIONS:

Females with IBS-C have normal colonic barrier and secretory function. Basal duodenal secretion is decreased in IBS-C. Am J Gastroenterol advance online publication, 21 March 2017; doi:10.1038/ajg.2017.48.

Celiac's and autoimmune disease

Acta Paediatr. 2017 Mar 1. doi: 10.1111/apa.13808. [

Large population study shows that adolescents with celiac disease have an increased risk of multiple autoimmune and non-autoimmune comorbidities.

Assa A^{1,2}, Frenkel-Nir Y³, Tzur D³, Katz LH^{2,3}, Shamir R^{1,2}.

Author information

Abstract

AIM:

Celiac disease (CD) is a systemic disorder that is associated with various autoimmune disorders and a higher prevalence of other diagnoses and complications. This large, cross-sectional, population-based study investigated the associations between CD and various medical conditions during late adolescence.

METHODS:

We included 2,001,353 Jewish Israeli adolescents who underwent a general health examination at a median age of 17.1 (16.9-17.4) years from 1988-2015. Comprehensive data regarding medical status were available for 1,588,041 (79%) subjects. A definite diagnosis of CD was based on accepted criteria. Covariate data included demographic measures and data on associated medical conditions.

RESULTS:

Overall, data on 7,145 subjects with CD and 1,580,896 controls were analysed. Multivariate analyses showed that autoimmune diseases were significantly more common in subjects with CD, including insulin dependent diabetes, with an odds ratio (OR) of 5.5, inflammatory bowel diseases (OR=3.8), arthritis (OR=2.4), thyroid diseases (OR=1.8), and psoriatic skin disorders (OR=1.6). Further associations included asthma (OR=1.5), bile stones (OR=3.6), migraine (OR=2.3), anaemia (OR=1.7) and menstrual abnormalities (OR=1.5). Long bone fractures and axial fractures were no more common in adolescents with CD than controls.

CONCLUSION:

CD was already associated with multiple comorbidities by adolescence and these were not limited to autoimmune disorders. This article is protected by copyright. All rights reserved.

IBS coping skills

Coping skills are associated with gastrointestinal symptom severity and somatization in patients with irritable bowel syndrome

Clinical Gastroenterology and Hepatology , 03/22/2017

Wilpart K, et al.

The essence of this study was to examine the relationship between coping resources and gastrointestinal (GI) and extra-intestinal symptom severity in patients with irritable bowel syndrome (IBS) as well as potential mediators of this relationship. Researchers found the relationship of levels of coping resources with GI and extra-intestinal symptom severity; these affiliations were mediated by levels of anxiety and depressive symptoms. This identifies coping as a potential psychological treatment target in IBS although confirmation in longitudinal studies is needed.

Appendectomies

Surgeon. 2017 Mar 8. pii: S1479-666X(17)30056-2. doi: 10.1016/j.surge.2017.02.001

Antibiotics-first strategy for uncomplicated acute appendicitis in adults is associated with increased rates of peritonitis at surgery. A systematic review with meta-analysis of randomized controlled trials comparing appendectomy and non-operative management with antibiotics.

Podda M¹, Cillara N², Di Saverio S³, Lai A⁴, Feroci F⁵, Luridiana G⁶, Agresta F⁷, Vettoretto N⁸; ACOI (Italian Society of Hospital Surgeons) Study Group on Acute Appendicitis.

Author information

Abstract

BACKGROUND:

Acute appendicitis is the most common surgical diagnosis in young patients, with lifetime prevalence of about 7%. Debate remains on whether uncomplicated AA should be operated or not. Aim of this meta-analysis of randomized controlled trials was to assess current evidence on antibiotic treatment for uncomplicated AA compared to standard surgical treatment.

METHODS:

Systematic literature search was performed using PubMed, EMBASE, Medline, Google Scholar and Cochrane Central Register of Controlled Trials databases for randomized controlled trials comparing antibiotic therapy (AT) and surgical therapy-appendectomy (ST) for uncomplicated AA. Trials were reviewed for primary outcome measures: treatment efficacy based on 1 year follow-up, recurrence at 1 year follow-up, complicated appendicitis with peritonitis identified at the time of surgical operation and post-intervention complications. Secondary outcomes were length of hospital stay and period of sick leave.

RESULTS:

Five RCTs comparing AT and ST qualified for inclusion in meta-analysis, with 1.351 patients included: 632 in AT group and 719 in ST group. Higher rate of treatment efficacy based on 1 year follow-up was found in ST group (98.3% vs 75.9%, $P < 0.0001$), recurrence at 1 year was reported in 22.5% of patients treated with antibiotics. Rate of complicated appendicitis with peritonitis identified at time of surgical operation was higher in AT group (19.9% vs 8.5%, $P = 0.02$). No statistically significant differences were found when comparing AT and ST groups for the outcomes of overall post-intervention complications (4.3% vs 10.9%, $P = 0.32$), post-intervention complications based on the number of patients who underwent appendectomy (15.8% vs 10.9%, $P = 0.35$), length of hospital stay (3.24 ± 0.40 vs 2.88 ± 0.39 , $P = 0.13$) and period of sick leave (8.91 ± 1.28 vs 10.27 ± 0.24 , $P = 0.06$).

CONCLUSIONS:

With significantly higher efficacy and low complication rates, appendectomy remains the most effective treatment for patients with uncomplicated AA. The subgroups of patients with uncomplicated AA where antibiotics can be more effective, should be accurately identified.

10 A. CERVICAL SPINE**Neck pain and eye reflexes****June 2017** Volume 29, Pages 72–77**Eye stabilization reflexes in traumatic and non-traumatic chronic neck pain patients**

Britta K. Ischebeck, MSc Jurryt de Vries, MSc Malou Janssen, MSc Jan Paul van Wingerden, PhD Gert- Jan Kleinrensink, PhD Jos N. van der Geest, PhD Maarten A. Frens, PhD

DOI: <http://dx.doi.org/10.1016/j.msksp.2017.03.004>**Highlights**

- Chronic, unsuccessfully treated neck patients have an elevated COR.
- This elevation seems to be independent of the origin of complaints.
- The group of neck patients with altered reflexes is bigger than assumed.
- Thus, other presently unknown factors cause the reflex alterations.
- Maybe persistent sensorimotor disorders are a perpetuating factor.

Abstract**Background**

Many chronic neck pain patients experience problems with vision. These problems are possibly induced by deviations of the eye stabilization reflexes. It is not known whether these eye reflex alterations occur both in traumatic and non-traumatic neck pain patients.

Objective

To investigate if the cervico-ocular reflex (COR) and the vestibulo-ocular reflex (VOR) are changed in tertiary care patients with prolonged, chronic neck pain with various origin of complaints.

Design

Cross sectional study.

Methods

Ninety-one chronic neck pain patients were subdivided into three groups by origin of complaints, and compared with healthy controls. COR and VOR gains were measured with an infrared eye tracking device with the subject sitting on a rotating chair in a darkened room and with the head fixed.

Results

Neck pain patients had a higher COR gain (median 0.41, IQR 0.289) compared with healthy controls (median 0.231, IQR 0.179). The mean COR gain did not differ between the three patient groups (Whiplash Associated Disorders 0.444 (SD 0.221); traumatic 0.397 (SD0.205); non-traumatic 0.468 (SD0.236)). There was no difference in VOR gain between the groups.

Conclusion

Chronic neck pain patients, who already received primary care, still have an elevated cervico-ocular reflex. The origin of complaints did not seem to be associated with this deviant oculomotor behavior.

11. UPPER C SPINE

Facet orientation

Spine (Phila Pa 1976). 2017 Mar 15;42(6):E320-E325. doi: 10.1097/BRS.0000000000001826.

The Facet Orientation of the Subaxial Cervical Spine and the Implications for Cervical Movements and Clinical Conditions.

Rong X¹, Liu Z, Wang B, Chen H, Liu H.

Author information

Abstract

STUDY DESIGN:

Computed tomography study.

OBJECTIVE:

To obtain detailed information on the facet orientation in the subaxial cervical spine and explore the correlation to the cervical movements and relevant clinical conditions.

SUMMARY OF BACKGROUND DATA:

Although facet orientation was well studied in the lumbar spine, the literatures on the cervical facet orientation were limited and the descriptions were nonspecific.

METHODS:

The computed tomography scans of 100 individuals were reconstructed. For each level from C2/C3 to C6/C7, the horizontal plane, the mid-sagittal plane, the coronal plane, and the two facet planes were established. The normal vectors of the five planes were used for the calculation of the facet orientation and the facet tropism.

