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LOW DOSE PREDNISONE FOR RA

The use of glucocorticoids for the treatment of rheumatoid arthritis (RA) has evoked controversy for more than 50 years. While disease modification was documented during the 1950s, toxicity of long-term glucocorticoids in prednisone doses of 10 mg per day or more has caused concern. Therefore, from the 1950s through the 1980s, systemic glucocorticoids were recommended in RA only as bridging therapy while patients await anticipated benefits of disease-modifying antirheumatic drugs (DMARDs). The efficacy of prednisone in doses below five mg per day has not been previously established for RA. This study sought to determine the efficacy of clinical treatment with a one to four mg per day dose of prednisone for the treatment of RA.

Patients were recruited from one academic clinical care setting. All had been taking a stable dose of prednisone of 1 to 5 mg per day over the previous 12 weeks. The protocol comprised three phases. During an equivalence phase, all participants were given a 12-week supply of prednisone tablets at the same dose that they had taken at baseline. This was a change in tablet appearance only, so as to match with placebo tablets. During a transfer phase, dosages were reduced at a rate of a single, 1 mg tablet per four weeks to either 1 mg prednisone or identical placebo tablets. During the comparison phase, the subjects were maintained over 24 weeks at one mg prednisone or identical placebo. Each visit included assessment and recording of weight and blood pressure, labs, completion of a multidimensional health assessment questionnaire by the patient, and scoring of a Routine Assessment of Patient Index Data Three (RAPID3) by a study rheumatologist.

Thirty-one patients were randomized, 15 to a treatment group

and 16 to a placebo group. After one administrative withdrawal, of the 15 remaining participants in the placebo group, 11 withdrew due to lack of efficacy, and four completed the 24-week "comparison" observation period. Subjects in the placebo group had poorer outcomes as compared to the treatment group, including worsening scores for physical function, pain, patient global estimate, RAPID3, and fatigue. Participants in the prednisone group remained similar to baseline at the conclusion of the trial.

Conclusion: This study of patients with rheumatoid arthritis suggests that very low dose prednisone may be effective in reducing symptoms of that disease.

Pincus, T., et al. Efficacy of Prednisone, One to Four Mg/Day, in Patients with Rheumatoid Arthritis: A Randomized, Double-Blind, Placebo-Controlled, Withdrawal Clinical Trial. *Ann Rheum Dis.* 2009, November; 68(11); 1715-1720.

HAND OA IN WOMEN IS ASSOCIATED WITH CAROTID AND CORONARY ATHEROSCLEROSIS

Osteoarthritis (OA) is the most common of the musculoskeletal diseases. Several investigators have found evidence implicating the vascular system in the development or progression of OA. This study sought to determine whether an association exists between the severity of hand OA and markers of atherosclerosis in the elderly population.

Data were obtained from the AGES Reykjavik study, and included 2,264 elderly men and 3,078 elderly women. Using a cross-sectional, population-based study design, the authors compared the severity of hand OA from high quality photographs with the results of measures of atherosclerosis.

Markers for atherosclerosis included carotid intimal thickness and plaque severity, coronary calcifications, aortic calcifications, and reported cardiac and cerebrovascular events.

A significant association was found between carotid plaque severity and coronary calcifications, and severity of hand OA in women. Women with hand OA had an odds ratio of 1.42 for having coronary calcifications ($p=0.002$), and an odds ratio of 1.25 for having moderate or severe carotid plaques ($p=0.016$). No such significant relationships were seen in men. Despite this association, women with hand OA did not report a higher proportion of previous cardiovascular or cerebrovascular events.

Conclusion: This cross-sectional study found a linear association between the severity of hand osteoarthritis and the degree of atherosclerosis in older women. The authors suggest that this finding indicates a possible connection in the pathological processes of the two diseases.

Jonsson, H., et al. Hand Osteoarthritis in Older Women Is Associated with Carotid and Coronary Artherosclerosis: The AGES Reykjavik Study. *Ann Rheum Dis.* 2009, November; 68: 1696-1700.

GOLF AFTER TOTAL KNEE ARTHROPLASTY

Golf is enjoyed by approximately 28 million American adults each year. However, in the older population, degenerative arthritis can impede enjoyment and participation in this sport. Many golfers are potential candidates for total knee arthroplasty (TKA). This study sought to determine how TKA affects the ability to participate in golf.

