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MAGNETIC STORMS AND STROKE

Research linking cardiovascular disorders to geomagnetic activity has accumulated over the past 40 years. However, no reliable data exist concerning the effects of geomagnetic activity on the risk of stroke. This study analyzed associations between stroke occurrence in adults and changes in geomagnetic activity.

In this international multi-centered study, multiple overlapping sources were checked prospectively to identify all new stroke cases that occurred in adults 16 years of age or older. Strokes were identified and categorized according to three pathologic types, including ischemic, intracerebral hemorrhage or subarachnoid hemorrhage. The geomagnetic activity data were obtained from the World Data Center for Geomagnetism in Kyoto, Japan, and the National Oceanic and Atmospheric Administration Space Environment Center in Boulder, Colorado. The activity was measured by daily averaged Ap indices, with geomagnetic storms categorized according to three levels of severity. A time stratified, case crossover design was used to determine associations of daily stroke occurrence with geomagnetic activity.

During the study, 11,453 incident stroke cases were registered over 23 years. A significant, direct relationship was found between the risk of stroke and geomagnetic storms. The effect of the magnetic activity on the risk of stroke was consistent across all stroke pathologic types. Those storms with an Ap index of 60 or above were associated with a 19% increase the risk of stroke, with the effect more pronounced in people less than 65 years of age. Among those less than 65 years of age moderate geomagnetic strokes were associated with a 27% increased risk of stroke, while strong storms were associated with a 52% increased risk of stroke.

Conclusion: This prospective study found that geomagnetic storms are associated with a significant increase in the risk of stroke occurrence.

Feigin, V., et al. Geomagnetic Storms Can Trigger Stroke. Evidence from Six, Large, Population-Based Studies in Europe and Australia. **Stroke.** 2014, June; 45(6): 1639-1645.

LITHIUM FOR POST-STROKE RECOVERY

Animal studies have suggested that lithium may be helpful in reducing infarction volume and neurologic deficits, following a stroke. This study assessed the efficacy of lithium in patients with middle cerebral artery infarctions.

This single-center, placebo-controlled, double-blind, randomized trial included patients diagnosed with first-ever ischemic stroke who were ineligible for antithrombotic therapy, due to a time limitation. The participants were allocated to receive lithium carbonate, 300 mg two times per day, or a similar appearing placebo. The subjects received the tablets for 30 days, beginning 40 hours after stroke onset. The primary outcome variable was change in score on the Modified National Institute of Health Stroke Scale (mNIHSS). The secondary outcome measure was defined as 25% of the full motor function on the hand subsection of the Fugl-Meyer (hFMA) scale.

Of the 80 subjects enrolled, the study was completed by 32 subjects in the lithium group and 34 in the placebo group. At 30 days, no significant difference was seen between the groups in improvement on the mNIHSS (p=0.40) and the hFMA (p=0.07). A subgroup analysis revealed that patients with cortical stroke in the lithium group had better improvement in both the mNIHSS and the hFMA. The endpoint of regaining more than 25% of function, based upon hFMA performance, was achieved by 44% of patients in the lithium group and 15% of the placebo group (p=0.009).

Conclusion: This study of patients with acute ischemic strokes found that those with cortical strokes receiving lithium enjoyed better functional outcomes than did those receiving placebo.

Mohammadianinejad, S., et al. Effect of Lithium in Post-Stroke Motor Recovery: A Double-Blind, Placebo-Controlled, Randomized Clinical Trial. **Clinical Neuropharm.** 2014, May/June; 37(3): 73-78.

LATE LIFE CYNICISM, MORTALITY AND DEMENTIA

Cynical distrust has been associated with a variety of adverse health outcomes. This population-based study investigated the association between late life cynical distrust and incident dementia and mortality.

Data were obtained from the Cardiovascular Risk Factors, Aging and Dementia (CAIDE) study. The subjects were derived from four, separate, independent, population-based, random samples, from which 2,000 persons were invited for a re-examination in 1998. Cynical distrust was measured using the Cook-Medley Scale. Dementia was assessed according to DSM-IV criteria. Data were gathered concerning potential confounding variables, including several biological, behavioral, health-related and socioeconomic factors. During follow-up, 361 participants died and 46 were diagnosed with dementia.