RESULTS:

The angle of the facet plane with respect to the horizontal plane at the C6/7 level was the largest (left side: $64.34^{\circ} \pm 6.60^{\circ}$, right side: $63.37^{\circ} \pm 6.81^{\circ}$, $P > 0.05$). The angle of the facet plane with respect to the coronal plane decreased from C2/C3 level to C6/C7 level. Regarding the angle of the facet plane with respect to the sagittal plane, for the paired facet joints, three types were found: posteromedially oriented, posterolaterally oriented, and ipsilaterally oriented. All (100%) of the facet joints at the C2/C3 level and 65% at the C3/C4 level were posteromedially oriented. In the lower levels of the cervical spine, the posteromedially oriented facet joints were less common. The facet tropism was common phenomenon in the subaxial cervical spine.

CONCLUSION:

This study provided detailed information on the facet orientation in the subaxial cervical spine. The cervical facet orientation correlated well with the spinal movements and related clinical conditions.

12 B. CERVICAL SURGERIES

Early best with neuro signs

Eur Spine J. 2017 Feb 28. doi: 10.1007/s00586-017-5004-z.

Early versus delayed reduction of cervical spine dislocation with complete motor paralysis: a multicenter study.

Nagata K¹, Inokuchi K², Chikuda H³, Ishii K⁴, Kobayashi A⁴, Kanai H⁴, Nakarai H⁵, Miyoshi K⁵.

Author information

Abstract

PURPOSE:

Reduction of cervical facet dislocation should be performed as soon as possible to depressurize neuron cells although some randomized control studies defined early reduction as over 24 h after trauma. The purpose of this study was to define the actual time limit for early reduction in patients with complete motor paralysis.

METHODS:

Cervical spine dislocation patients with complete motor paralysis admitted between April 2007 and December 2014 were analyzed as retrospective cohort study. We separated the patients into three groups according to the number of hours lapsed between the trauma and reduction, within 4 h (very early group), >4-6 h (early group), and >6 h (delayed group). We compared the neurological outcomes, patient injury patterns, the arrival time at the hospital, and the injury severity score (ISS).

RESULTS:

Of 30 patients who enrolled, 8 (27%) were recovered to American Spinal Injury Association Impairment Scale Grades C-E. The delayed group had poorer neurological outcomes than the very early group and early group, although no significant differences were noted in the recovery rate between the very early group and early groups. The injury pattern, arrival time, and ISS were not found to be associated with the neurological outcome.

CONCLUSION:

Our data suggest that early (<6 h) reduction of cervical spine dislocation is associated with favorable neurological outcome as compared with those performed after 6 h.

13. CRANIUM/TMJ

Nose shape

PLoS Genet. 2017 Mar 16;13(3):e1006616. doi: 10.1371/journal.pgen.1006616. eCollection 2017.

Investigating the case of human nose shape and climate adaptation.

Zaidi AA^{1,2}, Mattern BC², Claes P³, McEcoy B⁴, Hughes C^{5,6}, Shriver MD^{1,2}.

Author information

Abstract

The evolutionary reasons for variation in nose shape across human populations have been subject to continuing debate. An important function of the nose and nasal cavity is to condition inspired air before it reaches the lower respiratory tract. For this reason, it is thought the observed differences in nose shape among populations are not simply the result of genetic drift, but may be adaptations to climate.

To address the question of whether local adaptation to climate is responsible for nose shape divergence across populations, we use Q_{st} - F_{st} comparisons to show that nares width and alar base width are more differentiated across populations than expected under genetic drift alone. To test whether this differentiation is due to climate adaptation, we compared the spatial distribution of these variables with the global distribution of temperature, absolute humidity, and relative humidity. We find that width of the nares is correlated with temperature and absolute humidity, but not with relative humidity.

We conclude that some aspects of nose shape may indeed have been driven by local adaptation to climate. However, we think that this is a simplified explanation of a very complex evolutionary history, which possibly also involved other non-neutral forces such as sexual selection. PMID: 28301464 DOI: 10.1371/journal.pgen.1006616

Respiratory fatigue

Med Sci Sports Exerc. 2017 Mar 10. doi: 10.1249/MSS.0000000000001251.

Influence of Upper-Body Exercise on the Fatigability of Human Respiratory Muscles.

Tiller NB¹, Campbell IG, Romer LM.

Author information

Abstract

PURPOSE:

Diaphragm and abdominal muscles are susceptible to contractile fatigue in response to high-intensity, whole-body exercise. This study assessed whether the ventilatory and mechanical loads imposed by high-intensity, upper-body exercise would be sufficient to elicit respiratory muscle fatigue.

METHODS:

Seven healthy men (mean±SD: age 24±4 y; peak O₂ uptake [V̇[Combining Dot Above]O₂ peak] 31.9±5.3 ml/kg/min) performed asynchronous arm-crank exercise to exhaustion at work rates equivalent to 30% (heavy) and 60% (severe) of the difference between gas-exchange threshold and V̇[Combining Dot Above]O₂ peak. Contractile fatigue of the diaphragm and abdominal muscles was assessed by measuring pre- to post-exercise changes in potentiated transdiaphragmatic and gastric twitch pressures (P_{di,tw} and P_{ga,tw}) evoked by supramaximal magnetic stimulation of the cervical and thoracic nerves, respectively.

RESULTS:

Exercise time was 24.5±5.8 min for heavy exercise and 9.8±1.8 min for severe exercise. Ventilation over the final minute of heavy exercise was 73±20 L/min (39±11% maximum voluntary ventilation [MVV]) and 99±19 L/min (53±11% MVV) for severe exercise. Mean P_{di,tw} did not differ pre- to post-exercise at either intensity (p>0.05). Immediately (5-15 min) after severe exercise, mean P_{ga,tw} was significantly lower than pre-exercise values (41±13 vs. 53±15 cmH₂O, p<0.05), with the difference no longer significant after 25-35 min. Abdominal muscle fatigue (defined as ≥15% reduction in P_{ga,tw}) occurred in 1/7 subjects after heavy exercise and 5/7 subjects after severe exercise.

CONCLUSIONS:

High-intensity, upper-body exercise elicits significant abdominal, but not diaphragm, muscle fatigue in healthy men. The increased magnitude and prevalence of fatigue during severe-intensity exercise is likely due to additional (non-respiratory) loading of the thorax. This is an open access article distributed under the Creative Commons Attribution License 4.0 (CCBY), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Whiplash and TMD**Temporomandibular disorders and whiplash injury: A narrative review**

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J.B. Epstein, DMD, MSD, FRCD(C), FDS RCSE

DOI: <http://dx.doi.org/10.1016/j.o000.2017.03.001>

Abstract**Background**

The objective of this paper was to conduct a review investigating the relationship between temporomandibular disorders (TMD) and whiplash injuries (WI).

Methods

The authors conducted a search of PubMed/Medline, Cochrane and Embase for studies discussing prevalence, incidence, severity, treatment or prognosis of TMDs following WI. English language studies published between January 2010 and March 2016 were included. Study quality was assessed using the Ottawa-Newcastle scale.

Results

Eight studies investigating TMDs in patients with histories of WI were included. These studies reported associations between WI and TMD and an increase in symptom severity among TMD patients with a history of WI. Additionally, TMD patients with trauma histories display more severe subjective, objective and psychological dysfunction than do typical TMD patients. This results in poorer treatment outcomes.

Conclusions

These findings highlight the need for early evaluation of WI patients for TMDs and for a multidisciplinary approach to their management.

Sleep fragmentation

J Pain. 2017 Mar 11. pii: S1526-5900(17)30491-1. doi: 10.1016/j.jpain.2017.02.436.

Sleep Fragmentation Hypersensitizes Healthy Young Women to Deep and Superficial Experimental Pain.

Iacovides S¹, George K², Kamerman P³, Baker FC⁴.

Author information

Abstract

The effect of sleep deprivation on pain sensitivity has typically been studied using total and partial sleep deprivation protocols.

These protocols do not mimic the fragmented pattern of sleep disruption usually observed in individuals with clinical pain conditions. Therefore, we conducted a controlled-experiment to investigate the effect of sleep fragmentation on pain perception (deep pain: forearm muscle ischaemia, and superficial pain: graded pin-pricks applied to the skin) in 11 healthy young women following two consecutive nights of sleep fragmentation, compared with a normal night of sleep. Compared to normal sleep, sleep fragmentation resulted in significantly poorer sleep quality, morning vigilance, and global mood. Pin-prick threshold decreased significantly (increased sensitivity), as did habituation to ischaemic muscle pain (increased sensitivity), over the course of the two nights of sleep fragmentation compared to the night of normal sleep.

Sleep fragmentation did not increase the maximum pain intensity reported during muscle ischaemia (no increase in gain), and nor did it increase the number of spontaneous pains reported by participants. Our data show that sleep fragmentation in healthy, young, pain-free women increases pain sensitivity in superficial and deep tissues, indicating a role for sleep disruption, through sleep fragmentation, in modulating pain perception.