A total of 1,630, consecutive patients who had undergone a primary TKA over a five-year period

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were screened for participation. Surveys regarding activity and sports participation were sent to the subjects. Among the respondents, 20.7% identified themselves as active golfers. After excluding cases with bilateral TKAs and revisions, 151 patients were eligible for a second survey. That survey targeted the patient's ability to participate in and to enjoy golf. Questions addressed time of return to play, frequency of golf participation, comparisons of handicap, enjoyment, ease of play, pain before and after surgery, and surgeons' advice concerning golf.

Ninety-three patients responded to the survey. The mean age at the time of TKA was 66 years, and the average follow-up time was 8.7 years. At the time of the survey, 91% of the golfers had been golfing for more than 10 years, and 66% for more than 20 years. Fifty-seven percent were able to return to golf within six months. Twenty-eight percent stated that they had walked the course before surgery, while 14% walked the course after surgery. After returning to golf, only 19% believed that they golfed less after the TKA, while 81% believed that they golf as much as (60%) or more than (21%) before surgery.

Conclusion: This study of golfers undergoing total knee arthroplasty found that 94% of the respondents reported enjoying golf as much as or more after than before surgery. Over half returned to playing golf within six months.

Jackson, J., et al. Golf after Total Knee Arthroplasty: Do Patients Return to Walking the Course? **Am J Sp Med.** 2009, November; 37 (11) 2201-2204.

ASYMPTOMATIC PAD AND STROKE RECURRENCE

Symptomatic peripheral artery disease (PAD) has been found to confer an increased risk of ischemic stroke and myocardial infarction. This study sought to determine whether asymptomatic peripheral artery disease, as assessed by an ankle brachial index (ABI), is an independent risk factor for recurrent stroke among patients with a history of stroke or transient ischemic attack.

This study included 102 patients with histories of ischemic stroke or transient ischemic attack. Among

those participants, 26 had asymptomatic PAD. Both those with and those without PAD were followed over an average of 2.1 years. Outcome measures included the incidence of nonfatal myocardial infarction, nonfatal stroke, transient ischemic attack, and death due to a cardiovascular event. The association between asymptomatic PAD and vascular events, after adjusting for confounding risk factors, was calculated.

Subjects without PAD had significantly longer composite cardiovascular event free survival and stroke free survival than did those with asymptomatic PAD. After adjusting for the covariates of age, race, hypertension, smoking status, carotid stenosis, serum cholesterol, homocysteine, and C-reactive protein levels, the associations between asymptomatic PAD in both composite vascular events and recurrent stroke were significant (p=0.006 and p=0.008, respectively).

Conclusion: This study suggests that, for patients with a history of stroke or transient ischemic attack, asymptomatic peripheral artery disease significantly increases the risk of recurrent stroke or heart attack.

Sen, S et al. Association of Asymptomatic Peripheral Artery Disease with Vascular Events in Patients with Stroke or Transient Ischemic Attack. **Stroke.** 2009, November 1; 40(11): 3472-3477.

HEALTH BENEFITS FROM EXERCISE DESPITE SUBOPTIMAL WEIGHT LOSS

Weight management through exercise is frequently prescribed by physicians. The success of exercise in promoting weight loss varies among individuals. This study examined whether exercise-induced improvements in health are obtained in the absence of optimal weight loss.

Fifty-eight, sedentary men and women with an average body mass index of 31.8 were studied. All underwent a 12-week, supervised aerobic exercise training program. The sessions occurred five times per week, with a 500-kilocalorie expenditure per session. Body composition, anthropometric parameters, aerobic capacity, blood pressure, and acute psychological

responses were recorded before and after the 12-week intervention.

The subjects' mean weight loss was 3 kg. Of the 58 participants, nearly half failed to attain their predicted weight loss. This subgroup had a mean weight loss of only 0.9 kg. Despite lower than expected weight loss, these individuals experienced significantly increased aerobic capacity, as well as decreased systolic and diastolic blood pressure, waist circumference, and resting heart rate. They also experienced an acute improvement in psychological state. Interestingly, no significant differences in health benefits were found between those who achieved their predicted weight loss and those who did not.

Conclusion: This study found that significant health benefits can be achieved through exercise despite a lower than expected weight loss.

King, N., et al. Beneficial Effects of Exercise: Shifting the Focus from Body Weight to Other Markers of Health. *Br J Sp Med.* 2009, November; 43(12): 924-927.