The sample comprised 1,449 participants, 65 to 79 years of age at the beginning of the study. The mean

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follow-up times were 8.4 years for dementia analysis and 10.4 years for mortality analysis. The subjects with higher levels of cynical distrust were older and had greater body mass index, systolic blood pressure and plasma fasting glucose than did those with lower cynical distrust.

After accounting for cardiovascular risk factors, those with the highest level of cynical distrust had a 2.54 times greater risk of incident dementia, as compared to those with low cynical distrust. Those with the highest level of cynical distrust had, on average, a 40% higher risk of death than those with the lowest level of cynical distrust. When data were adjusted for socioeconomic factors, smoking, alcohol consumption and experienced health, the association with mortality was abolished.

Conclusion: This study suggests that higher levels of cynical distrust among elderly individuals are associated with a higher risk of dementia.

Neuvonen, E., et al. Late Life Cynical Distrust, Risk of Incident Dementia, and Mortality in a Population-Based Cohort. **Neurol**. 2014, June 17; 82 (24): 2205-2212.

FRUITS AND VEGETABLES AND RISK OF STROKE

Improved diet and lifestyle are critical features in cardiovascular disease risk reduction. Prospective cohort studies concerning the effects of fruit and vegetable consumption on the risk of stroke have produced both positive and negative associations. This meta-analysis was designed to better understand this association.

Relevant studies were identified by searching PubMed and EMBASE, including those which measured fruit and vegetable consumption, as well as the association between this consumption and stroke. Data were extracted from 20, prospective, cohort studies, involving 16,981 stroke events among 760,629 participants, with the mean duration of follow-up ranging from three to 37 years. Most of the studies were adjusted for known risk factors of cardiovascular diseases.

The highest versus lowest levels of fruit and vegetable consumption was inversely associated with the risk of stroke, with a relative risk (RR) of 0.79. The highest versus lowest levels of fruit consumption was inversely associated with the risk of stroke, with a RR of 0.77. Further, the highest versus lowest levels of vegetable consumption was inversely related to the risk of stroke, with a RR of 0.86. A dose response analysis revealed that the risk of stroke decreased by 11% for every 200 g per day increment of vegetable consumption, and by 32% for every 200 g per day of fruit consumption.

Conclusion: This meta-analysis of prospective cohort studies found a significant reduction in the risk of stroke with fruit and vegetable consumption.

Hu, D., et al. Fruits and Vegetables Consumption and Risk of Stroke. A Meta-Analysis of Prospective Cohort Studies. **Stroke**. 2014, June; 45(6): 1613-1619.

RECANALIZATION IN OCTOGENARIAN PATIENTS WITH ACUTE ISCHEMIC STROKE

Among patients with acute ischemic stroke, an increasing proportion undergo endovascular treatment. However, the lowest rate of utilization is among patients 80 years of age or older. This study assessed the efficacy of stent retrievers in octogenarian patients with acute ischemic stroke.

Data from patients with acute stroke, who were treated with mechanical thrombectomy using stent retrievers between April of 2010 and June of 2012, were retrospectively reviewed from a stroke database. The participants were grouped by age comparing those under 80 to those 80 years of age or older. Baseline medical data, including stroke subtype, were recorded. Clinical outcomes were recorded, including post-procedural National Institute of Health Stroke Scale (NIHSS) scores, death and Modified Rankin Scale scores at three months post-procedure.

No significant difference in revascularization was seen between the two groups. The post-procedure NIHSS scores were higher in the older group than in the younger group (p=0.03). This phenomenon occurred in 35.3% of the octogenarians and in 17.2% of the younger patients (p=0.02). A modified Rankin Scale score of three or higher at three

months was more frequent in the octogenarians than in the younger group (<0.0001). Death occurred in 35.3% of the octogenarians and in 17.2% of the younger group (p=0.02).

Conclusion: This study of patients with acute ischemic stroke found that thrombectomy with stent retrievers can produce good rates of recanalization, but resulted in a higher mortality rate among octogenarians than among those younger.

Parrilla, G., et al. Recanalization and Mortality Rates of Thrombectomy with Stent Retrievers in Octogenarian Patients with Acute Ischemic Stroke. **Cardiovasc Interventional Radiol**. 2014, June 10.1007/s00270-014-0920-3

STRUCTURED PHYSICAL ACTIVITY TO PREVENT MAJOR DISABILITY IN OLDER ADULTS

Life expectancy of older Americans continues to increase, with persons 65 years of age or older representing the fastest growing segment of the population. Of significance is the preservation of the capacity to live independently as the population ages. This study was designed to determine whether physical activity can prevent or delay the onset of mobility disability.