Tooth loss and dementia

J Am Geriatr Soc. 2017 Mar 8. doi: 10.1111/jgs.14791.

Tooth Loss and Risk of Dementia in the Community: the Hisayama Study.

Takeuchi K¹, Ohara T^{2,3}, Furuta M¹, Takeshita T¹, Shibata Y¹, Hata J^{3,4,5}, Yoshida D^{3,4}, Yamashita Y¹, Ninomiya T^{3,4}.

Author information

Abstract

OBJECTIVES:

To clarify the effect of tooth loss on development of all-cause dementia and its subtypes in an elderly Japanese population.

DESIGN:

Prospective cohort study.

SETTING:

The Hisayama Study, Japan.

PARTICIPANTS:

Community-dwelling Japanese adults without dementia aged 60 and older (N = 1,566) were followed for 5 years (2007-2012).

MEASUREMENTS:

Participants were classified into four categories according to baseline number of remaining teeth (≥ 20 , 10-19, 1-9, 0). The risk estimates of the effect of tooth loss on the development of all-cause dementia, Alzheimer's disease (AD), and vascular dementia (VaD) were computed using a Cox proportional hazards model.

RESULTS:

During follow-up, 180 (11.5%) subjects developed all-cause dementia; 127 (8.1%) had AD, and 42 (2.7%) had VaD. After adjusting for potential confounders, there was a tendency for the multivariable-adjusted hazard ratio of all-cause dementia to increase with decrease in number of remaining teeth (P for trend = .04). The risk of all-cause dementia was 1.62 times as great in subjects with 10 to 19 teeth, 1.81 times as great in those with one to nine teeth, and 1.63 times as great in those with no teeth as in those with 20 teeth or more. An inverse association was observed between number of remaining teeth and risk of AD (P for trend = .08), but no such association was observed with risk of VaD (P for trend = .20).

CONCLUSION:

Tooth loss is associated with an increased risk of all-cause dementia and AD in the Japanese population.

14. HEADACHES

Families and Migraines

J Headache Pain. 2017 Dec;18(1):32. doi: 10.1186/s10194-017-0729-y. Epub 2017 Mar 2.

Family studies to find rare high risk variants in migraine.

Hansen RD¹, Christensen AF¹, Olesen J².

Author information

Abstract

INTRODUCTION:

Migraine has long been known as a common complex disease caused by genetic and environmental factors. The pathophysiology and the specific genetic susceptibility are poorly understood. Common variants only explain a small part of the heritability of migraine. It is thought that rare genetic variants with bigger effect size may be involved in the disease. Since migraine has a tendency to cluster in families, a family approach might be the way to find these variants. This is also indicated by identification of migraine-associated loci in classical linkage-analyses in migraine families. A single migraine study using a candidate-gene approach was performed in 2010 identifying a rare mutation in the TRESK potassium channel segregating in a large family with migraine with aura, but this finding has later become questioned. The technologies of next-generation sequencing (NGS) now provides an affordable tool to investigate the genetic variation in the entire exome or genome. The family-based study design using NGS is described in this paper. We also review family studies using NGS that have been successful in finding rare variants in other common complex diseases in order to argue the promising application of a family approach to migraine.

METHOD:

PubMed was searched to find studies that looked for rare genetic variants in common complex diseases through a family-based design using NGS, excluding studies looking for de-novo mutations, or using a candidate-gene approach and studies on cancer. All issues from Nature Genetics and PLOS genetics 2014, 2015 and 2016 (UTAI June) were screened for relevant papers. Reference lists from included and other relevant papers were also searched. For the description of the family-based study design using NGS an in-house protocol was used.

RESULTS:

Thirty-two successful studies, which covered 16 different common complex diseases, were included in this paper. We also found a single migraine study. Twenty-three studies found one or a few family specific variants (less than five), while other studies found several possible variants. Not all of them were genome wide significant. Four studies performed follow-up analyses in unrelated cases and controls and calculated odds ratios that supported an association between detected variants and risk of disease. Studies of 11 diseases identified rare variants that segregated fully or to a large degree with the disease in the pedigrees.

CONCLUSION:

It is possible to find rare high risk variants for common complex diseases through a family-based approach. One study using a family approach and NGS to find rare variants in migraine has already been published but with strong limitations. More studies are under way.

Anxiety and depression

J Headache Pain. 2017 Dec;18(1):37. doi: 10.1186/s10194-017-0742-1. Epub 2017 Mar 21.

Anxiety and depression symptoms and migraine: a symptom-based approach research.

Peres MF^{1,2}, Mercante JP³, Tobo PR⁴, Kamei H⁴, Bigal ME⁵.

Author information

Abstract

BACKGROUND:

Anxiety and mood disorders have been shown to be the most relevant psychiatric comorbidities associated with migraine, influencing its clinical course, treatment response, and clinical outcomes. Limited information is available on how specific anxiety and depression symptoms are related to migraine. Symptoms-based approach, a current trend in mental health research, may improve our understanding in migraine comorbidity. The purpose of this study was to analyze how anxiety and depression aspects are related to migraine through a symptom-based approach.

METHODS:

We studied 782 patients from the general population who completed a self-administered questionnaire assessing demographics, headache features, anxiety and depression symptoms. A binary logistic regression analyses were conducted to test the association between all four ratings in GAD-7 (anxiety) and PHQ-9 (depression) scales subitems as covariates, and migraine vs no headache as the outcome.

RESULTS:

The leading Odd Ratios (OR) observed in individuals with migraine relative to those without migraine were anxiety related, "Not being able to stop or control worrying" on a daily basis [OR (CI 95%)] 49.2 (13.6-178.2), "trouble relaxing" 25.7 (7.1-92.6), "Feeling nervous, anxious or on edge" on a daily basis 25.4 (6.9-93.8), and "worrying too much about different things" 24.4 (7.7-77.6). Although the hallmark symptoms of depression are emotional (hopelessness and sadness), the highest scores found were physical: appetite, fatigue, and poor sleep. Irritability had a significant increase in migraine risk [OR 3.8 (1.9-7.8) if experienced some days, 7.5 (2.7-20.7) more than half the days, and 22.0 (5.7-84.9) when experienced nearly every day].

CONCLUSIONS:

Anxiety was more robustly associated with increase in migraine risk than depression. Lack of ability to properly control worrying and to relax are the most prominent issues in migraine psychiatric comorbidity. Physical symptoms in depression are more linked to migraine than emotional symptoms. A symptom-based approach helps clarifying migraine comorbidity and should be replicated in other studies.

HA's and dissection

JAMA Neurol. 2017 Mar 6. doi: 10.1001/jamaneurol.2016.5704.

Association Between Migraine and Cervical Artery Dissection: The Italian Project on Stroke in Young Adults.

De Giuli V¹, Grassi M², Lodigiani C³, Patella R⁴, Zedde M⁵, Gandolfo C⁶, Zini A⁷, DeLodovici ML⁸, Paciaroni M⁹, Del Sette M¹⁰, Azzini C¹¹, Toriello A¹², Musolino R¹³, Calabrò RS¹⁴, Bovi P¹⁵, Sessa M¹⁶, Adami A¹⁷, Silvestrelli G¹⁸, Cavallini A¹⁹, Marcheselli S²⁰, Bonifati DM²¹, Checcarelli N²², Tancredi L²³, Chiti A²⁴, Lotti EM²⁵, Del Zotto E²⁶, Tomelleri G¹⁵, Spalloni A⁴, Giorli E²⁷, Costa P¹, Poli L¹, Morotti A¹, Caria F¹, Lanari A¹⁸, Giacalone G²⁸, Ferrazzi P³, Giossi A¹⁶, Piras V²⁹, Massucco D⁶, D'Amore C⁹, Di Lisi F⁴, Casetta I¹¹, Cucurachi L³⁰, Cotroneo M¹³, De Vito A¹¹, Coloberti E²⁰, Rasura M⁴, Simone AM⁷, Gamba M³¹, Cerrato P³², Micieli G³³, Malferrari G⁵, Melis M²⁹, Iacoviello L³⁴, Padovani A¹, Pezzini A¹; Italian Project on Stroke in Young Adults Investigators.

IMPORTANCE:

Although sparse observational studies have suggested a link between migraine and cervical artery dissection (CEAD), any association between the 2 disorders is still unconfirmed. This lack of a definitive conclusion might have implications in understanding the pathogenesis of both conditions and the complex relationship between migraine and ischemic stroke (IS).

OBJECTIVE:

To investigate whether a history of migraine and its subtypes is associated with the occurrence of CEAD.