OBESITY AND MULTIPLE SCLEROSIS

The etiology of Multiple Sclerosis (MS) is believed to involve both environmental and genetic factors. Elevated levels of serum 25 hydroxy vitamin D appear to decrease the risk of MS. Obese individuals have lower levels of vitamin D metabolites than do normal weight individuals. Thus, childhood obesity could be an important risk factor for MS. This cohort study analyzed whether obesity in childhood, adolescence, or adulthood is linked to an increased risk of MS.

Two large cohort studies, The Nurses' Health Study (NHS) (1976) and The Nurses' Health Study II (NHS II) (1989) were conducted over a 40-year period with female nurses ages 30 to 55, and 25 to 42, respectively. An initial lifestyle and medical questionnaire was filled out by both groups, and was subsequently updated every two years. Initial height and weight data were documented, with body mass index (BMI) calculated for each participant. The subjects also provided historical evidence of weight and body silhouette at multiple points, including adolescence, to which a

BMI was also assigned. Over time, any participants who reported a diagnosis of MS were asked for permission to speak with their neurologists. Covariates included race, location of residence, smoking status, and level of physical activity.

In both cohorts, an age-adjusted analysis revealed that women with BMI of at least 30kg/m² at age 18 had a greater than twofold risk of developing MS, as compared to those with a BMI of between 18.5 and 20.9kg/m². As smoking was the main confounder of the association between obesity at age 18 and MS risk, the analysis in the NHS II was restricted to never smokers. The analysis of never smoking women also revealed a twofold increased risk of MS among those with a BMI of greater than 30 at the age of 18 (p<0.01). In contrast, BMI at baseline was not associated with an increased risk of MS.

Conclusion: This study of women demonstrates that obesity during adolescence is a risk factor for the later development of Multiple Sclerosis.

Munger, K., et al. Body Size and Risk of MS in Two Cohorts of U.S. Women. *Neur.* 2009, November; 73 (19): 1543-1550.

STATIN TREATMENT AND STROKE OUTCOME WITH AGGRESSIVE CHOLESTEROL REDUCTION

Previous studies have suggested that 3-hydroxy-3-methylglutaryl CoA reductase inhibitors (statins) can reduce stroke severity and improve stroke outcomes. This study sought to determine whether statin treatment can reduce strokes in subjects with a recent stroke or a recent transient ischemic attack. The authors also sought to determine whether treatment can favorably shift the distribution of severities of ischemic cerebral vascular outcomes.

The Stroke Prevention and Aggressive Reduction of Cholesterol Level (SPARCL) trial randomized 4,731 subjects who had experienced a stroke or transient ischemic attack within one to six months prior to study entry. All subjects had low-density lipoprotein cholesterol levels of 100 to 190 mg/dL and no known coronary heart disease. The participants were randomized to a treatment group,

given 80 mg of atorvastatin, or to a placebo group. The trial's primary endpoint was time to a fatal or nonfatal stroke.

Over the median follow-up period of 4.9 years, 492 subjects had an outcome of ischemic stroke, including 218 in the atorvastatin group and 274 in the placebo group (odds ratio=0.79). Fifty-five subjects receiving atorvastatin and 33 receiving placebo had outcomes of hemorrhagic stroke. The data revealed a proportional reduction in fatal, severe, moderate, and mild strokes, and an increase in the proportion of event-free subjects randomized to the atorvastatin group (p<0.001).

Conclusion: This study of patients with a previous stroke or transient ischemic attack found that 80 mg of atorvastatin can reduce the rate of recurrent stroke, as well as the severity of strokes when they do occur.

Goldstein, L., et al. Statin Treatment and Stroke Outcome in the Stroke Prevention by Aggressive Reduction in Cholesterol Levels (SPARCL) Trial. *Stroke.* 2009, November; 40(11): 3526-3531.

THERAPEUTIC INTERVENTIONS FOR SECONDARY PREVENTION OF STROKE

Among survivors of a first-ever stroke, at least 25% experience a recurrent stroke within the next five years. Stroke recurrence increases the risk of disability and institutionalization, with almost half of those survivors remaining disabled. This study assessed the use of evidence-based interventions in preventative care, with patients with stroke compared to those with coronary artery disease.

This observational, multicenter study involved 1,444 primary care health centers throughout Spain during the year 2007. Preventative therapeutic objectives, as specified by the American Heart Association's guidelines, were predefined. The primary care physicians in each participating center enrolled three patients older than 40 years with a hospital discharge diagnosis of either ischemic stroke (cases) or coronary artery disease (CAD) (controls) in the preceding two years. The cases were free of evidence of CAD and the

control subjects were stroke-free. Multivariate analysis was performed, with forward step logistic regression used to determine independent predictors of achievement of the various therapeutic objectives.

