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METHYLPREDNISOLONE FOR ADVANCED CANCER PAIN

Pain is a prevalent symptom in patients with cancer. Careful titration of non-opioid and opioid analgesics comprises the basis of cancer pain treatment. Corticosteroids are among the adjuvant pain medications mentioned in cancer treatment guidelines. This study reviewed the analgesic efficacy of oral methylprednisolone for patients with cancer related pain.

This multicenter, double-blind study included adult subjects with cancer, with an average pain rating of at least four on a 10-point numeric rating scale. Twenty-five subjects were randomized to a methylprednisolone group and 22 to a placebo group. Those in the treatment group received 16 mg of methylprednisolone, twice daily for seven days, while those in the placebo group received identical appearing placebo capsules. All other pain medications were maintained as before. The primary outcome measure was the average pain intensity, as assessed on day seven. Secondary outcomes included analgesic consumption, fatigue, appetite loss and patient satisfaction.

At day seven, no significant differences were seen in average pain intensity or opioid consumption between the two groups. However, at that point significantly greater improvements were seen in fatigue, appetite loss and satisfaction with treatment in the corticosteroid group as compared to the placebo group ($p=0.003$, $p=0.003$, and $p=0.01$, respectively).

Conclusion: This study of patients with cancer related pain found that methylprednisolone at 32 mg per day does not provide additional analgesic effects, but does improve fatigue, appetite loss and patient satisfaction.

Paulsen, O., et al. Efficacy of Methylprednisolone on Pain, Fatigue and Appetite Loss in Patients with Advanced Cancer Using Opioids: A Randomized, Placebo-Controlled, Double-Blind Trial. **J Clin Onc**. 2014. DOI: 10.1200/JCO.2013.54.3926

SODIUM CONSUMPTION AND CARDIOVASCULAR DEATH

Dietary intake of sodium is associated with elevated blood pressure, a major risk factor for cardiovascular disease. This study reported on a systematic analysis of sodium consumption worldwide, in an effort to better determine the dose response effects of sodium on blood pressure and from these data to estimate the worldwide impact of sodium consumption on cardiovascular mortality.

Between March of 2008 and December of 2011, a systematic search was made for previously conducted national or international surveys on individual-level sodium consumption, with 205 such surveys identified. These included data from 66 countries, accounting for 74.1% of adults in the world. Using a hierarchical Bayesian model, sodium consumption was estimated using 24-hour urine collections as a reference standard. The effects of sodium on blood pressure were calculated from a new meta-analysis of 107 randomized interventions. The effects of blood pressure on cardiovascular mortality were determined from a metanalysis of cohorts. Cause specific mortality was determined for separate countries by age and gender using the Global Burden of Disease study of 2010.

In 2010, it was estimated that the mean level of consumption of sodium worldwide was 3.95 g per day. Of the 187 countries assessed, 99.2% had sodium intake exceeding the World Health Organization's recommendation of two g per day. A linear dose response relationship was found between sodium intake and blood pressure ($p<0.001$). Using the correlations between sodium intake and blood pressure, and between blood pressure and cardiovascular mortality, it was estimated that, in 2010, 1.65 million deaths from cardiovascular disease could be attributed to sodium consumption above the reference level.

Conclusion: This global study estimated that, in 2010, a total of 1.65 million deaths from cardiovascular causes were attributed to sodium consumption of more than two grams per day.

Mozaffararian, D., et al. Global Sodium Consumption and Death from Cardiovascular Causes. **N Eng J Med.** 2014, August 14; 371(7): 624-634.

INSURANCE STATUS AND TREATMENT AFTER SUBARACHNOID HEMORRHAGE

Non-traumatic subarachnoid hemorrhage (SAH) is most often caused by ruptured intracerebral aneurysm, with current evidence-based recommendations suggesting treatment through microsurgical clipping or endovascular coiling. Despite these recommendations, however, only one third of all patients with SAH in the United States receive some form of surgical treatment. This study assessed the association between insurance status and surgical treatment allocation for patients with SAH.

Data were obtained for the years 2003 to 2008 from the Nationwide Inpatient Sample database, which is maintained by the Agency for Healthcare Research and Quality. From this database were identified discharges of patients aged 18 or older diagnosed with SAH and no concomitant diagnosis of arteriovenous malformation or head

trauma. The subjects were stratified by insurance. The primary outcome variables included treatment allocation and hospital mortality. Secondary outcomes included hospital costs, hospital complications and length of stay.