DESIGN, SETTING, AND PARTICIPANTS:

A prospective cohort study of consecutive patients aged 18 to 45 years with first-ever acute ischemic stroke enrolled in the multicenter Italian Project on Stroke in Young Adults was conducted between January 1, 2000, and June 30, 2015. In a case-control design, the study assessed whether the frequency of migraine and its subtypes (presence or absence of an aura) differs between patients whose IS was due to CEAD (CEAD IS) and those whose IS was due to a cause other than CEAD (non-CEAD IS) and compared the characteristics of patients with CEAD IS with and without migraine.

MAIN OUTCOMES AND MEASURES:

Frequency of migraine and its subtypes in patients with CEAD IS vs non-CEAD IS.

RESULTS:

Of the 2485 patients (mean [SD] age, 36.8 [7.1] years; women, 1163 [46.8%]) included in the registry, 334 (13.4%) had CEAD IS and 2151 (86.6%) had non-CEAD IS. Migraine was more common in the CEAD IS group (103 [30.8%] vs 525 [24.4%], $P = .01$), and the difference was

mainly due to migraine without aura (80 [24.0%] vs 335 [15.6%], $P < .001$). Compared with migraine with aura, migraine without aura was independently associated with CEAD IS (OR, 1.74; 95% CI, 1.30-2.33). The strength of this association was higher in men (OR, 1.99; 95% CI, 1.31-3.04) and in patients 39.0 years or younger (OR, 1.82; 95% CI, 1.22-2.71). The risk factor profile was similar in migrainous and non-migrainous patients with CEAD IS (eg, hypertension, 20 [19.4%] vs 57 [24.7%], $P = .29$; diabetes, 1 [1.0%] vs 3 [1.3%], $P > .99$).

CONCLUSIONS AND RELEVANCE:

In patients with IS aged 18 to 45 years, migraine, especially migraine without aura, is consistently associated with CEAD. This finding suggests common features and warrants further analyses to elucidate the underlying biologic mechanisms.

18. CLAVICLE

Hypermobility AC

J Orthop Traumatol. 2017 Mar 8. doi: 10.1007/s10195-017-0452-0.

Management of chronic unstable acromioclavicular joint injuries.

Cisneros LN^{1,2}, Reiriz JS^{3,4}.

Author information

Abstract

The acromioclavicular joint represents the link between the clavicle and the scapula, which is responsible for the synchronized dynamic of the shoulder girdle. Chronic acromioclavicular joint instability involves changes in the orientation of the scapula, which provokes cinematic alterations that might result in chronic pain. Several surgical strategies for the management of patients with chronic and symptomatic acromioclavicular joint instability have been described. The range of possibilities includes anatomical and non-anatomical techniques, open and arthroscopy-assisted procedures, and biological and synthetic grafts.

Surgical management of chronic acromioclavicular joint instability should involve the reconstruction of the torn ligaments because it is accepted that from three weeks after the injury, these structures may lack healing potential. Here, we provide a review of the literature regarding the management of chronic acromioclavicular joint instability.

27. HIP**IT band**

Int J Sports Phys Ther. 2017 Feb;12(1):16-24.

DEFORMATION RESPONSE OF THE ILIOTIBIAL BAND-TENSOR FASCIA LATA COMPLEX TO CLINICAL-GRADE LONGITUDINAL TENSION LOADING IN-VITRO.

Wilhelm M1, Matthijs O2, Browne K1, Seeber G3, Matthijs A2, Sizer PS1, Brismée JM1, James CR1, Gilbert KK1.

BACKGROUND:

Iliotibial Band (ITB) syndrome is a troublesome condition with prevalence as high as 12% in runners. Stretching has been utilized as a conservative treatment. However, there is limited evidence supporting ITB elongation in response to a stretching force.

PURPOSE/HYPOTHESES:

The purpose of this study was to describe the iliotibial band tensor fascia lata complex (ITBTFLC) tissue elongation response to a simulated clinical stretch *in-vitro*. The authors hypothesized that the ITBTFLC would undergo statistically significant elongation when exposed to a clinical-grade stretching regimen, with the majority of the elongation occurring within the proximal ITBTFLC region.

STUDY DESIGN:

Within subjects repeated measures *in-vitro* design.

METHODS:

The strain response of six un-embalmed ITBTFLCs to a simulated clinical stretch of 2.75% elongation was assessed. Four sets of array marks were placed along the length of the ITBTFLC. Photographic images were taken in resting position (with 1.0% *in-situ* elongation) and with an additional 2.75% elongation. Tissue elongation was compared between proximal, middle, and distal ITBTFLC regions.

RESULTS:

A paired samples *t-test* demonstrated a significantly longer ITBTFLC in the "stretched" versus resting condition ($p = 0.001$). Significant elongation was observed in the proximal (3.96mm (SD = 1.35); $p = 0.001$), middle (2.12mm (SD = 1.49); $p = 0.018$) and distal (2.25mm (SD = 1.37); $p = 0.01$) regions during the "stretched" versus the resting condition. A one-way ANOVA demonstrated a significant main effect for region ($p = 0.002$). The proximal region exhibited significantly greater elongation versus the middle ($p = 0.003$) and distal ($p = 0.007$) regions, with no significant difference between the middle and distal regions ($p = 0.932$).

CONCLUSION:

The results of this study demonstrate that the ITBTFLC is capable of elongation in response to a clinically simulated stretch. The proximal ITB region underwent significantly greater elongation

than the middle and distal regions and may be more likely to respond to "stretching" in clinical situations. Future investigation should assess the ITBTFLC load/deformation properties to determine whether a short-term clinically available stretch translates into permanent tissue elongation.

LEVEL OF EVIDENCE: III.

KEYWORDS: Iliotibial band; iliotibial band syndrome; stretch; tensor fascia lata

32 A. KNEE/ACL

Return to sports

Br J Sports Med. 2017 Feb 21. pii: bjsports-2016-096836. doi: 10.1136/bjsports-2016-096836.

Eighty-three per cent of elite athletes return to preinjury sport after anterior cruciate ligament reconstruction: a systematic review with meta-analysis of return to sport rates, graft rupture rates and performance outcomes.

Lai CC¹, Ardern CL^{2,3,4}, Feller JA⁵, Webster KE².

Author information

Abstract

OBJECTIVES:

The primary objective was to calculate the rate of return to sport (RTS) following anterior cruciate ligament (ACL) reconstruction in elite athletes. Secondary objectives were to estimate the time taken to RTS, calculate rates of ACL graft rupture, evaluate postsurgical athletic performance and identify determinants of RTS.

DESIGN:

Pooled RTS and graft rupture rates were calculated using random effects proportion meta-analysis. Time to RTS, performance data and determinants of RTS were synthesised descriptively.

DATA SOURCES:

MEDLINE, EMBASE, AMED, CINAHL, AMI, PEDro, SPORTDiscus and The Cochrane Library were searched from inception to 19 January 2016. Hand searching of 10 sports medicine journals and reference checking were also performed.

ELIGIBILITY CRITERIA FOR SELECTING STUDIES:

Studies were included if they reported the ratio of elite athletes who returned to their preinjury level of sport following ACL reconstruction. Twenty-four studies were included.

RESULTS:

The pooled RTS rate was 83% (95% CI 77% to 88%). The mean time to RTS ranged from 6 to 13 months. The pooled graft rupture rate was 5.2% (95% CI 2.8% to 8.3%). Six out of nine studies that included a noninjured control group found no significant deterioration in athletic performance following ACL reconstruction. Indicators of greater athletic skill or value to the team were associated with RTS.

SUMMARY AND CONCLUSIONS:

Eighty-three per cent of elite athletes returned to sport following ACL reconstruction, while 5.2% sustained a graft rupture. Most athletes who returned to sport performed comparably with matched, uninjured controls. This information may assist in guiding expectations of athletes and clinicians following ACL reconstruction.

Co-activation

Int J Sports Phys Ther. 2017 Feb;12(1):3-15.

EXERCISES THAT FACILITATE OPTIMAL HAMSTRING AND QUADRICEPS CO-ACTIVATION TO HELP DECREASE ACL INJURY RISK IN HEALTHY FEMALES: A SYSTEMATIC REVIEW OF THE LITERATURE.

Dedinsky R1, Baker L1, Imbus S1, Bowman M1, Murray L1.

BACKGROUND:

Anterior cruciate ligament (ACL) injury is common among females due to many anatomic, hormonal, and neuromuscular risk factors. One modifiable risk factor that places females at increased risk of ACL injury is a poor hamstrings: quadriceps (H:Q) co-activation ratio, which should be 0.6 or greater in order to decrease the stress placed on the ACL. Exercises that produce more quadriceps dominant muscle activation can add to the tension placed upon the ACL, potentially increasing the risk of ACL injury.

HYPOTHESIS/PURPOSE:

The purpose of this systematic review was to compare quadriceps and hamstring muscle activation during common closed kinetic chain therapeutic exercises in healthy female knees to determine what exercises are able to produce adequate H:Q co-activation ratios.