A total of 5,458 patients were included in the final analysis. The most prevalent risk factors for the entire group were hypertension and dyslipidemia. Despite the fact that more than 90% of the patients with hypertension, diabetes, and dyslipidemia were prescribed specific drug regimens, fewer than 30% achieved the desired therapeutic objectives for each risk factor. The degree of success was generally poor, especially among patients with ischemic stroke. The treatment objectives related to hypertension (23.8% versus 27.2%; $p=0.028$), dyslipidemia (13.6% versus 20.3%; $p<0.001$) and abdominal obesity (49.1% versus 54.6%; $p=0.002$) were less frequently accomplished by patients with ischemic stroke than by those with CAD.

Only 3.3% of patients with ischemic stroke had all risk factors under control, as compared with 5.6% of patients with CAD ($p=0.006$).

Conclusion: This study revealed that the rate of success in risk factor control for secondary prevention of vascular events was low in a non-selected, general outpatient sample. This failure is more common among those who experience an ischemic stroke than among those sustaining a coronary artery disease event.

Alvarez-Sabin, J., et al. Therapeutic Interventions and Success in Risk Factor Control for Secondary Prevention of Stroke. *J Stroke Cerebral Vasc Dis.* 2009, November-December: 460-465.

ACL RECONSTRUCTION, MENISCECTOMY, AND NFL CAREERS

Over 12% of all players in the national football league (NFL) have a history of meniscal injury. Approximately eight percent have a history of anterior cruciate ligament (ACL) injury. These injuries have been found to be associated with a decreased probability of playing professional football. This study investigated whether a combined history of meniscectomy and/or ACL

surgery before NFL play is associated with the length of the athlete's career.

A database was created containing the injury and surgery history for all 5047 athletes reviewed at the annual NFL combine (Evaluation camp for college football players vying for the NFL) by the medical staff of one NFL team from 1987-2000. This was subsequently linked to a dataset of NFL career statistics from the Elias Sports Bureau. These statistics included the round drafted, the number of seasons played, and the number of games played in the NFL. Athletes were identified with a history of meniscectomy or ACL reconstruction before the combine who played at least one game. Athletes with other surgeries or injuries were excluded from the study. The controls identified for each injured athlete were matched by position.

Fifty-four players were identified with an isolated history of meniscectomy, 29 with an isolated history of ACL reconstruction, and 11 with both injuries. Isolated meniscectomy reduced careers in years (5.6 versus 7.0; $p=0.03$) and games played (62 versus 85; $p=0.02$), as compared to controls. Isolated ACL construction did not significantly reduce the career in years or games played. A history of both surgeries reduced the athletes' careers in years (4.0 versus 5.8; $p=0.08$) and games played (41 versus 63; $p=0.07$), as compared to controls.

Conclusion: This study of NFL athletes who were able to return to the field of play, demonstrates that a history of meniscectomy but not ACL reconstruction shortens the expected career of a professional football player.

Brophy, R., et al. Effect of Anterior Cruciate Ligament Reconstruction and Meniscectomy on Length of Career in National Football League Athletes: A Case Control Study. *Am J Sp Med.* 2009, November; 37: 2102-2107.

HOME THERAPY, CORTICOSTEROID INJECTIONS, OR SHOCKWAVE THERAPY FOR GREATER TROCHANTER PAIN SYNDROME

A commonly overlooked cause of hip pain in adults is the greater

trochanter pain syndrome (GTPS). This disorder is defined as chronic pain around the greater trochanter, sometimes radiating to the lateral hip or thigh, and exacerbated by physical activity. Standard, initial treatment of gluteal tendinopathy in refractory GTPS includes nonsteroidal anti-inflammatory drugs, physical therapy, and correction of training errors. When conservative treatments fail, a local corticosteroid injection is regarded as the standard of care. As shockwave therapy has been found effective for tendinopathies, this study compared the efficacies of local corticosteroid injection, a standardized home training program, and a shockwave treatment protocol.

Two hundred twenty-nine patients were studied. All had been referred to one of two orthopedic outpatient clinics for persisting, lateral hip pain, and all were diagnosed with refractory, unilateral GTPS. The participants were randomized into three groups. Seventy-six were taught home training stretching exercises for twice-daily use for 12 weeks. Seventy-five received a corticosteroid injection and 78 received three sessions of shockwave treatment. The subjects' pain severity was assessed at baseline, and then again at one, four, and 15 months after treatment, using a Likert numeric pain rating scale.