From 2003 to 2008, 21,047 discharges were identified with a diagnosis of SAH. The majority of the patients had private insurance (43%) or Medicare (36%). Of these, 66.1% received no surgical treatment, while 19.5% underwent craniotomy and microsurgical clipping, and 14.5% had endovascular treatment of an aneurysm. Medicare patients were almost 45% less likely to undergo surgical treatment, with this effect independent of age and comorbidity burden. Patients with Medicare or Medicaid and uninsured patients all had higher adjusted mortality rates than patients with private insurance (odds ratio 1.12 to 1.82). Patients with Medicaid had 11% higher adjusted hospital costs than patients with private insurance, while patients with Medicare and the uninsured had nine to 13% lower costs.

Conclusion: This representative national sample of adults with subarachnoid hemorrhage found that 66% did not undergo surgical treatment, with Medicare patients less likely to receive surgical intervention than other payers, independent of age and comorbidities.

Hobson, C., et al. Insurance Status is Associated with Treatment Allocation Outcomes after Subarachnoid Hemorrhage. **PLOS ONE**. 2014, August 20. DOI: 10.1371/ journal.pone.0105124.

NOVEL COMPRESSION GARMENT IMPROVES SPRINT PERFORMANCE

Some studies have suggested that lower body garments that exert compression likely have ergogenic effects during sprinting. As taping is also thought to improve strength and power, this study was designed to determine whether a compression garment, combined with adhesive silicone stripes (CGSS), helps improve athletic performance.

This study included 24 female subjects recruited from track and field or team sports clubs. The athletes were randomized to participate in sub -study one or sub-study two. Those assigned to sub-study one carried out two sessions of 30, 30 m repeated sprints, one wearing the CGSS and the other with non-compression tights without any adhesive silicone stripes.

The women wore a portable telemetric metabolic cart, a chest belt that monitored heart rate and a portable near infrared spectroscope. In sub-study two, the same procedure was followed, with the subjects wearing a telemetric device to record muscle activation, and with motion captured by video-analysis.

In sub-study one, sprint time was improved during the final third of the protocol among those wearing the CGSS ($p=0.02$). During the final 10 sprints, use of the CGSS garment reduced the perceived rate of exertion in the upper leg muscles ($p=0.01$). In sub-study two, sprint times were again improved in the final third of the protocol among those wearing the study garment ($p<0.01$). Motion analysis revealed that wearing the garment significantly reduced the hip flexion angle. During the final 10 sprints, the CGSS group increased step length, without altering step frequency, and demonstrated enhanced EMG activity in the rectus femoris muscle ($p=0.01$).

Conclusion: This study of female athletes found that the use of a compression garment with adhesive silicone stripes can improve repeated sprint performance, reducing perceived fatigue and altering running technique.

Born, D., et al. A Novel Compression Garment with Adhesive Silicone Stripes Improves Repeated Sprint Performance: A Multi-Experimental Approach on the Underlying Mechanisms. **BMC Sports Science Med Rehabil.** 2014; 6: 21.

ANKLE FRACTURES AND COMPRESSION STOCKINGS

Ankle fractures are common, with treatment including operative or nonoperative intervention. While compression stockings have been found to reduce the risk of venous stasis and deep venous thrombosis, some have suggested that these stockings may also improve wound healing. This study evaluated the effect of compression on recovery following ankle fracture.

This single center, prospective, randomized trial included patients 16

to 90 years of age with an acute ankle fracture. The subjects were randomized to receive either compression, using ankle injury stockings (AIS) plus an air cast boot, or a Tubigrip plus an air cast boot. The pressure profiles for the ankle injury stockings were 25 mmHg at the ankle, 17 mmHg at the midcalf and 10 mmHg at the upper calf. The primary outcome measure was the Olerud-Molander Ankle Score (OMAS). Secondary outcome measures included Short Form (SF)-12v2 Quality of Life questionnaires, frequency of deep venous thrombosis and the American Orthopedic Foot and Ankle Society Score (AOFAS).

The mean OMAS score was significantly better for patients treated with AIS, than for the control group at all time points ($p<0.001$). At six months, a marked difference remained in OMAS scores, with those in the treatment group obtaining a mean score of 98, as compared to 67 in the control group ($p<0.001$). The mean AOFAS scores and the SF quality of life scores were also significantly better in the treatment group than in the control group. At four weeks, of the 86 with duplex imaging, five (12%) of 43 in the AIS group, and ten (23%) of 43 in the Tubigrip group developed a DVT ($p = 0.26$).