The subjects included men and women, 70 to 89 years of age, who were sedentary and at increased risk for mobility disability. The participants were randomized to a physical activity group or to a health education program group. The physical activity intervention involved walking 115 minutes per week, along with strength, flexibility and balance training. The health education program focused on successful aging. Participants were assessed every six months at clinic visits. The primary outcome variable was major mobility disability, defined as the inability to complete a 400-meter walk test within 15 minutes without sitting and without the help of another person.

During the study, 818 subjects were randomized to the physical activity group and 817 to the education group. Major mobility disability was experienced by 30.1% of the physical activity group and 35.5% of the health education group (p=0.03). Persistent mobility disability was experienced by 14.7% of the physical activity group and 19.8% of the education group (p=0.006). Major mobility disability or death was experienced by 32.3% in the physical activity group and 37.8% in the education group (p=0.02). Finally, serious adverse events were reported by 49.4% of the physical activity group and 45.7% of the health education group.

Conclusion: This study of older adults at risk of disability found that a structured, moderate intensity physical activity program can reduce major mobility disability among these individuals.

Pahor, M., et al. Effect of Structured Physical Activity on Prevention of Major Mobility Disability in Older Adults. The Life Study Randomized, Clinical Trial. **JAMA.** 2014, June 18; 311(23)**:** 2387-2396.

PHYSICAL ACTIVITY AND INCIDENT DISABILITY AMONG ADULTS AT RISK FOR KNEE ARTHRITIS

Disability accounts for more than one in four dollars spent on health care. This study examined whether moderate physical activity is related to a decreased risk of developing disability among community dwelling adults with knee osteoarthritis (OA).

This prospective, multi-site cohort study included community dwelling adults participating in the Osteoarthritis Initiative (OAI). Subjects were 45 to 79 years of age, and were eligible for study inclusion if they had OA, with symptoms in at least one knee, or at least one established risk factor for knee OA. Physical activity was determined using an accelerometer. Disability was assessed, based upon limitations in instrumental and basic activities of daily living at baseline and at two years. The secondary outcome was progression of disability.

Of the 1,680 adults studied, 149 cases of new disability were identified. Significantly lower frequencies of incident disability were related to greater light activity time among men (p=0.042) and women (p<0.001), adults with knee OA (p<0.001) and those without knee OA (p=0.001). A multivariate analysis revealed that greater activity was significantly related to lower risk of developing disability. In addition a strong association was found between increasing quartile categories of moderate to vigorous activity time and reduced incident disability (p=0.005). The hazard ratios for disability progression decreased across increasing quartile categories of light activity, as well as moderate to vigorous activity (p=0.018 and p=0.07, respectively).

Conclusion: This study of community dwelling adults with or at high risk of osteoarthritis of the knee found an inverse relationship between physical activity and the risk of developing disability.

Dunlop, D., et al. Relation of Physical Activity Time to Incident Disability in Community Dwelling Adults with or at Risk of Knee Arthritis: Prospective Cohort Study. **BMJ**. 2014, May; 348: g2472.

STATINS AND PHYSICAL ACTIVITY IN OLDER MEN

Previous studies have suggested that statin use is linked to less physical activity in older adults, although long-term studies are lacking. This large, observational study of older men evaluated the relationship between physical activity and statin use for up to seven years after baseline.

This multi-centered study included community dwelling men, 65 years of age or older, all with a baseline examination completed between March of 2000 and April of 2002. At each clinic visit, the men were asked to report their medication use, and to complete a self-administered questionnaire to determine age, race, education, marital status, smoking status, self-perceived health, dizziness and selected self-reported/ physician diagnosed conditions. At each visit, a Physical Activity Scale for The Elderly (PASE) questionnaire was completed. At visit three, the subjects were asked to wear an accelerometer over a seven-day period. Categories of statin use were compared to levels of activity.

Of those studied, 989 were statin users and 3,148 were nonusers at baseline. On average a decrease in physical activity was observed in all groups during follow-up. The PASE scores of the prevalent statin users declined by roughly the same number of points annually as those of nonusers. In new users, the scores

declined at a faster rate than in nonusers. Of the 3,071 men who had adequate accelerometer data, statin users expended less energy and engaged in less moderate physical activity, less vigorous activity and more sedentary behavior than did nonusers.