At one month after baseline, results were significantly better for patients undergoing corticosteroid injection than for those receiving home training or shockwave therapy ($p<0.001$ and $p<0.00$, respectively). However, at four months, shockwave therapy resulted in better outcomes than did home training or corticosteroid injection ($p<0.05$ and $p<0.001$, respectively). At 15 months after baseline, shockwave therapy and home training were more successful than corticosteroid injection ($p<0.01$ and $p<0.001$, respectively).

Conclusion: This study of patients with greater trochanter pain syndrome found that, at one month after treatment, corticosteroid injection was superior for pain relief to radial shockwave therapy or home training. At four months, however, both corticosteroid injection and home training were significantly less successful than was shockwave therapy. At 15 months, home training and shockwave therapy were more

successful than were steroid injections.

Rompe, J., et al. Home Training, Corticosteroid Injection, or Radial Shockwave Therapy for Greater Trochanter Pain Syndrome. **Am J Sp Med.** 2009, October; 37: 1981-1990.

LUMBAR FACET JOINT ARTHROPATHY AFTER INJECTION OF HYLAN G-F 20

The lumbar facet joint is a diarthrodial synovial joint that contains nociceptive C-type fibers, both in the synovial membrane and in the joint capsule. The lumbar facet joint has been recognized as a source of lumbar axial pain, with estimates of prevalence ranging from 15% to 44%. *In vivo*, *in vitro*, and clinical studies of exogenous hyaluronic acid have demonstrated various physiologic effects that support its capacity to treat osteoarthritis (OA). This study examined changes in pain, disability, and medication use over time after joint injections with Hylan G-F 20.

This prospective, uncontrolled, pilot study was completed at a university spine center. Patients were enrolled in the study after the painful joint was confirmed by a single-blind, double, local comparative anesthetic block. Those with a true positive response received a one mL intra-articular injection with Hylan G-F 20 injected into the painful facet joint. A repeat Hylan injection was offered to patients who were not satisfied with the results obtained with the first two injections. The main outcome measures included a visual analog pain scale (average, standing, walking), Oswestry Disability Index (ODI), SF-36, finger to floor distance (FTF), tolerance (standing, sitting, walking), analgesic usage, and patient satisfaction collected at baseline, 7-10 days, and at 1-, 3-, 6-, and 12 months follow-up.

Repeated measures mixed models indicated that Hylan injections resulted in improvement from baseline to six months in visual analog pain scale scores for standing and walking ($p < 0.005$), ODI ($p < 0.029$), SF-36 ($p < 0.013$), FTF ($p = 0.032$), and sitting tolerance ($p = 0.020$). These results were not sustained at 12 months.

Conclusion: This study demonstrates that viscosupplementation for lumbar

facet joint arthropathy with Hylan G-F 20 is associated with modest efficacy that lasts up to six months.

Depalma, M., et al. Prospective Pilot Study of Painful Lumbar Disc Joint Arthropathy after Intra-Articular Injection of Hylan GF 20. **PM&R.** 2009, October; 1(10): 908-915.

BONE SCINTIGRAPHY FOR OA

Bone scintigraphy is a functional imaging modality that reflects alterations in the metabolic activity of bone. Progressive osteoarthritis (OA) is associated with high bone turnover, which should allow bone scintigraphy to be used as a screening tool. This study sought to determine the association between bone scintigraphy abnormalities and knee malalignment direction and severity in patients with OA of the knee.

This cohort study included 308 knees in 159 subjects with symptomatic OA. Symptoms were assessed using the National Health and Nutrition Examination Survey's criteria for pain. X-rays were obtained in order to measure knee alignment. Four bone scintigraphy views were taken for each knee. These images were scored by an experienced nuclear medicine physician. Generalized and mixed linear models were used to evaluate the within subject relationship between knees. Bivariate analyses were used to determine the association between radiographic evidence of OA, as compared to bone scintigraphy results, knee symptoms, and knee alignment angles. These were correlated with age, body mass index, and gender.

Increased bone scan retention was found in 91% of the knees, with 72% demonstrating retention in the tibiofemoral compartment, and 62% demonstrating retention in the patellofemoral compartment. Retention in the medial compartment was associated with a varus knee alignment, while lateral compartment retention was associated with a valgus knee alignment. The severity of misalignment was associated with the intensity of retention ($p < 0.001$). Bone scan agent retention in the tibiofemoral compartment was associated with symptom severity, with that finding persisting after adjustment for radiographic OA ($p < 0.001$).