Conclusion: This randomized, single-blind, controlled study found that compression stockings can improve functional outcome and quality-of-life for patients with ankle fractures

Sultan, M., et al. Compression Stockings in the Management of Fractures of the Ankle. **Bone Joint J.** 2014; 96-B: 1062-1069.

CERVICOVESTIBULAR REHABILITATION IN SPORTS CONCUSSION

After concussion, dizziness and balance dysfunction are commonly reported. This finding may be due to dysfunction of the vestibular proprioceptive or central systems. This study was designed to determine whether the combination of vestibular rehabilitation and physiotherapy improves outcomes for patients with prolonged postconcussive symptoms of dizziness, neck pain or headaches.

Patients between the ages of 12 and 30 years of age, all diagnosed with sports related concussion and symptoms greater than 10 days in duration, were studied. All complained of dizziness, neck pain and/or headaches.

The patients were randomized to an intervention or control group, both seen weekly for eight weeks by a physiotherapist. An intervention group received a combination of cervical spine physiotherapy, and vestibular rehabilitation. The primary outcome measure was the number of days from treatment initiation until medical clearance to return to sport.

A total of 31 individuals were studied. A greater proportion of individuals in the treatment group were medically cleared to return to sport at eight weeks than within the control group (73% and 7% respectively). Intention to treat analysis revealed that more individuals in the treatment group were medically cleared to return to sport than in the control group ($p=0.002$).

Conclusion: This study of young athletes with sport related concussion symptoms of dizziness, neck pain and/or headaches, found that the combination of cervical and vestibular therapy can decrease the time to medical clearance to return to sport.

Schneider, K., et al. Cervicovestibular Rehabilitation and Sports Related Concussion: A Randomized, Controlled Trial. **Br J Sport Med.** 2014, September; 48(17): 1294-1298.

TELE-CARE MANAGEMENT OF CHRONIC PAIN

It has been estimated that two thirds of pain related outpatient visits in the United States involve musculoskeletal pain. This study was designed to determine the effectiveness of a telephone delivered collaborative care intervention for primary care patients with chronic musculoskeletal pain.

Patients, 18 to 65 years of age with musculoskeletal pain of moderate severity, and at least three months' duration, were randomized to an intervention or control group. The intervention group underwent automated symptom monitoring, either by interactive voice recorded telephone calls or through the internet. Using reports from these data an analgesic algorithm was used to recommend medication use, with six categories of analgesics used. These medicines were prescribed by either the study physician or the primary care physician. The primary outcome was the change in the Brief Pain Inventory (BPI) score.

Of the 250 patients enrolled, 124 were placed in an intervention group and 126 in a control group. Those in the intervention group demonstrated significantly greater improvement in their BPI scores ($p<0.001$) during the 12-month trial, as well as greater improvement in BPI severity ($p<0.001$) and Interference Scale scores ($p<0.001$). Those in the intervention group were almost twice as likely to report at least a 30% improvement from their baseline pain scores by month 12.

Conclusion: This study found that a collaborative tele-care management intervention system for patients with chronic pain can produce clinically meaningful improvements in pain, accompanied by greater patient satisfaction with pain treatment.

Kroenke, K., et al. Tele-Care Collaborative Management of Chronic Pain in Primary Care: A Randomized, Clinical Trial. **JAMA.** 2014, July 16; 312(3): 240-248.

REFRACTORY OSTEITIS PUBIS TREATMENT

Groin pain is a common complaint among athletes. Osteitis pubis (OP) is a potential cause of chronic symptoms among athletes, with the pathologic process not well understood. This condition is characterized by chronic groin pain and pubic symphysis tenderness, and pain with resisted hip abductor and lower abdominal movements. As biphosphonate has been used as a treatment for other bone marrow edema (BME) syndromes, this study reviewed the outcomes of patients with refractory OP treated with pamidronate.

This retrospective study reviewed the cases of eight, high-level athletes diagnosed with refractory OP based upon groin pain and BME on MRI. The athletes completed a questionnaire concerning their pain at rest, during activities of daily living and during sports. All participants received IV pamidronate, with a second dose offered after a three-month interval if symptoms had not

improved sufficiently. The primary outcome variable of interest was return to sport.