Conclusion: This prospective study of community dwelling elderly men found statin use to be associated with modestly lower physical activity, even after accounting for medical history and other confounding factors.

Lee, D., et al. Statins and Physical Activity in Older Men: The Osteoporotic Fractures in Men Study. **JAMA Intern Med.** 2014: 2014 Jun 9. doi: 10.1001/jamainternmed.2014. 2266.

SHOCK-WAVE THERAPY FOR CHRONIC SHOULDER TENDINITIS

Extracorporeal shock-wave therapy (ESWT) has been suggested as an alternative treatment for refractory shoulder pain due to calcific or non-calcific tendinitis. Although ESWT is widely used, the appropriate dosage and efficacy remain uncertain. This systematic review summarized the evidence concerning this treatment for chronic calcific shoulder tendinitis.

Databases were reviewed for randomized, controlled trials comparing extracorporeal shockwave therapy with placebo for the treatment of calcific or noncalcific tendinitis of the shoulder. The therapy was classified as high, medium or low energy. From a literature search, 28 randomized, controlled trials were identified, with 20 comparing ESWT with placebo and eight comparing ESWT with other treatment modalities. Outcome measures included pain, functional assessment results and resolution of calcifications.

Studies involving high energy ESWT demonstrated the treatment to be effective for calcific tendinitis of the shoulder, with reductions in pain, improvement in function and resorption of calcification. Studies concerning low energy ESWT found this treatment to be less effective than high-energy ESWT, but still effective in improving shoulder function. Noncalcific tendinitis was not improved by ESWT, regardless of energy level.

Conclusion: This literature review of studies focusing on patients with chronic calcific tendinitis of the shoulder found high-energy extracorporeal shock-wave therapy to be effective in improving pain and function.

Bannuru, R., et al. High-Energy Extracorporeal Shock-Wave Therapy for Treating Chronic Calcific Tendinitis of the Shoulder. **Ann Intern Med**. 2014, April; 160(8): 542-549.

TREATING FULL THICKNESS CHONDRAL DEFECTS WITH HYALOGRAFT C

Autologous chondrocyte implantation has recently been introduced as a repair option for patients with full thickness chrondral defects of the knee. Modifications of this procedure include matrix assisted autologous chondrocyte transplantation (MACT). This study assessed the long-term effect of MACT, using Hyalograft C autograft, for the treatment of the knee.

This prospective study included consecutive patients treated with Hyalograft C over a six-year period. The case series included 22 female and 31 male patients with a mean age of 32 years and a mean defect size of 4.4 cm^2. Surgery comprised a two-step procedure. Four weeks after cells were harvested from healthy tissue, the cell seated matrix was implanted through a mini-arthrotomy. Crutch assisted, non-weight-bearing ambulation was ordered for six weeks, with touchdown weight-bearing progressing to full weight-bearing from seven to 12 weeks. Outcome measures included the subjective International Knee Documentation Committee (IKDC) knee form, an objective IKDC knee score, a Lysholm score and a modified Cincinnati Knee Rating System score.

The mean follow-up period was nine years, with a minimum follow-up of seven years. Treatment failure occurred in 12 of 53 patients at a mean of three years' post-surgery. Significant improvement was observed in all scores at all time points compared with pre-surgery levels ($p<0.05$). Analysis demonstrated a significantly lower chance of graft survival in complex and salvage cases ($p<0.001$).

Conclusion: This study of consecutive patients with full thickness chondral defects found that treatment with Hyalograft C autograft can produce good, clinical, long-term outcomes.

Brix, M., et al. Treatment of Full Thickness Chondral Defects with Hylograft C in the Knee: Long-Term Results. **Am J Sport Med**. 2014, June; 42: 1426-1432.

GREATER OCCIPITAL NERVE BLOCKS FOR CHRONIC CLUSTER HEADACHE

Cluster headache is a rare, but highly disabling, primary headache disorder. Treatment of episodic cluster headaches with a blockade of the greater occipital nerve (GONB) has been found to be effective. However, data is lacking concerning the efficacy of this treatment for chronic cluster headaches.

Consecutive patients presenting with a chronic cluster headache and treated with a GONB were identified. All subjects had previously reported an unsatisfactory benefit from preventative treatments. All patients underwent injections with methylprednisolone and lidocaine. At least four weeks before and after each injection, the participants recorded the frequency, duration and severity of their attacks.