Conclusion: This study describes a relationship between knee malalignment and knee compartment-specific abnormalities by bone scintigraphy. The localization and intensity of scintigraphic abnormalities of the knee were also associated with symptom severity. These findings suggest that this technique may be a good prognostic tool.

Kraus, V., et al. Association of Bone Scintigraphy Abnormalities with Knee Malalignment and Pain. **Ann Rheum Dis.** 2009, November; 68: 1673-1679.

AUTOLOGOUS CONDITIONED SERUM AND ACHILLES' TENDON HEALING

Achilles' tendon rupture has become the most common type of sports related tendon rupture. Recovery times for this injury remain long, with re-rupture rates substantial. Numerous animal studies have documented the beneficial effects of individual growth factors in tendon healing. Although the effect of growth factors on tendon healing is impressive, it is clear that tendon repair is not triggered by a single growth factor but requires the interplay of various such factors. Autologous conditioned serum (ACS) preparations are a natural source of multiple growth factors. This study tested the hypothesis that growth factors in ACS can improve the healing of ruptured and sutured Achilles tendons in rats.

Eighty adult rats were randomly assigned to either an experimental group or a control group of 40 rats each. All underwent Achilles' tendon transection and suture repair. For the treatment group, ACS was prepared, with 170 μ L of ACS injected into the area of the sutured tendon. Ten rats from each group were euthanized at one, two, four, and eight weeks postoperatively for biomechanical and histologic testing.

Tendons exposed to ACS *in vitro* showed greatly enhanced expression of the Col1A1 gene. The ACS treated tendons were thicker had more type I collagen and an accelerated recovery of tendon stiffness and histologic maturity of the repair tissue. However, no significant differences were found between the groups in the maximum load to failure up to week eight.

Conclusion: This animal study revealed that treatment with ACS has the potential to improve Achilles tendon healing. However, tendon strength was not found to increase within the parameters of the study.

Majewski, M., et al. Accelerated Healing of the Ruptured Achilles' Tendon in Response to Autologous Conditioned Serum. *Am J Sp Med.* 2009, November; 37(11): 2117-2125.

PSYCHIATRIC DISORDERS FOLLOWING BRAIN INJURY

Many with traumatic brain injury (TBI) develop psychiatric problems post-injury. Variable frequencies of psychiatric disorders have been reported at various times after injury, with rates of depression and anxiety ranging from 14% to 77%, and those of substance abuse from 4.9% to 28%. This study examined the frequency of pre-and post-TBI DSM-IV Axis I psychiatric disorders among patients with mild to severe TBI.

One hundred participants with mild to severe TBI, all with injuries sustained within six months to 5.5 years, were recruited from the database of all admissions with TBI to the referring hospital. Eligible patients were at least 17 years of age at the time of injury, and had no history of previous TBI or other neurologic disorder. The subjects' medical files were reviewed. A structured clinical interview for DSM-IV disorders was used to assess frequency, comorbidity, and resolution over time of psychiatric disorders. That interview was conducted twice, first retrospectively to determine lifetime, pre-injury psychiatric diagnoses, and, second, to identify post-injury psychiatric diagnoses.

Prior to injury, 52% of the patients had psychiatric disorders, with 28% having had one diagnosis and 24% having had more than one diagnosis. Pre-injury alcoholism was the most common single diagnosis (29%), with other substance use disorders also common. A total of 41% were assigned to those categories. Major depressive disorder was the second most frequent pre-injury disorder (17%), followed by anxiety disorders (13%).

Following TBI, 65% of the sample met the criteria for at least one diagnosis. Major depression was the most common diagnosis (45%),

followed by anxiety (38%). Generalized anxiety disorder was the most commonly diagnosed anxiety disorder, followed by post traumatic stress disorder. Twenty-one percent met the criteria for post-injury substance use disorder, with alcohol the most commonly abused substance (14%). The frequency of depressive disorders in the first year was significantly lower than that in subsequent years ($p=0.012$).

Conclusion: This study of patients with mild to moderate traumatic brain injury found a high frequency of psychiatric disorders, evident up to 5.5 years after injury.

Whelan-Goodinson, R., et al. Psychiatric Disorders Following Traumatic Brain Injury: Their Nature and Frequency. *J Head Trauma Rehab.* 2009, September/October; 24(5): 324-333.