The mean duration of symptoms prior to treatment was 19 months. At 15-week follow-up, five of the eight patients rated their status as significantly improved and returned to sport. One patient described the progress as improved, and two reported no change. Pain with activities of daily living (p=0.004) and pain during sports (p=0.001) both improved significantly.

Conclusion: This retrospective study of eight athletes with refractory osteitis pubis, each treated with a single dose of IV pamidronate, found that the majority reported significant improvement and were able to return to sport.

Wedatilake, T., et al. Treatment of Osteitis Pubis with Pamidronate in Athletes. **Intern Musculoskel Med.** 2014; 36(1): 23-25.

HEADACHE RELIEF AFTER CERVICAL DISCECTOMY

Previous studies have demonstrated that anterior neck surgery is associated with a reduction in headache. To further assess the mechanisms for headache, this study compared headache reduction in patients undergoing fusion and those receiving artificial discs.

Data were obtained from a multicenter, randomized study evaluating an artificial disc (Mobi-C). All subjects had symptoms of radiculopathy or myelopathy, and were randomized to receive either anterior cervical discectomy and fusion or anterior cervical discectomy and arthroplasty. The participants were evaluated preoperatively and at multiple times postoperatively for up to two years. All were assessed with the Neck Disability Index (NDI) questionnaire preoperatively and at six weeks and three, six, 12, 18, and 24 months.

Subjects included 260 patients, of whom 88% reported a headache and 52% obtained an NDI score of three or greater. After surgery, 13% to 17% of NDI scores were three or greater. The mean pain score before surgery was 2.5, with postoperative scores averaging 1.3 points lower (p<0.001). No significant difference was seen between the surgical groups in headache reduction. In addition, no significant difference in the degree of postoperative pain relief was found as a function of surgical level.

Conclusion: This study of adult patients with cervical radiculopathy or myelopathy found that most patients complained of headaches preoperatively, and that anterior cervical discectomy with either arthroplasty or arthrodesis was associated with a lasting decrease in these headaches.

Schrot, R., et al. Headache Relief after Anterior Cervical Discectomy: Post Hoc Analysis of a Randomized, Investigational Device Exemption Trial. **J Neurosurg Spine.** 2014, August; 21(2): 217-222.

BENEFITS OF PHYSICAL ACTIVITY IN MULTIPLE SCLEROSIS

Multiple sclerosis (MS) is a neurodegenerative disease that results in decreased physical function. As physical activity in the general population is known to be beneficial for physical and emotional well-being, this study was designed to better understand the effects of physical activity on patients with MS.

This study, part of a large, international survey of patients with MS, recruited 2,232 individuals to participate in an online survey. The survey comprised several validated questionnaires, including the International Physical Activity Questionnaire. From these, metabolic equivalent (MET) minutes per week were estimated. Physician diagnosed relapse rates over the past one and five years were obtained for those with relapsing remitting MS. Disease activity was categorized as increasing, decreasing or stable. Health-related quality of life was measured using the Multiple Sclerosis Quality-Of-Life-54(MSQOL-54).

The level of physical activity was inversely related to the level of disability (p<0.001). Physical activity was related to gender in the low disability group (p=0.006) with males being more active than females. Age was inversely related to the level of PA (p<0.001). Among those with relapsing remitting MS, those with low levels of physical activity had more annual relapses than those with moderate (p=0.024), and those with high levels of PA (p=0.004). PA was also significantly correlated with MSQOL-54 score.

Conclusion: This study of patients with multiple sclerosis found that, regardless of disability level, physical activity is correlated with decreased levels of relapse and increased energy, social functioning, and mental and physical health.

Claudia, M., et al. Physical Activity and Associated Levels of Disability and Quality of Life in People with Multiple Sclerosis: A Large International Survey. **BMC Neurol**. 2014, July 2; 14: 143.

COGNITIVE IMPAIRMENT IN HIP FRACTURE PATIENTS

Cognitive impairment (CI) is a known risk factor for falls in the elderly. Hip fractures are often associated with decreases in independence, mobility and overall daily function. It is difficult to estimate the underlying frequency of preoperative cognitive disorders in this population. Rates of documented dementia in hip fracture patients have varied from 15% to 32%. This study was designed to determine the prevalence of preoperative cognitive impairment in patients with hip fractures.