Eighty-three patients with chronic cluster headache underwent GONB. After the first injection, 57% reported a positive response, with 42% becoming pain-free. The median time to a positive effect was one day. The median duration of a favorable response was 21 days. Of those who became pain-free, 31% were pain free at day 15, 15% at day 30 and 2% at day 90. Thirty-seven patients responding to the first injection received a second injection. Of those, 84% had a further positive response, with 46% becoming pain-free. The median duration of the effect of the second injection was 21 days.

Conclusion: This prospective study of patients with chronic cluster headache found that greater occipital nerve blocks may be useful in the management of this disorder.

Lambru, J., et al. Greater Occipital Nerve Loss and Chronic Cluster

Headache: A Prospective, Open Label Study. **Euro J Neurol**. 2014, February; 21(2): 338-343.

HIP FRACTURE SURGERY AND CLOPIDOGREL

Clopidogrel is an adenosine diphosphate receptor/P2Y12 inhibitor used to disrupt platelet function. Historically, it has been assumed that antiplatelet therapy greatly increases the risk of perioperative bleeding, although little evidence supports this conclusion. This study compared patients undergoing hemiarthroplasty while on clopidogrel therapy to the general population of intracapsular hip fracture patients.

All patients with femoral neck fractures between 2005 and 2011, treated at one institution, were identified. Charts were reviewed for preoperative demographics, including age, gender, time to surgery, use of clopidogrel, use of aspirin, use of warfarin or other anti-coagulation agents, comorbidities, American Society of Anesthesia score and preoperative hemoglobin and postoperative hemoglobin. Major complications were defined as hematoma formation, pulmonary embolism, myocardial infarction, cerebrovascular accident, transient ischemic attack, blood transfusion reaction, return to the operating room, infection, acute renal failure, respiratory failure, gastrointestinal bleed or death.

Of the 162 patients meeting the inclusion/exclusion criteria, 15 were receiving clopidogrel at the time of injury. No significant differences were seen between those taking clopidogrel and those who were not at the time of surgery in intraoperative blood loss, wound complications, hemoglobin at follow-up days one to three, 30-day mortality or number of transfusions. Time to surgery was 2.3 days in the clopidogrel group and 1.9 days in the non-clopidogrel group (p=0.25).

Conclusion: This retrospective study of patients with femoral neck fractures undergoing hemi-arthroplasty found no significant differences in bleeding or wound related complications between those taking clopidogrel and those not taking clopidogrel at the time of injury.

Manaqibwala, M., et al. Complications of Hip Fracture Surgery on Patients Receiving Clopidogrel Therapy. **Archives Orthopaed Trauma Surgery**. 2014, June; 134(6): 747-753.

ACCIDENTAL INJURY IN PARKINSON'S DISEASE

Parkinson's disease (PD) is a common neurodegenerative disease. Previous studies have demonstrated that patients with PD have a high risk of falls and of fractures. This study assessed the full spectrum of injuries experienced by patients with PD.

This sample included patients from the Longitudinal Health Insurance Database (LHID), a subset of the National Health Insurance Research Database (NHIRD) in Taiwan. This database contains annual claim data for reimbursement. From these records, data were obtained concerning patients with PD, at least 50 years of age, with a control group chosen from among those without PD. During follow-up, accidental injuries were identified and categorized. Injury rate and type was compared between the PD group and the comparison group.

During follow-up, 4,046 subjects with PD and 16,184 without were surveyed. The patients with PD experienced 19.78 injuries per person/year, compared to 14.4 for the control group (hazard ratio, 1.30). The hazard ratios for specific injuries among PD patients versus non-PD patients were 1.88 for head injury, 1.39 for bone fracture and dislocation, 1.25 for spinal cord injury and 1.20 for superficial injuries and contusions. The risk of burns or injuries to the spinal cord, plexus or nerves were not significantly increased in PD patients, as compared with controls.

Conclusion: This study of patients with PD found that, after adjusting for comorbidities, patients with PD have a higher incidence of injuries than do those without PD.

Wang, H., et al. Risk of Accidental Injuries Amongst Parkinson's Disease Patients. **Europ J Neuro.** 2014, June; 21(6): 907-913.

SLEEP QUALITY AND LOW BACK PAIN

Sleep problems have been reported in 50 to 60% of patients with chronic or acute low back pain (LBP). This study was designed to determine whether poor sleep quality is associated with subsequent increases in pain intensity in patients with acute LBP.