DIALYSIS AND FUNCTIONAL STATUS IN THE ELDERLY

In the United States, there are increasing numbers of elderly patients with end-stage renal disease who begin dialysis. Mortality in the first year after the initiation of dialysis exceeds 35% among patients older than 70 years of age, and exceeds 50% among those older than 80 years of age. However, it remains unclear to what extent dialysis affects the quality of life in elderly patients who are frail or disabled. This study reviewed the trajectory of functional status, before and after the initiation of dialysis, among elderly nursing home residents.

Using data from the United States Renal Data System, nursing home residents with end-stage renal disease on dialysis were identified. Inclusion criteria included residence in a nursing home before the first end-stage renal disease service date, with a length of stay at least 90 days and at least one functional status measurement before dialysis. Minimum data set (MDS) assessments were completed at admission and quarterly thereafter for 12 months. Functional status was evaluated according to ability to perform each of seven activities of daily living.

The mean age of the residents was 73 years, with 60% women and 64% Caucasian. Using a random effects model, the initiation of dialysis was found to be associated with a

decline in functional status, indicated by an increase of 2.8 points in MDS-ADL scores. This decline was independent of age, race, gender, and trajectory of functional status before the initiation of dialysis. The median MDS-ADL score increased from 12 during the three months before dialysis to 16 during the three months after the initiation of dialysis. At 12 months, pre-dialysis functional status had significantly worsened in 87% of the patients. After adjusting for coexisting conditions, the initiation of dialysis was found to be associated with worsening of MDS-ADL scores by 2.8 ($p<0.04$). After 12 months of dialysis, a further worsening of MDS-ADL scores of 1.4 ($p<0.04$) was found.

Conclusion: This study of nursing home residents found that, in addition to very high mortality, the initiation of dialysis is associated with a substantial and sustained decline in functional status.

Tamura, M., et al. Functional Status of Elderly Adults before and after Initiation of Dialysis. *New Eng J Med.* 2009, October 15; 361(16): 1539-1547.

MRI AND ULTRASOUND IN GOUT WITH NORMAL X-RAYS

The destruction and bony changes caused by gout are well known. The current standard of care to determine the presence or absence of these destructive bony changes is a plain radiograph of the involved joint. When detected, these radiographic changes are thought to reveal irreversible damage, which is only detectable after many years of disease. This study investigated whether patients with known gout and normal x-rays may have occult skeletal damage visible by magnetic resonance imaging (MRI) or ultrasound (US).

This prospective study included patients with known gout and normal x-rays. The index joint for each subject was identified as the joint with the most gouty attacks. All participants had at least two x-rays which were read as negative, with no evidence of erosive damage in the joint. All subjects underwent MRI and US of the index joint, as well as of an asymptomatic joint. The films were read by blinded radiologists for the presence of erosions synovial pannus and bone marrow edema.

Fifty-six percent of the subjects with normal radiographs had evidence of erosion in the index joint by MRI and/or US ($p < 0.0001$). Of those, 56% of the subjects had erosions in the index joint as detected by MRI, and four percent had erosions as detected by US. No significant relationship was seen between the presence of erosive changes on MRI or US and the use of allopurinol and colchicine.

Conclusion: This study found that magnetic resonance imaging can detect changes not apparent on radiographs in 56% of the patients with gouty arthritis.

Carter, J., et al. An Analysis of MRI and Ultrasound Imaging in Patients with Gout Who Have Normal Plain Radiographs. *Rheum.* 2009, November; 48: 1442-1446.

STEROID INJECTIONS FOR DE QUERVAIN'S TENOSYNOVITIS

De Quervain's tenosynovitis is a condition that can cause wrist pain and dysfunction of the affected hand. It is caused by impaired gliding of the tendons of the abductor pollicis longus and extensor pollicis brevis muscles, and can be treated by conservative measures, corticosteroid injections, or surgery. This study further explored the effectiveness of local steroid injections for this malady.

Patients were recruited from the practices of 11 general practitioners in the northern part of the Netherlands. A clinical diagnosis of de Quervain's tenosynovitis was defined as pain or tenderness at the radial styloid, combined with either a positive Finkelstein's test result or crepitations on palpation at the radial styloid. The subjects received one or two local injections of either one mL of triamcinolone acetonide (TCA) or one mL of normal saline (NS). Non-responders to NS were treated with additional TCA injections. The main outcome measures were early (one-week) treatment response, severity of pain at the radial styloid, and improvement in the patients' self-perceptions of functional disability using The Dutch Arthritis Impact Measurement Scale.