Data were obtained from an ongoing, prospective, longitudinal study of cognitive assessment after hip fractures in the elderly (CAFE). Subjects were 65 years of age or older, admitted for acute hip fracture between August of 2011 and August of 2012. Delirium was assessed with the Confusion Assessment Method Short- Form (CAM-SF) and documented by the attending physician. The Montréal Cognitive Assessment (MoCA) was used for preoperative cognitive assessment and to determine the presence and severity of CI. Patients were also assessed for anxiety, fear and pain.

A total of 62 patients with hip fracture were studied. Of these, 37% scored in the normal range of cognition and 62.9% scored in the CI range. Only five patients had a documented diagnosis of CI or dementia during hospitalization. Before hip fracture, 46.2% of the cognitively impaired and 43.5% of the cognitively normal patients lived alone. While median preoperative pain scores were higher in those with CI (p<0.001), no significant

differences in fear or anxiety were found between the groups.

Conclusion: This study of elderly patients with hip fractures found that cognitive impairment is highly prevalent, but often unrecognized, during hospitalization.

Daniels, A., et al. Preoperative Cognitive Impairment and Psychological Distress in Hospitalized, Elderly Hip Fracture Patients. **Am J Orthopedics.** 2014, July; 43(7): E146-E152.

ADAPTED CARDIAC REHABILITATION AFTER STROKE

Despite recommendations, few stroke survivors exercise regularly, possibly because structured exercise programs are not widely available. As cardiac rehabilitation programs offer structure aerobic training, resistance training, and nutritional and psychological counseling, these programs may be useful to fill this gap. This study examined the effects of adapted cardiac rehabilitation programs after stroke.

Subjects were at least 12 weeks post-stroke and able to ambulate 10 meters or more independently, with or without an assistive device. All patients attended a 90-minute exercise class one time per week for six months, including both resistance and aerobic training. All were also prescribed a range of motion and flexibility routine, performed both in class and at home.

Of the 120 subjects who completed the program, significant improvements were noted in the six-minute walk distance ($p<0.001$), repeated sit-to-stand performance ($p<0.001$), affected side isometric knee extensor strength exercise ($p<0.001$), and VO_{2peak} ($p<0.001$). Using linear regression, a negative association was found between change in six minute walk distance and time from stroke ($p=0.002$). Subjects also demonstrated improved 5 meter fast-paced walking speed ($p<0.001$), cadence ($p<0.001$), step length ($p=0.03$), affected-side grip strength ($p<0.001$), affected-side elbow flexor force ($p<0.01$), affected-side shoulder and hip flexion range of motion ($p<0.001$ for both), Berg Balance Scale score ($p<0.001$), and participation and social reintegration ($p<0.001$).

Conclusion: This study of patients participating in cardiac rehabilitation programs for at least three months after stroke found improvements in multiple domains of stroke recovery, with better recovery among those beginning rehabilitation earlier.

Marzolini, S., et al. Outcomes in People after Stroke Attending Adapted Cardiac Rehabilitation Exercise Program: Does Time from Stroke Make a Difference? **J Stroke Cerebrovascular Diseases.** 2014, July; 23(6): 1648-1656.

CONCUSSIVE BLAST VERSUS NON-BLAST INJURY

It has been estimated that 20% of the deployed United States military force experienced a head injury in the wars in Iraq and Afghanistan. Of those, 83.3% are believed to have endured a mild, uncomplicated traumatic brain injury (TBI) or concussion. While blast injury has been identified as the signature injury in these conflicts, it is unclear whether differences exist between blast related and non-blast related TBI. This study was designed to further understand these differences.

This study included 255 soldiers with blast plus impact TBIs, non-blast related TBIs, blast exposed controls without TBIs and non-blast exposed controls without TBIs. The subjects were assessed at six to 12 months post-injury. All patients underwent clinical evaluations, including a standardized neurologic examination, neuropsychological testing and a psychiatric evaluation. Global outcomes were assessed with the Glasgow Outcome Scale - Extended (GOS-E).

The global GOS-E scores were poorer in both TBI groups than in either control condition. Results of neuropsychological testing did not differ between the two groups with TBI. In addition, no significant difference was seen between the TBI groups in headache severity or posttraumatic stress disorder severity. Using the Neurobehavioural Rating Scale - Revised, no significant differences were observed between the blast plus impact TBI and nonblast TBI groups.

Conclusion: This study of military personnel exposed to combat found that clinical outcomes after blast related concussion are generally similar to those after non-blast related concussion.