Data were obtained from a randomized, placebo-controlled trial evaluating the use of paracetamol for the treatment of acute LBP. The patients were randomly assigned to receive either paracetamol or a placebo until recovery from back pain. The sleep quality item (item 6) of the Pittsburgh Sleep Quality Index was used to evaluate sleep quality over the prior seven days. Participants were asked to rate average pain over the last 24 hours on a zero to 10-point numerical rating scale (NRS). The relationship between pain intensity and sleep quality was evaluated using repeated measurements of pain intensity and sleep quality over 12 weeks.

Data of 1,046 individuals with acute low back pain were included in the analysis. At baseline, 633 participants reported their sleep quality to be very bad or fairly bad. The analysis found a significant association between sleep quality and subsequent pain intensity ($p<0.001$). The strength of the association between sleep quality and subsequent LBP remained after adjusting for important LBP prognostic factors.

Conclusion: This study demonstrates a strong relationship between sleep quality and subsequent pain intensity in patients with acute low back pain.

Alsaadi, S., et al. Poor Sleep Quality Is Strongly Associated with Subsequent Pain Intensity in Patients with Acute Low Back Pain. **Arthritis and Rheum.** 2014, May; 66(5): 1388-1394.

RETURN TO SCHOOL FOLLOWING BRAIN INJURY

The highest overall incidence of traumatic brain injury (TBI) occurs in the age group of 15 to 24 years. As TBI results in numerous cognitive, behavioral and emotional sequelae, these factors impact a student's ability to return to study following injury. Although return to school/study is important in this population, few large studies have assessed this issue.

This prospective study involved 295 adolescents with moderate to severe TBI, each of whom had been admitted to Epworth healthcare rehabilitation. All participants were studying prior to injury. All were invited to attend follow -up clinic at one, two, three, five and 10 years post-injury. Each subject completed the Structured Outcome Questionnaire (SOQ), answering questions regarding their current vocational status. Detailed questions pertaining to the Experience of Returning to Study Questionnaire were added to the interview in 2005.

Of the 295 patients who attended follow-up, 43.1% never returned to study. At three years, 82.7%, and at five years, 71.6% were either studying or working. In the subset of those who had returned to study, 44.6%, reported difficulty keeping up with the workload, 42.4% had problems learning new information and 46.5% experienced fatigue. Before injury, only 3.3% of students reported the need to put in extreme effort to pass the course, increasing to 34.5% post-injury.

Conclusion: This study of patients with moderate to severe traumatic brain injury found that return to school/study occurs in over half of the patients although this return is associated with fatigue and the need for a greater effort than prior to injury.

Willmott, C., et al. Frequency and Quality of Return to Study Following Traumatic Brain Injury. **J Head Trauma Rehab.** 2014, May/June; 29 (3): 248-256.

COGNITIVE FUNCTION AFTER CAROTID ENDARTERECTOMY

Significant carotid stenosis is known to cause ischemic stroke and cognitive impairment. This study was designed to determine whether patients with carotid stenosis, treated with carotid endarterectomy, enjoy improved cognitive function.

Patients with suspected carotid stenosis were prospectively evaluated for cognitive function between October of 2011 and December of 2012. All participants underwent ultrasound and three-dimensional computed tomographic angiography or digital subtraction angiography, in order to determine the degree of stenosis. For those treated with carotid endarterectomy, cognitive function was evaluated at baseline and seven to 14 days post-surgery.

Of 110 subjects screened, 39 underwent carotid endarterectomy. The median scores on the Montréal Cognitive Assessment (MOCA) were 22 before surgery and 24 after surgery (p=0.031). Scores on the Mini Mental State Exam did not change significantly. Patients who improved more on the MOCA were 73 years of age or younger (p=0.02) and underwent surgery of the left carotid (p=0.034). Carotid endarterectomy did not improve the performances of patients with unilateral lesions, while scores on the MOCA improved significantly among those with bilateral lesions (p=0.025). Those with carotid stenosis of 80% or more demonstrated significant improvement in MOCA scores, while those with less stenosis did not.

Conclusion: This study of patients with carotid artery stenosis found that treatment with carotid endarterectomy can improve cognition.

Wantanabe, J., et al. Improvement of Cognitive Function after Carotid Endarterectomy-A New Strategy for the Evaluation of Cognitive Function. **J Stroke Cerebrovas Dis**. 2014, July; 23(6): 1332-1336.