During the inclusion period of two years, 21 participants who fulfilled the inclusion criteria were recruited by 11 general practitioners. At one week following the final injection, the TCA

group enjoyed better outcomes than did the placebo group in direct treatment response ($p = 0.02$), severity of local pain ($p = 0.03$), and perceived improvement ($p = 0.047$). At 12 months' follow-up, the treatment effects of local injections were upheld for the outcomes of severity of pain and scores on the Dutch Arthritis Impact Measurement Scale, but not for patients' perceived improvement.

Conclusion: This study of de Quervain's tenosynovitis found that one or two local injections with triamcinolone acetonide 10mg/ml can improve symptoms within one week of injection.

Peters-Veluthamaningal, C., et al. Randomized, Controlled Trial of Local Corticosteroid Injections for de Quervain's Tenosynovitis in General Practice. *BMC Musculoskel Dis.* 2009, October 10: 131.

INTRACRANIAL BLEEDING IN PATIENTS WITH TBI

Intracranial bleeding is a common and serious consequence of traumatic brain injury (TBI). The probability of intracranial bleeding varies with TBI severity, age, and the presence or absence of a compound skull fracture at the site of injury. This study evaluated the association between intracranial bleed size and outcome among patients with TBI.

Data were analyzed from the Trauma Audit and Research Network, a large European trauma registry which includes 60% of hospitals receiving trauma patients in England and Wales. Included were 13,962 patients with Glasgow Coma Scale scores of below 15 at presentation. The presence and extent of intracranial bleeding was determined and coded as epidural, subdural, or intraparenchymal. The extent of bleeding was coded as absent, small, large, or unspecified.

A total of 6,445 patients (46%) sustained an intracranial bleed. Of those, 45% had one type of intracranial bleed, 16% had two types, 25% had three types, and 14% had four types. Subdural hematoma was the most common bleed type, present in 30% of the subjects. After adjusting for potential confounders, a large intracranial bleed, regardless of location, was associated with increased mortality, as compared to no bleeding. A large intracranial bleed was also associated with

increased risk of mortality as compared to a small intracranial bleed. The odds ratios for mortality for large, as compared to small, subdural hematoma, intraparenchymal hemorrhage, and epidural hematoma were 3.41, 3.47 and 2.86, respectively.

Conclusion: This study of patients admitted to a hospital with traumatic brain injury found that large intracranial bleeds are associated with a substantially higher probability of hospital mortality than are small intracranial bleeds.

Perel, P., et al. Intracranial Bleeding in Patients with Traumatic Brain Injury: A Prognostic Study. *BMC Emer Med.* 2009; 9: 15.

EMERGENCE FROM A MINIMALLY CONSCIOUS STATE

In 2002, the Aspen Neurobehavioral Workshop proposed the term "minimally conscious state" (MSC) to label the condition wherein persons demonstrate behavioral evidence of self or environmental awareness, but do so inconsistently. That conference proposed two criteria to define a patient's emergence from MCS: 1) functional, interactive communication and 2) functional use of two different objects. To enhance reliability, functional communication was operationally defined as accurate yes/no responses to six of six situational orientation questions on two consecutive evaluations. Some have asserted that these criteria are too stringent, and that conscious individuals with severely impaired cognition would have difficulty achieving the requisite threshold of accuracy and consistency. This study further explored the utility of these operational guidelines.

This prospective, observational study included 144 patients recovering from traumatic brain injury. All were enrolled in a National Institute on Disability and Rehabilitation TBI Model Systems program brain injury center. All participants were classified as responsive, based on their results on the Disability Rating Scale. The subjects were evaluated using the yes/no accuracy subscale of the Mississippi Aphasia Screening Test, consisting of 10 questions concerning orientation.

(Continued from page 2)

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Name recognition was found to be the easiest yes/no question, with non-confused patients responding with 100% accuracy, compared to 75% to 78% of confused patients. The findings also suggested that confused participants are more likely to respond inaccurately to all yes/no questions. Confused patients gave inaccurate answers 22% to 26% of the time to simple questions, and 31% of the time to situational orientation questions.

Conclusion: This study found frequent errors on simple orientation and situational orientation yes/no questions in responsive patients who emerged from a minimally conscious state. This finding provides evidence that the functional communication criterion for minimally conscious state emergence, which requires correct responses to six of six situational orientation questions on two consecutive examinations, may be too stringent.

Nakase-Richardson, R., et al.
Emergence from Minimally Conscious State. *Neur.* 2009, October 6; 73: 1120-1126.

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