STUDY DESIGN:

Systematic Review.

METHODS:

Multiple online databases were systematically searched and screened for inclusion. Eight articles were identified for inclusion. Data on mean electromyography (EMG) activation of both quadriceps and hamstring muscles, % maximal voluntary isometric contraction (MVIC), and H:Q co-activation ratios were extracted from the studies. Quality assessment was performed on all included studies.

RESULTS:

Exercises analyzed in the studies included variations of the double leg squat, variations of the single leg squat, lateral step-up, Fitter, Stairmaster® (Core Health and Fitness, Vancouver, WA), and slide board. All exercises, except the squat machine with posterior support at the level of the scapula and feet placed 50 cm in front of the hips, produced higher quadriceps muscle activation compared to hamstring muscle activation.

CONCLUSION:

Overall, two leg squats demonstrate poor H:Q co-activation ratios. Single leg exercises, when

ABSTRACTS

performed between 30 and 90 degrees of knee flexion, produce adequate H:Q ratios, thereby potentially reducing the risk of tensile stress on the ACL and ACL injury.

LEVEL OF EVIDENCE:

2a- Systematic Review of Cohort Studies.

KEYWORDS:

Anterior cruciate ligament; electromyography; hamstrings; quadriceps; resistance training

34. PATELLA**Finding OA**

Arthritis Care Res (Hoboken). 2017 Mar 20. doi: 10.1002/acr.23238.

Diagnostic Performance of Clinical Examination Measures and Pain Presentation to Identify Patellofemoral Joint Osteoarthritis.

Stefanik JJ^{1,2}, Duncan R³, Felson DT^{2,4}, Peat G⁵.

Author information

Abstract

OBJECTIVE:

Test the diagnostic performance of a comprehensive set of tests and measures to discriminate patellofemoral (PF) from tibiofemoral (TF) osteoarthritis (OA).

METHODS:

The Clinical Assessment of the Knee Study is a study of knee pain in the general population. The presence of PF crepitus and pain with PF compression were assessed. Anterior knee pain (AKP) was determined from a knee pain map. Pain with stairs and walking on level ground were assessed with the WOMAC. Radiographs were used to define the compartment(s) of the knee affected by OA as: no OA, isolated/predominant PF OA, and isolated/predominant TF OA. In knees with mixed OA, knees with more severe PF OA were included in the isolated/predominant PF group (the same was done for TF OA). We determined the sensitivity (Sn), specificity (Sp), positive and negative predictive values (PPV and NPV), and positive likelihood ratio (LR+) for each test and measure individually, and the combination of these measures, in identifying knees with PF OA from knees with TFJ OA or no OA.

RESULTS:

745 knees were included in the study. No measure had high Sn and Sp. Pain with stairs had the greatest Sn (90%) but poor Sp (15%). The combination of definite crepitus with no pain on walking had the greatest Sp (96%), PPV (53%) and LR+ (1.8) but poor Sn (7%).

CONCLUSIONS:

Typical clinical examination findings and knee pain patterns commonly thought to represent underlying PF pathology do not discriminate knees with PF OA from knees without OA or TF OA. This article is protected by copyright. All rights reserved.

35. KNEE/TOTAL**Inflammation**

Osteoarthritis Cartilage. 2017 Mar 16. pii: S1063-4584(17)30924-X. doi: 10.1016/j.joca.2017.03.008.

Inflammation and Post-operative Recovery in Patients undergoing Total Knee Arthroplasty- Secondary Analysis of a Randomized Controlled Trial.

Langkilde A¹, Jakobsen TL², Bandholm TQ³, Eugen-Olsen J⁴, Blauenfeldt T⁵, Petersen J⁶, Andersen O⁷.

Author information

Abstract

OBJECTIVE:

Reduced function persists for many patients after total knee arthroplasty (TKA). Inflammation is part of osteoarthritis' pathophysiology, and surgery induces a marked inflammatory response. We therefore wanted to explore the role of inflammation in long-term recovery after TKA, and thus conducted this secondary analysis of our randomized controlled trial of physical rehabilitation +/- progressive strength training (PST). We aimed to investigate whether A) inflammation is associated with functional performance, knee-extension strength, and knee pain before TKA; B) PST affects inflammation, and the inflammatory state over time; C) baseline or surgery-induced inflammation modifies the effect of rehabilitation +/- PST on change in 6-minute walk test (Δ 6MWT); and D) baseline or surgery-induced inflammation is associated with Δ 6MWT following TKA.

DESIGN:

In the primary trial report's per-protocol analysis, 72/82 patients were included. Sixty had ≥ 1 blood sample before and after TKA, and were included in this secondary analysis. Inflammation was measured by interferon γ -inducible protein (IP)-10, soluble urokinase plasminogen activator receptor (suPAR), interleukin (IL)-6, IL-10, and tumor necrosis factor (TNF)- α at baseline; day 1, week 4, 8, and 26 after TKA.

RESULTS:

At baseline, suPAR ($p=0.03$) was negatively associated with 6MWT. Neither baseline nor surgery-induced inflammation modified the response to rehabilitation +/- PST. Only surgery-induced IL-10 was associated with Δ 6MWT_{26 weeks-baseline} ($p=0.001$), also adjusted for 6MWT_{baseline}, age, sex and BMI.

CONCLUSION:

In this secondary analysis, only increased surgery-induced IL-10 response was associated with decreased long-term functional performance after TKA. The importance of controlling the surgery-induced immune response remains to be investigated further.

37. OSTEOARTHRITIS/KNEE**Hyaluronic acid**

Arthritis Care Res (Hoboken). 2017 Mar 20. doi: 10.1002/acr.23242.

A cost utility analysis of high molecular weight hyaluronic acid for knee osteoarthritis in everyday clinical care in patients in the working age. An economic evaluation of a randomized clinical trial.

Hermans J¹, Reijman M¹, Goossens LM², Verburg H³, Bierma-Zeinstra SM^{1,4}, Koopmanschap MA².

Author information

Abstract

Objectives Knee osteoarthritis (OA) is associated with high medical costs and especially with high productivity costs, in particular in patients in their working years.

High molecular weight (HMW) hyaluronic acid (HA) is an alternative treatment for non-steroidal anti-inflammatory drugs (NSAIDs), which are known for their serious side-effects. The cost-utility of intra-articular HMW-HA treatment in these patients is unknown though and was assessed in this study. **Methods** Secondary care patients between 18 and 65 with knee OA were randomized to usual care (UC) + HMW-HA (intervention group) or UC only (control group). A cost-utility analysis over 52 weeks from the societal and healthcare perspective was performed. Uncertainty for costs, effects and cost-utility ratio was analysed by non-parametric bootstrapping. Baseline imbalance adjustment was done by inversed probability of treatment weighting. **Results** In total, 156 subjects were included (intervention group 77, control group 79). The total of productivity and medical costs was €475 higher in the intervention group (€7.754, 95% Confidence Interval (CI) €5.426; €10.436 versus €7.270, €95%CI €5.453; €9.262). The amount of quality adjusted life years (QALYs) gained during follow-up was also higher in the intervention group (0.779 versus 0.727). This resulted in an incremental cost-effectiveness ratio of €9.100/QALY from a societal perspective and €8.700/QALY from a healthcare perspective.

When the maximum willingness to pay for similar conditions to knee OA is considered, the probability on cost-effectiveness is 64% and 86% from both perspectives respectively. **Conclusion** Intra-articular HMW-HA added to usual care for knee OA is probably cost-effective in the treatment of knee OA. This article is protected by copyright. All rights reserved.

Enhancement of balance

Arch Phys Med Rehabil. 2017 Mar 6. pii: S0003-9993(17)30136-3. doi: 10.1016/j.apmr.2017.01.029.

Dynamic balance training improves physical function in individuals with knee osteoarthritis: a pilot randomized controlled trial.

Takacs J¹, Krowchuk NM¹, Garland SJ², Carpenter MG³, Hunt MA⁴.

Author information

Abstract

OBJECTIVE:

To examine the effect of a targeted balance training program on dynamic balance and self-reported physical function in people with medial tibiofemoral osteoarthritis (OA).

DESIGN:

A single-blind randomized controlled trial.

SETTING:

Exercise gymnasium and community dwellings.

PARTICIPANTS:

Forty individuals with medial compartment knee OA.

INTERVENTION:

Ten weeks of partially-supervised exercises targeting dynamic balance and strength performed four times per week, or no intervention (control group).

MAIN OUTCOME MEASURES:

Dynamic balance was measured using the Community Balance and Mobility Scale (CB&M), and self-reported physical function was measured using the Western Ontario and McMaster Universities Arthritis Index (WOMAC) physical function subscale. Secondary outcomes included knee pain, fear of movement, knee joint proprioception, and muscle strength.