MacDonald, C., et al. Prospectively Assessed Clinical Outcomes in Concussive Blast versus Non-Blast Tramatic Brain Injury among of Actuated U.S. Military Personnel. **JAMA Neurol.** 2014, August; 71(8): 994-1002.

STROKE IN YOUNG ADULTS AND SUBJECTIVE COGNITIVE FAILURE

Among patients with a stroke occurring prior to 55 years of age, subjective cognitive failure is a common complaint. This study investigated the long-term prevalence of these complaints and the relationship between these complaints and objective cognitive performance.

Subjects were patients with first-ever transient ischemic attack or ischemic stroke, ages 18 to 50 years, seen between January of 1980 and November of 2010. The subjects were assessed at baseline by neurologic examination and brain imaging. Stroke severity was assessed with the National Institute of Health Stroke Scale. Stroke-free control participants were recruited and matched for gender and age. Subjective cognitive failure was assessed with the Cognitive Failure Questionnaire. The primary outcome variable was the prevalence of subjective memory failure and of subjective executive failure. Secondary measures included education, depression, fatigue and current level of performance, as measured by the modified Rankin Scale.

Of the 437 patients included in the analysis, the rates of subjective memory and executive failures were 86.4% and 67.4%, respectively. Patients had higher scores in subjective memory and executive failure than did controls ($p=0.0004$ and $p=0.00006$, respectively). This difference was evident for patients with ischemic stroke but not TIA. Fatigue was independently associated with subjective memory and executive failures.

A weak but significant association was found between subjective memory failure and cognitive domain scores of immediate and delayed memory ($p=0.011$ and $p=0.01$,

respectively). This difference disappeared after stratification by stroke subtype and correction for multiple testing.

Conclusion: This study of young stroke patients found that, while the majority have complaints of subjective cognitive impairment, these concerns are not strongly related to objective cognitive impairment.

Noortje, A., et al. Subjective Cognitive Failure after Stroke in Young Adults: Prevalent, but Not Related to Cognitive Impairment. **J Neurol.** 2014, July; 261(7): 1300-1308.

EARLY BOTULINUM TOXIN FOR SPASTIC PES EQUINOVARUS

Botulinum toxin has been shown to be effective for the treatment of tone related to upper motor neuron lesions. This study was designed to better understand the effect of the timing of botulinum toxin therapy for lower limb spasticity.

This single center, randomized, placebo-controlled trial included patients with traumatic brain injury (TBI), diffuse cerebral hypoxia or stroke. All patients presenting with unilateral or bilateral spastic pes equinovarus were randomized to receive either a botulinum toxin injection or a placebo injection. Those in the botulinum group received 230 units of Botulinum toxin A (Botox), injected into the gastrocnemius, the soleus and the tibialis posterior. Those with bilateral involvement received the same injections in both legs. Both groups received similar, standardized, multidisciplinary neuro-rehabilitative care and physiotherapy following the injections. At week 12, both groups were given the opportunity for repeat injections. The main outcome variable was the modified Ashworth scale (mAS)

Patients in the treatment group demonstrated significant improvement on the mAS, from an average of 3.3 at baseline to 2.7 at week 12 ($p<0.01$). At week 12, spastic muscle tone differed significantly between the two treatment groups (2.7 (Botox) vs. 3.2 (placebo); $p < 0.01$). The placebo group deteriorated, with mAS scores of 3.1 at week 0, to 4.2 at week 16, and to 4.6 at week 36. Deterioration occurred even among those offered Botox at 12 weeks.

Conclusion: This study found, that among patients with central nervous system injuries, those treated with botulinum toxin within four weeks of injury enjoy significant improvement in spastic pes equinovarus, as compared with those treated after three months.

Fietzek, U., et al. Early Botulinum Toxin Treatment for Spastic Pes Equinovarus: A Randomized, Double-Blind, Placebo-Controlled Study. **Euro J Neurol.** 2014, August; 21(8): 1089-1095.

SURVIVAL AND OUTCOME AFTER HIP FRACTURE IN NURSING HOMES

Hip fractures occur 300,000 times each year among older adults, with residents of long-term nursing homes twice as likely as community dwelling individuals to sustain such a fracture. This study reviewed the patterns and predictors of mortality and functional decline among nursing home residents with hip fracture.