COGNITIVE FUNCTION AND CHRONIC PAIN

Previous studies have demonstrated that chronic pain impairs cognition, particularly memory, attention and mental flexibility in healthy subjects. This study was designed to determine whether cognitive function can predict chronic pain after surgical procedures.

Subjects comprised patients undergoing total knee arthroplasty (TKA) or breast cancer surgery between 2008 and 2011. The patients underwent measurements of postoperative pain, as well as a presurgical neuropsychological evaluation. The participants were also assessed for mood and anxiety before surgery, using the Becks Depression Inventory and the Spielberger State-Trait Anxiety Inventory. Pain coping strategies were assessed with the Coping Strategies Questionnaire.

Subjects included 189 patients undergoing TKA and 100 undergoing breast surgery. Of these, 96% were assessed at six months and 88% at 12 months. Multivariate logistic regression revealed that the presence of clinically meaningful pain at six and 12 months was predicted by poorer cognitive performance on the Trail Making Test, Form B (p=0.0009 and p=0.02 respectively), the Rey Osterrieth Complex Figure copy (p=0.015 and p=0.016 respectively) and recall (p=0.016 at 12 months). Linear regression analysis found that impaired scores on these tests predicted both pain intensity (p<0.01) and neuropathic symptoms (p<0.05) in patients with pain.

Conclusion: This study found that neuropsychological measures of attention, visual memory and executive function and affective variables independently contribute to the prevalence and severity of chronic pain, as well as to its neurologic and neuropathic quality.

Attal, N., et al. Does Cognitive Function Predict Chronic Pain? Results from a Prospective Surgical Cohort. **Brain.** 2014, March; 137(3): 904-917.

ORITAVANCIN FOR ACUTE SKIN INFECTIONS

Many skin infections require antibiotics once or twice daily for seven to 10 days. Oritavancin is a lipoglycopeptide antibiotic with three mechanisms of action, resulting in concentration dependent bactericidal activity against gram-positive pathogens. This study evaluated the efficacy and safety of a single dose of oritavancin for patients with acute bacterial skin infections

This double-blind, randomized, non-inferiority study included adults with acute gram-positive bacterial skin and skin-structure infections, randomized to receive either a single intravenous dose of 1,200 mg oritavancin, followed by placebo, or intravenous vancomycin every 12 hours for seven to 10 days. Clinical evaluations were performed at 48 and 72 hours, and then again on day seven to day 10.

The primary composite endpoint was defined as cessation of spreading or reduction in lesion size, absence of fever and no need for administration of a rescue antibiotic

48 to 72 hours after administration of oritavancin. The primary secondary endpoint was clinical cure, as assessed at the post-therapy evaluation.

Subjects were 475 patients who received oritavancin and 479 who received vancomycin. The primary, composite endpoint was met in 82.3% treated with oritavancin and in 78.9% treated with vancomycin. The endpoints of clinical cure, post-therapy, were 79.6% with oritavancin and 80% with vancomycin. The frequency of adverse events were similar between the two medications.

Conclusion: This phase 3 study, involving adults with acute bacterial skin and skin structure infections, found that the treatment efficacy of a one-time dose of oritavancin was non-inferior to that of seven to 10 days of vancomycin.

Corey, G., et al. Single Dose Oritavancin in the Treatment of Acute Bacterial Skin Infections. **N Eng J Med.** 2014, June 5; 370(23): 2180-2190.

OUTPATIENT PHARMACOTHERAPY FOR ALCOHOL USE DISORDERS

Alcohol use disorders (AUDs) are common, causing substantial morbidity and mortality. However, fewer than one third of patients with AUDs receive treatment. This systematic review and meta-analysis was designed to determine the efficacy of various medications used for the treatment of AUDs.

Data were obtained from databases including PubMed, the Cochrane Library, PsycINFO, CINAHL and EMBASE from January of 1970 to October of 2013. Studies were identified involving AUDs with at least 12 weeks of outpatient intervention. Those studies assessed the degree of consumption, health outcomes, injuries, quality-of-life, function and mortality, as well as adverse events.