RESULTS:

Forty individuals underwent baseline testing, with 36 participants completing follow-up testing. Adherence to exercise in the training group was high, with 82.2% of all home-based exercise sessions completed. No significant changes were observed in any outcome in the control group at follow-up. Significant improvements in self-reported pain, physical function, and fear of movement were observed in the training group when compared to the control group. No other within- or between-group differences were observed.

CONCLUSION:

A ten week dynamic balance training program for people with knee OA significantly improved self-reported knee pain, physical function, and fear of movement, though there was no change in dynamic balance as quantified by the CB&M. Further research is needed to investigate how exercise may result in improvement on objective measures of dynamic balance.

OA impact on gait

Knee. 2017 Mar 6. pii: S0968-0160(17)30041-8. doi: 10.1016/j.knee.2017.02.006.

The impact of symptomatic knee osteoarthritis on overall gait pattern deviations and its association with performance-based measures and patient-reported outcomes.

Naili JE¹, Esbjörnsson AC², Iversen MD³, Schwartz MH⁴, Hedström M⁵, Häger CK⁶, Broström EW².

Author information

Abstract

BACKGROUND:

Limited knowledge exists regarding the impact of symptomatic knee osteoarthritis (OA) on the overall gait pattern; and whether gait deviations are associated with performance-based measures (PBMs) and patient-reported outcomes (PROs). This cross-sectional study evaluated overall gait patterns in patients with knee OA using the Gait Deviation Index for kinematics (GDI) and kinetics (GDI-kinetic), and explored associations between gait deviations, PBMs, and PROs.

METHODS:

Forty patients with knee OA and 25 age and gender-matched controls underwent three-dimensional gait analysis. Participants performed the Timed Up and Go (TUG), Five Times Sit-to-Stand (5STS), and Single Limb Mini Squat (SLMS) tests and completed a disease-specific PRO. Associations between gait deviations, PBMs, and PROs were assessed by Pearson's correlation and multiple linear regression.

RESULTS:

Patients with OA demonstrated significantly lower GDI and GDI-kinetic scores of the OA and contralateral limbs compared to controls; with GDI-kinetic scores on the contralateral limb more impacted than the OA limb. On the contralateral limb, GDI-kinetic score significantly correlated with TUG ($r=-0.42$) and 5STS ($r=-0.33$), while on the OA limb with TUG ($r=-0.68$), 5STS ($r=-0.38$), SLMS ($r=-0.38$), activities of daily living ($r=0.35$) and Knee-related Quality of Life ($r=0.35$). No significant associations existed between kinematic GDI scores, PBMs and PROs.

CONCLUSION:

The overall gait pattern, as represented by GDI and GDI-kinetic scores, in patients with symptomatic knee OA is affected both on the painful OA limb and the contralateral limb. The GDI and GDI-kinetic scores provide different information regarding function that is not revealed by PBMs or PROs.

41 A. ACHILLES TENDON AND CALF**Ankle dysfunction**

Int J Sports Phys Ther. 2017 Feb;12(1):133-143.

JOINT MOBILIZATION IN THE MANAGEMENT OF PERSISTENT INSERTIONAL ACHILLES TENDINOPATHY: A CASE REPORT.

Jayaseelan DJ1, Post AA2, Mischke JJ3, Sault JD2.

BACKGROUND & PURPOSE:

Insertional Achilles tendinopathy (IAT) can be a challenging condition to manage conservatively. Eccentric exercise is commonly used in the management of chronic tendinopathy; however, it may not be as helpful for insertional tendon problems as compared to mid-portion dysfunction. While current evidence describing the physical therapy management of IAT is developing, gaps still exist in descriptions of best practice. The purpose of this case report is to describe the management of a patient with persistent IAT utilizing impairment-based joint mobilization, self-mobilization, and exercise.

CASE DESCRIPTION:

A 51-year-old male was seen in physical therapy for complaints of posterior heel pain and reduced running capacity. He was seen by multiple physical therapists previously, but reported continued impairment, and functional restriction. Joint-based non-thrust mobilization and self-mobilization exercise were performed to enhance his ability to run and reduce symptoms.

OUTCOMES:

The subject was seen for four visits over the course of two months. He made clinically significant improvements on the Foot and Ankle Activity Measure and Victorian Institute of Sport Assessment-Achilles tendon outcomes, was asymptomatic, and participated in numerous marathons. Improvements were maintained at one-year follow-up.

DISCUSSION:

Mobility deficits can contribute to the development of tendinopathy, and without addressing movement restrictions, symptoms and functional decline related to tendinopathy may persist. Joint-directed manual therapy may be a beneficial intervention in a comprehensive plan of care in allowing patients with chronic tendon changes to optimize function.

LEVEL OF EVIDENCE: Therapy, Level 4.

KEYWORDS: Achilles tendon; Ankle; manual therapy; pain

45 A. MANUAL THERAPY LUMBAR & GENERAL**Chiropractic and prevention**

Chiropr Man Therap. 2017 Mar 20;25:9. doi: 10.1186/s12998-017-0140-4. eCollection 2017.

Primary prevention in chiropractic practice: a systematic review.

Goncalves G¹, Le Scanff C², Leboeuf-Yde C¹.

Author information

Abstract

BACKGROUND:

Chiropractors are primarily concerned with musculoskeletal disorders but have the responsibility to deal also with prevention in other areas.

OBJECTIVES:

To establish the prevalence of chiropractors who have a positive opinion on the use of primary prevention (PP), their actual use of PP, and the proportion of patients who consult for PP in relation to (i) musculoskeletal disorders, (ii) public health issues, or (iii) chiropractic treatment for wellness.

METHOD:

A systematic search for literature was done using PubMed, Embase, Index to Chiropractic Literature, and Google Scholar and updated on February 15th 2017. Inclusion criteria were: surveys on chiropractors and/or chiropractic patients, information had to be present on PP in relation to the percentage of patients who consult for PP in chiropractic practice or in a chiropractic student clinic, and/or the percentage of chiropractors who reported using PP, and/or information on chiropractors' opinions of the use of PP, in the English, French, or Scandinavian languages. The review followed the PRISMA guidelines. Articles were classified as 'good', 'acceptable' and 'unacceptable' based on scores of quality items. Results from the latter group were not taken into account.

RESULTS:

Twenty-five articles were included, reporting on twenty-six studies, 19 of which dealt with wellness. The proportion of chiropractors who stated that they had a positive opinion on PP was generally higher than the proportion of chiropractors offering PP. Most chiropractors offered some type of PP for musculoskeletal disorders and more than a half stated that they did so in the public health area but also for wellness. For all types of PP, however, it was rarely stated to be the reason for patients consulting. Regardless the type of PP, the proportion of patients who actually consulted specifically for PP was much smaller than the proportion of chiropractors offering PP.

CONCLUSION:

More research efforts have been put into wellness than into prevention of musculoskeletal disorders or public health-related disorders. It therefore seems that parts of the chiropractic profession are in search of an understanding of various aspects of clinical practice over and above its traditional musculoskeletal role. Interestingly, only a small proportion of chiropractic patients consult for PP, despite the readiness of the profession to offer such services.

45 B. MANUAL THERAPY CERVICAL

Osteopathic medicine for HA's

Osteopathy for primary headache patients: A systematic review

Journal of Pain Research, 03/24/2017

Cerritelli F, et al.

Researchers evaluated the efficacy, effectiveness, safety, and tolerability of osteopathic manipulative treatment (OMT) in patients with headache. This systematic review demonstrates a preliminary low level of evidence that OMT is effective in the management of headache, however, to strengthen this evidence, studies with more rigorous designs and methodology are needed. Furthermore, this review proposes that new manual interventions for the treatment of acute migraine are available and developing.

Methods

- All available studies examining the use of OMT in patients with migraine and other forms of headache were systematically reviewed.

Results

- In this study, the search of literature produced 6 studies, 5 of which were eligible for review.
- The investigated papers collectively bolster the concept that patients with migraine can benefit from OMT.
- OMT could most likely decrease the number of episodes per month and in addition drug use.
- However, according to the Cochrane Collaboration's tool for assessing the risk of bias, none of the included studies was classified as low risk of bias.

45 C. MANUAL THERAPY THORACIC**For shoulder impingement**

Arch Phys Med Rehabil. 2017 Mar 1. pii: S0003-9993(17)30101-6. doi: 10.1016/j.apmr.2017.02.003.

Short-Term Effects of Thoracic Spine Manipulation on Shoulder Impingement Syndrome - A Randomized Controlled Trial.

Haik MN¹, Albuquerque-Sendín F², Camargo PR³.

Author information

Abstract

OBJECTIVE:

To investigate the short-term effects of thoracic spine manipulation (TSM) on pain, function, scapular kinematics and scapular muscle activity in individuals with shoulder impingement syndrome (SIS).