Data included the Long-Term Care Minimum Data Set (MDS) from 2005 to 2009, with Medicare Provider Analysis and Review (MedPar) files for the same period. From these data were retrieved information concerning Medicare beneficiaries who were hospitalized for acute hip fractures incurred while residing in long-term nursing homes. Baseline data concerning the patients' function were obtained from the MDS, while clinical outcomes were obtained from hospital records. The primary outcome variable was death from any cause within 180 days of hospital admission. Secondary outcomes included post-fracture mobility and ADL performance.

Of the 60,111 nursing home residents reviewed, 36.2% died within 180 days after the fracture, and 47% died within one year. The greatest decreases in survival occurred among those older than 90 years of age ($p<0.001$), those with nonoperative fracture management $p<0.001$), and those with advanced comorbidities, defined as Charleston score of at least five ($p<0.001$). Among those who survived for 180 days, new total dependence in locomotion occurred in 27.8%.

Conclusion: This study of long-term nursing home residents with hip fracture found that, within 180 days, more than one of three had died, with survival decreasing among those at least 90 years of age, those managed nonoperatively and those with high comorbidities.

Neuman, M., et al. Survival and Functional Outcomes after Hip Fracture among Nursing Home Residents. **JAMA Int Med**. 2014, August; 174(8): 1273-1280.

READMISSION AFTER TOTAL HIP ARTHROPLASTY

As the second phase of the Patient Protection and Affordable Care Act of 2010 takes effect, hip arthroplasty will be included in a readmission policy that imposes financial penalties on hospitals for excess readmission occurrences within 30 days. This study was designed to identify independent risk factors for readmission after total hip arthroplasty (THA).

The study used data from the American College of Surgeons - National Surgical Quality Improvement Program Database. Data were obtained from 315 participating hospitals in 43 states, with these data reviewed to identify all patients undergoing THA in 2011. The sample was stratified into readmitted and non-readmitted cohorts, with these groups compared by preoperative comorbidities, preoperative laboratory values, operative characteristics and demographic factors.

A total of 9,441 patients were identified, with 3.65% readmitted within 30 days. Those who were readmitted had a significantly higher rate of diabetes ($p<0.001$), chronic obstructive pulmonary disease ($p<0.001$), corticosteroid use ($p<0.001$), bleeding disorders ($p<0.001$), blood transfusion ($p=0.035$), systemic sepsis ($p<0.001$), dyspnea ($p<0.001$), previous cardiac surgery ($p=0.002$), and hypertension ($p<0.001$). An increasing trend was found between readmission and body mass index (BMI) with the highest readmission rate of 5.99% seen among those with a BMI of greater than 40 kg/m², and the lowest rate of patients in the overweight category (25-30kg/m²).

Conclusion: This study found that, among patients undergoing a total hip arthroplasty, certain medical

comorbidities increase the patient's risk for readmission.

Mednick, R., et al Factors Affecting Readmission Rates following Primary Total Hip Arthroplasty. **J Bone Joint Surg.** 2014, July; 96 (14): 1201-1209.

PREOPERATIVE PSYCHOLOGICAL DISTRESS AND OUTCOMES AFTER TOTAL KNEE ARTHROPLASTY

Up to 30% of patients report no improvement in pain and function after total knee arthroplasty. This study was designed to determine whether preoperative psychological distress levels can predict poor outcomes among these patients.

This prospective cohort study included patients undergoing unilateral, primary total knee arthroplasty as a treatment for gonarthosis. Of the patients recruited, 235 underwent surgery and 28 were placed in a control group, as they did not want surgery or had medical contraindications to surgery. At baseline, all patients completed the Full-Screen Mini Mental Test, the Hospital Anxiety and Depression Scale, the Knee Society Score (KSS), a Visual Analogue Scale for Pain and the WOMAC Quality-of-Life Questionnaire. The patients were divided into those with versus without psychological distress.

Psychological distress decreased from 34.16% before surgery to 7.9% at one year. Those experiencing preoperative psychological distress obtained poorer KSS scores in function (p=0.002) and quality of life (p=0.042) one year after surgery.

Conclusion: This study of patients undergoing total knee arthroplasty found that changes in function and quality of life were worse at one year among patients with preoperative psychological distress.

Utrillas-Compaired, A., et al. Does Preoperative Psychological Distress Influence Pain, Function, and Quality-of-Life after TKA? **Clin Ortho Related Research**. 2014, August; 472(8):2457-2465.