The authors identified 151 articles reporting on 123 studies. Acamprosate and naltrexone were associated with improvement in consumption outcomes. For return to heavy drinking, acamprosate was not associated with improvement, while naltrexone, at 50 mg per day, was associated with improvement. A meta -analysis of head-to-head, randomized, controlled trials comparing acamprosate with naltrexone found no significant difference between the two medications. Well controlled trials of disulfiram did not support an association with preventing return to any drinking or improvement in other alcohol consumption outcomes. For the vast majority of off-label medications, evidence was insufficient to suggest a positive effect.

Conclusion: This meta-analysis found that acamprosate and naltrexone are associated with a reduction in return to drinking among patients with alcohol use disorders.

Jonas, D., et al. Pharmacotherapy for Adults with Alcohol Use Disorders in Outpatient Settings: A Systematic Review and Meta-Analysis. **JAMA**. 2014, May 14; 311(18): 1889-1900.

TRENDS IN HOSPITAL ADMISSIONS FOR HYPERGLYCEMIA AND HYPOGLYCEMIA

Severe hypoglycemia is the most common, acute adverse effect of glucose lowering therapy among patients with diabetes mellitus (DM). DM care quality metrics established over a decade ago have focused on preventing hyperglycemia. This study reviewed the rates of hospital admissions for hyperglycemia and hypoglycemia using a sample of Medicare beneficiaries.

Data were obtained from the inpatient national claims history files of the centers for Medicare and Medicaid services. All fee-for-service Medicare beneficiaries from 1999 to 2011 who were 65 years of age or older were included. Data collected including hyperglycemia and hypoglycemia hospitalization rates, subsequent 30-day and one-year mortality rates and 30-day readmission rates.

The final sample comprised 33,952,331 Medicare beneficiaries. During the study, hospitalizations for hyperglycemia declined by 38.6%, from 114 per 100,000 person/year to 70 per 100,000 person/year. A total of 429,850 hospitalizations for hypoglycemia were documented, with the observed rate of hospitalization increasing by 11.7% during this time period. Among those admitted for hyperglycemia, the 30-day mortality rates were 7.1% in 1999 and 5.2% in 2010, with one-year mortality rates of 21.4% in 1989 and 17.6% in 2010. Among those admitted for hypoglycemia, the 30-day mortality rates were five percent in both 1999 and 2010, with one-year mortality rates of 23.3% in 1999 and 22.6% in 2010.

Conclusion: This study of Medicare beneficiaries found that hospital admission rates for hypoglycemia now exceed those for hyperglycemia among patients 65 years of age or older.

Lipska, K., et al. National Trends in U.S. Hospital Admissions for Hyperglycemia and Hypoglycemia among Medicare Beneficiaries, 1999 to 2011. **JAMA Intern Med.** 2014. doi: 10.1001/jamainternmed.2014.1824.

RESISTIVE STRENGTH TRAINING FOR OLDER HOSPITALIZED PATIENTS

Bed rest decreases muscle strength by one to 1.5% per day, with muscle mass loss predominantly affecting the lower body musculature. This study evaluated the effect of resistance training on functional outcomes in older hospitalized patients.

This prospective, single-blind, randomized, controlled clinical trial included patients referred by medical doctors for physiotherapy. All subjects were able to stand with or without walking aids and were expected to be hospitalized for seven or more days. The participants randomized to a treatment group participated in four sessions per week. Weight training included 12 -15 repetitions at an intensity of 60 to 70% of the one repetition maximum (1RM). Subjects in both groups received regular physiotherapy. The patients were assessed with the Timed Up and Go Test, a 30-second chair stand task, a 10-meter walk test and three tasks of the Barthel Index.

Of the 71 participants in the program, 36 were randomized to a treatment group and 35 to a control group. The mean total intervention time was eight hours, 20 minutes. Significant improvement was noted in the treatment group, but not in the control group, on the 10-minute walk test ($p<0.01$) and on the Barthel Index-Walking ($p<0.01$). Differences

(Continued from page 2)

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between the groups were not significant except for the Barthel index-stairs (p=0.05).

Conclusion: This randomized, controlled study of elderly, hospitalized patients found that progressive resistance strength training, added to traditional therapy, results in more improvement than does traditional therapy on all measures evaluated, but in no case was there any statistically significant difference between the groups in functional outcomes.

Tibaek, S., et al. Does Progressive Resistance Strength Training as Additional Training Have Any Measured Effect on Functional Outcomes in Older Hospitalized Patients? A Single-Blinded, Randomized, Controlled Trial. **Clin Rehab.** 2014, April; 28(4): 319-328.

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