DESIGN:

Blinded assessor and patient, randomized controlled trial.

SETTING:

Laboratory.

PARTICIPANTS:

Sixty-one patients with SIS.

INTERVENTION:

Participants were randomly allocated to TSM (n=30) or sham-TSM group (n=31) and attended 2 intervention sessions over a 1-week period.

MAIN OUTCOME MEASUREMENTS:

Scapular kinematics and muscle activity were measured at day 1 (baseline, before first intervention), day 2-pre (before second intervention), day 2-post (after second intervention) and day 3 (follow-up). Shoulder pain and function were assessed by the Disability of the Arm, Shoulder and Hand (DASH) questionnaire and Western Ontario Rotator Cuff (WORC) index at baseline, day 2-pre and follow-up. An assessor blinded to group assignment measured all outcomes.

RESULTS:

Pain decreased 0.7 points (1.3-0.1 95% Confidence Interval - CI) at day 2-pre and 0.9 points (1.5-0.3 95%CI) at day 2-post in the TSM group. DASH (p=0.01) and WORC (p=0.02) scores improved in both groups. Scapular upward rotation increased during arm lowering (p<0.01) at day 2-post (5.3°) and follow-up (3.5°) in the TSM group. Upper trapezius activity increased (p<0.05) in the sham-TSM group. Middle and lower trapezius and serratus anterior decreased activation in both groups during elevation and lowering of the arm.

CONCLUSION:

TSM may increase scapular upward rotation during arm lowering. TSM does not seem to influence activity of the scapular muscles. Results concerning shoulder pain, function, scapular tilt and internal rotation are not conclusive.

45 D. MANUAL THERAPY EXTREMITIES**T spine manip for shoulder impingement**

Arch Phys Med Rehabil. 2017 Mar 1. pii: S0003-9993(17)30101-6. doi: 10.1016/j.apmr.2017.02.003.

Short-Term Effects of Thoracic Spine Manipulation on Shoulder Impingement Syndrome - A Randomized Controlled Trial.

Haik MN¹, Albuquerque-Sendín F², Camargo PR³.

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RESULTS:

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CONCLUSION:

TSM may increase scapular upward rotation during arm lowering. TSM does not seem to influence activity of the scapular muscles. Results concerning shoulder pain, function, scapular tilt and internal rotation are not conclusi

52. EXERCISE**Blood flow restriction**

Clin Physiol Funct Imaging. 2017 Mar 2. doi: 10.1111/cpf.12416.

The acute muscular response to blood flow-restricted exercise with very low relative pressure.

Jessee MB¹, Mattocks KT¹, Buckner SL¹, Mouser JG¹, Counts BR¹, Dankel SJ¹, Laurentino GC¹, Loenneke JP¹.

Author information

Abstract

To investigate the acute responses to blood flow-restricted (BFR) exercise across low, moderate and high relative pressures.

Muscle thickness, maximal voluntary contraction (MVC) and electromyography (EMG) amplitude were assessed following exercise with six different BFR pressures: 0%, 10%, 20%, 30%, 50% and 90% of arterial occlusion pressure (AOP). There were differences between each time point within each condition for muscle thickness, which increased postexercise [+0.47 (0.40, 0.54) cm] and then trended towards baseline. For MVC, higher pressures resulted in greater decrements than lower pressures [e.g. 10% AOP: -20.7 (-15.5, -25.8) Nm versus 90% AOP: -24 (-19.1, -28.9) Nm] postexercise.

EMG amplitude increased from the first three repetitions to the last three repetitions within each set. When using a common BFR protocol with 30% 1RM, applying BFR does not seem to augment acute responses over that of exercise alone when exercise is taken to failure.

Suspended exercise

Int J Sports Phys Ther. 2017 Feb;12(1):42-52.

MUSCLE ACTIVATION PATTERNS DURING SUSPENSION TRAINING EXERCISES.

Harris S1, Ruffin E1, Brewer W1, Ortiz A1.

BACKGROUND:

Suspension training (ST) has been utilized over exercises performed on a stable surface to train multiple muscle groups simultaneously to increase muscle activation and joint stability.

HYPOTHESIS/PURPOSE:

The purpose of this study was to determine whether ST augments muscle activation compared to similar exercises performed on a stable surface.

STUDY DESIGN:

Cross-sectional study.

METHODS:

Twenty-five healthy adults (male: 16; women: 9; BMI: 23.50 ± 2.48 kg/m²) had 16 pre-amplified wireless surface EMG electrodes placed bilaterally on: the pectoralis major (PM), middle deltoid (MD), serratus anterior (SA), obliques (OB), rectus abdominis (RA), gluteus maximus (GM), erector spinae (ES), and middle trapezius/rhomboids (MT). Each participant performed reference isometric exercises (Sorensen test, push-up, sit-up, and inverted row) to establish a baseline muscle contraction. Muscle activation was assessed during the following exercises: ST bridge, ST push-up, ST inverted row, ST plank, floor bridge, floor push-up, floor row, and floor plank. The root mean square (RMS) of each side for every muscle was averaged for data analysis. Multivariate analyses of variance (MANOVA) for each exercise with post-hoc comparisons were performed to compare muscle activation between each ST exercise and its stable surface counterpart.

RESULTS:

MANOVAs for all exercise comparisons showed statistically significant greater muscle activation in at least one muscle group during the ST condition. Post-hoc analyses revealed a statistically significant increase in muscle activation for the following muscles during the plank: OB ($p = 0.021$); Push-up: PM ($p = 0.002$), RA ($p < 0.0001$), OB ($p = 0.019$), MT ($p < 0.0001$), and ES ($p = 0.006$); Row: MD ($p = 0.016$), RA ($p = 0.059$), and OB ($p = 0.027$); and Bridge: RA ($p = 0.013$) and ES ($p < 0.0001$).

CONCLUSIONS:

Performing ST exercises increases muscle activation of selected muscles when compared to exercises performed on a stable surface.

LEVEL OF EVIDENCE:

1b.

KEYWORDS:

Electromyography; muscle activation; stable surface exercise; suspension training exercise

53. CORE**Core training**

Int J Sports Phys Ther. 2017 Feb;12(1):25-41.

DANCE, BALANCE AND CORE MUSCLE PERFORMANCE MEASURES ARE IMPROVED FOLLOWING A 9-WEEK CORE STABILIZATION TRAINING PROGRAM AMONG COMPETITIVE COLLEGIATE Dancers.

Watson T1, Graning J1, McPherson S1, Carter E, Edwards J, Melcher I, Burgess T.

BACKGROUND:

Dance performance requires not only lower extremity muscle strength and endurance, but also sufficient core stabilization during dynamic dance movements. While previous studies have identified a link between core muscle performance and lower extremity injury risk, what has not been determined is if an extended core stabilization training program will improve specific measures of dance performance.

HYPOTHESIS/PURPOSE:

This study examined the impact of a nine-week core stabilization program on indices of dance performance, balance measures, and core muscle performance in competitive collegiate dancers.

STUDY DESIGN:

Within-subject repeated measures design.

METHODS:

A convenience sample of 24 female collegiate dance team members (age = 19.7 ± 1.1 years, height = 164.3 ± 5.3 cm, weight 60.3 ± 6.2 kg, BMI = 22.5 ± 3.0) participated. The intervention consisted of a supervised and non-supervised core (trunk musculature) exercise training program designed specifically for dance team participants performed three days/week for nine weeks in addition to routine dance practice. Prior to the program implementation and following initial testing, transversus abdominis (TrA) activation training was completed using the abdominal draw-in maneuver (ADIM) including ultrasound imaging (USI) verification and instructor feedback. Paired t tests were conducted regarding the nine-week core stabilization program on dance performance and balance measures (pirouettes, single leg balance in passe' releve position, and star excursion balance test [SEBT]) and on tests of muscle performance. A repeated measures (RM) ANOVA examined four TrA instruction conditions of activation: resting baseline, self-selected activation, immediately following ADIM training and four days after completion of the core stabilization training program. Alpha was set at 0.05 for all analysis.

RESULTS:

Statistically significant improvements were seen on single leg balance in passe' releve and bilateral anterior reach for the SEBT (both $p \leq 0.01$), number of pirouettes ($p = 0.011$), and all measures of strength ($p \leq 0.05$) except single leg heel raise. The RM ANOVA on mean percentage of change in TrA was significant; post hoc paired t tests demonstrated significant improvements in dancers' TrA activations across the four instruction conditions.

CONCLUSION:

This core stabilization training program improves pirouette ability, balance (static and dynamic), and measures of muscle performance. Additionally, ADIM training resulted in immediate and short-term (nine-week) improvements in TrA activation in a functional dance position.

LEVEL OF EVIDENCE: 2b.