AEROBIC TRAINING AND PAIN TOLERANCE

A number of studies have demonstrated pain relieving effects of exercise training in patients with chronic disease. However, few have examined the effect of chronic aerobic exercise on pain sensitivity in healthy participants. This study examined the effects of moderate to vigorous intensity aerobic exercise on pain sensitivity in healthy adults.

Healthy adults, between the ages of 18 and 50 years with no history of chronic pain or chronic disease were recruited. The patients were allocated to an exercise group or to a control group. At baseline and follow-up, both groups were assessed for pain sensitivity and aerobic capacity, with questionnaires assessing psychological status and physical activity levels. Pressure pain thresholds and ischemic pain tolerance were also assessed. The exercise group worked with a cycle ergometer three times per week for 30 minutes at 75% of HR reserve. Control subjects performed only the initial and final assessments, and were asked to maintain their regular levels of physical activity.

At follow-up, a significant increase was seen in ischemic pain tolerance in the exercise group (p=0.036), with this tolerance not significantly changed in the control group. For pain ratings during ischemia, and for pressure pain thresholds, no group effect or group-time interaction was found.

Conclusion: This study suggests that six weeks of moderate to vigorous aerobic exercise training can increase pain tolerance to noxious ischemic stimuli in healthy individuals.

Jones, M., et al. Aerobic Training Increases Pain Tolerance in Healthy Individuals. **Med Sci Sport Exer.** 2014, August; 46(8): 1640-1647.

PROPHYLACTIC INDOMETHACIN AFTER ACETABULAR FRACTURE REPAIR

While indomethacin has long been thought to be a prophylactic agent against HO, the literature concerning its use in clinical practice contains mixed results. This study further evaluated the relationships among indomethacin prophylaxis, the incidence of HO and bone healing following acetabular fracture.

This randomized, double-blind, controlled trial included 98 patients with acute acetabular fractures, managed surgically. The subjects were randomly assigned to six weeks of treatment with 1) placebo for six weeks, 2) three days of indomethacin, followed by a placebo, 3) one week of indomethacin followed by placebo or 4) six weeks of indomethacin. The participants were assessed for range of motion, pain and radiographic changes at six weeks, and at three, six and twelve months.

At six-month follow-up, the incidence of HO in group one was 67%, while that in group four was 69%. Those in group four had a higher rate of nonunion than group one (p=0.012). Subjects in group three had a lower incidence and volume of HO, as compared to group one, without increased nonunion.

Conclusion: This study of patients undergoing acetabular fracture repair found that prolonged prophylaxis with indomethacin does not decrease the incidence of HO but does increase the risk for fracture nonunion. However, indomethacin treatment for one week was effective in decreasing HO, without the additional risk of nonunion.

Sagi, H., et al. Indomethacin Prophylaxis for Heterotopic Ossification after Acetabular Fracture Surgery Increases the Risk for Nonunion of the Posterior Wall. **J Ortho Trauma**. 2014, July; 28(7): 377-383.

EFFECTS OF IBUPROFEN ON TENDON HEALING ARE TIME DEPENDENT

Clinical protocols after tendon repair often include nonsteroidal anti-inflammatory drugs (NSAIDs) to reduce pain and inflammation. While this class of medication has been found to have negative effects on tendon cell migration and proliferation, some studies have also suggested that a late application may improve the healing process. This study investigated tendon healing based upon timing of administration of ibuprofen.

This animal study included 65 rats undergoing bilateral supraspinatus detachment and repair surgeries. The subjects were divided into a control group, a group administered ibuprofen on days zero to seven, and a group administered ibuprofen on days 7-14. The rats were euthanized, with tissues examined

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biomechanically and histologically at days seven, 14 and 28.

Tendon stiffness and modulus of elasticity were significantly worse in the early group as compared to the control group (p=0.003 and p=0.013, respectively). No significant difference was seen between the control and the late delivery group. The early ibuprofen group demonstrated significantly lower fiber alignment at seven days (p=0.0084), suggesting reduced fiber reorganization as compared with that of controls.

Conclusion: This animal study of tendon surgical repair suggests that early, but not late, administration of ibuprofen has a negative effect on tendon healing.

Connizzo, B., et al. The Detrimental Effects of a Systematic Ibuprofen Delivery on Tendon Healing Are Time Dependent. **Clin Ortho Related Research.** 2014, August; 472(8): 24332439.

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