KEYWORDS: abdominal draw-in maneuver; core stability; dancers; pirouette; transversus abdominis

57. GAIT**Knee OA changes**

Knee. 2017 Mar 6. pii: S0968-0160(17)30041-8. doi: 10.1016/j.knee.2017.02.006

The impact of symptomatic knee osteoarthritis on overall gait pattern deviations and its association with performance-based measures and patient-reported outcomes.

Naili JE¹, Esbjörnsson AC², Iversen MD³, Schwartz MH⁴, Hedström M⁵, Häger CK⁶, Broström EW².

Author information

Abstract

BACKGROUND:

Limited knowledge exists regarding the impact of symptomatic knee osteoarthritis (OA) on the overall gait pattern; and whether gait deviations are associated with performance-based measures (PBMs) and patient-reported outcomes (PROs). This cross-sectional study evaluated overall gait patterns in patients with knee OA using the Gait Deviation Index for kinematics (GDI) and kinetics (GDI-kinetic), and explored associations between gait deviations, PBMs, and PROs.

METHODS:

Forty patients with knee OA and 25 age and gender-matched controls underwent three-dimensional gait analysis. Participants performed the Timed Up and Go (TUG), Five Times Sit-to-Stand (5STS), and Single Limb Mini Squat (SLMS) tests and completed a disease-specific PRO. Associations between gait deviations, PBMs, and PROs were assessed by Pearson's correlation and multiple linear regression.

RESULTS:

Patients with OA demonstrated significantly lower GDI and GDI-kinetic scores of the OA and contralateral limbs compared to controls; with GDI-kinetic scores on the contralateral limb more impacted than the OA limb. On the contralateral limb, GDI-kinetic score significantly correlated with TUG ($r=-0.42$) and 5STS ($r=-0.33$), while on the OA limb with TUG ($r=-0.68$), 5STS ($r=-0.38$), SLMS ($r=-0.38$), activities of daily living ($r=0.35$) and Knee-related Quality of Life ($r=0.35$). No significant associations existed between kinematic GDI scores, PBMs and PROs.

CONCLUSION:

The overall gait pattern, as represented by GDI and GDI-kinetic scores, in patients with symptomatic knee OA is affected both on the painful OA limb and the contralateral limb. The GDI and GDI-kinetic scores provide different information regarding function that is not revealed by PBMs or PROs.

59. PAIN**Chronic pain and CSF**

J Pain Res. 2017 Mar 13;10:575-590. doi: 10.2147/JPR.S125667. eCollection 2017.

Clear differences in cerebrospinal fluid proteome between women with chronic widespread pain and healthy women - a multivariate explorative cross-sectional study.

Olausson P¹, Ghafouri B¹, Bäckryd E¹, Gerdle B¹.

Author information

Abstract

INTRODUCTION:

Frequent chronic local pain can develop into chronic widespread pain (CWP). The spread of pain is correlated with pain intensity, anxiety, and depression, conditions that ultimately lead to a poor quality of life. Knowledge is incomplete about CWP's etiology, although it has been suggested that both central hyperexcitability and/or a combination with peripheral factors may be involved. Cerebrospinal fluid (CSF) could act as a mirror for the central nervous system as proteins are signal substances that activate the formation of analgesics and control nociceptive processes. To this end, this study investigates the CSF protein expression in women with CWP and in female healthy controls.

MATERIALS AND METHODS:

This study included 12 female patients with CWP diagnosed according to the American College of Rheumatology criteria with 13 healthy age- and sex-matched pain-free subjects. All subjects went through a clinical examination and answered a health questionnaire that registered sociodemographic and anthropometric data, pain characteristics, psychological status, and quality of life rating. CSF was collected by lumbar puncture from each subject. Two-dimensional gel electrophoresis in combination with mass spectrometry was used to analyze the CSF proteome. This study identifies proteins that significantly discriminate between the two groups using multivariate data analysis (MVDA) (i.e., orthogonal partial least squares discriminant analysis [OPLS-DA]).

RESULTS:

There were no clinically significant levels of psychological distress and catastrophization presented in subjects with CWP. MVDA revealed a highly significant OPLS-DA model where 48 proteins from CSF explained 91% (R^2) of the variation and with a prediction of 90% (Q^2). The highest discriminating proteins were metabolic, transport, stress, and inflammatory.

CONCLUSION:

The highest discriminating proteins (11 proteins), according to the literature, are involved in apoptotic regulations, anti-inflammatory and anti-oxidative processes, the immune system, and endogenous repair. The results of this explorative study may indicate the presence of neuro-inflammation in the central nervous system of CWP patients. Future studies should be larger and control for confounders and determine which alterations are unspecific/general and which are specific changes.

61. FIBROMYALGIA**Brain changes****Painful After-Sensations in Fibromyalgia are Linked to Catastrophizing and Differences in Brain Response in the Medial Temporal Lobe**

Kristin L. Schreiber Marco L. Loggia* Jieun Kim Christine M. Cahalan Vitaly Napadow Robert R. Edwards

DOI: <http://dx.doi.org/10.1016/j.jpain.2017.02.437>

Highlights:

- Painful After-sensations (PAS) after a prolonged mechanical stimulus are more common and severe in individuals with Fibromyalgia (FM)
- PAS and catastrophizing are associated with clinical pain severity in FM
- fMRI showed reduced deactivation of the medial temporal lobe (MTL) in FM patients in the post-stimulation period
- Greater PAS severity is associated with less MTL deactivation

Abstract

Fibromyalgia (FM) is a complex syndrome characterized by chronic widespread pain, hyperalgesia, and other disabling symptoms. While the brain response to experimental pain in FM patients has been the object of intense investigation, the biological underpinnings of painful after-sensations (PAS), and their relation to negative affect have received little attention. In this cross-sectional cohort study, subjects with FM (n=53) and healthy controls (n=17) were assessed for PAS by exposure to a sustained, moderately painful cuff stimulus to the leg, individually calibrated to a target pain intensity of 40/100. Despite requiring lower cuff pressures to achieve the target pain level, FM patients reported more pronounced PAS 15s following end of cuff stimulation, which correlated positively with clinical pain scores. Functional magnetic resonance imaging (fMRI) revealed reduced deactivation of the medial temporal lobe (MTL; amygdala, hippocampus, parahippocampal gyrus) in FM patients, during both pain stimulation, and in the ensuing post-stimulation period, when PAS are experienced. Moreover, the fMRI signal measured during the post-stimulation period in MTL, as well as in the insular and anterior middle cingulate and medial prefrontal cortices, correlated with the severity of reported PAS by FM patients.

These results suggest that the MTL plays a role in PAS in FM patients.

62 A. NUTRITION/VITAMINS**Med. Diet and inflammation**

J Nutr. 2017 Mar 15. pii: jn243543. doi: 10.3945/jn.116.243543.

Obesity Mediates the Association between Mediterranean Diet Consumption and Insulin Resistance and Inflammation in US Adults.

Park YM^{1,2}, Zhang J², Steck SE², Fung TT^{3,4}, Hazlett LJ², Han K⁵, Ko SH⁶, Merchant AT⁷.

Author information

Abstract

Background: The inverse association between Mediterranean diet (Med-diet) consumption and insulin resistance or inflammatory markers is well known. However, the extent to which obesity may act directly on or mediate this association is unclear.

Objective: We aimed to investigate whether the associations between Med-diet consumption and markers of insulin resistance and inflammation are mediated by body mass index (BMI) or waist circumference (WC) in a representative US population.

Methods: We used cross-sectional data from 4700 adults aged 20-90 y without any previous diagnosis of cancer, cardiovascular disease, diabetes, or hypertension based on the NHANES III, 1988-1994. A Med-diet score (MDS) was created to assess adherence to the Med-diet. Linear regression models were fitted in conventional and causal mediation analyses comparing extreme MDS tertiles.

Results: Compared with the lowest MDS tertile, the highest tertile of MDS was associated with a 0.77 lower BMI (in kg/m²; $P = 0.004$) and a 2.7 cm lower WC ($P < 0.001$) after multivariable adjustment. WC mediated the association of MDS with insulin resistance and glucose intolerance markers (log insulin, log homoeostasis model assessment of insulin resistance, fasting glucose, and glycated hemoglobin) and inflammatory markers (white blood cell count and fibrinogen), whereas BMI mediated the association between MDS and insulin resistance and glucose intolerance markers only (all $P < 0.05$). The mediated effects of WC were consistently greater than those of BMI for all markers in both conventional and causal mediation analyses. Furthermore, the association between MDS and fasting glucose was fully mediated by adiposity, especially by WC in men aged <45 y and in premenopausal women.

Conclusion: Our results suggest that reducing abdominal obesity may play an important role in the pathway through which Med-diet consumption reduces insulin resistance and inflammation.