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EXERCISE AFTER AN ANKLE SPRAIN AND SUBSEQUENT PROXIMAL INJURY

Ankle sprains are among the most common injuries sustained in active populations. This study assessed the impact of therapeutic exercise (TE) after an ankle sprain on subsequent proximal injuries.

This retrospective, cohort study included beneficiaries in the military health system treated for an ankle sprain between 2010 and 2011. The variables of interest included age, gender, military rank (as a surrogate for socioeconomic status), injury location, and subsequent disorders of the lumbar, hip, or knee. The data were reviewed for prescriptions for TE within 90 days of the injury.

An ankle injury was identified in 33,361 adults with a mean age of 31.86 years. A prescription for TE was given to 27.8%. At follow-up, 17.9% had sustained an injury to the knee, lumbar spine, or hip. Compared to those without prescribed exercise, at one year, those prescribed TE were less likely to have a subsequent knee ($p=0.037$), hip ($p<0.0001$), or lumbar injury ($p<0.0001$), with hazard ratios of 0.87, 0.68, and 0.82, respectively.

Conclusion: This study of military personnel found that, of those patients with an ankle sprain, 20% experienced an injury in a proximal joint in the following year, with therapeutic exercise reducing the likelihood of such an injury.

Foster, K., et al. The Influence of Therapeutic Exercise after Ankle Sprain on the Incidence of Subsequent Knee, Hip, and Lumbar Spine Injury. *Med Sci Sport Exer.* 2023, February 1; 55(2): 177-185.

REGIONAL WHITE MATTER HYPERINTENSITIES, HYPERTENSION, AND COGNITION

White matter hyperintensities of presumed vascular origin (WMH) are frequently observed in cerebral

magnetic resonance imaging (MRI). This study analyzed the association between regional WMH, hypertension and cognition.

Data were collected from the 1000BRAINS study, a longitudinal cohort study of patients ≥ 55 years of age, along with their spouses and children. The study recorded the blood pressure and medications of the participants, and categorized them into groups based upon their blood pressure levels. MRI scans were conducted using a 3 Tesla scanner to assess for the presence of WMHs. The Fazekas scale was used to quantify the lesions.

Data were completed for 560 participants between 50 and 85 years of age, among whom 83.7% had WMH affecting the frontal lobe. Higher Fazekas scores in the frontal, parietal, and temporal lobes were associated with higher blood pressure and antihypertensive treatment. Higher Fazekas scores in the parietal lobe scores were associated with lower performance in executive function, verbal, and non-verbal memory.

Conclusion: This study of patients 55 years of age or older found that white matter hyperintensity most often involves the frontal lobe, and that higher Fazekas scores in the frontal parietal and temporal lobe are associated with higher blood pressure and antihypertensive treatment.

Gronewold, J., et al. Association of Regional White Matter Hyperintensities with Hypertension and Cognition in The Population-Based 1000Brains Study. *Euro J Neurol.* 2023, Jan 26. doi: 10.1111/ene.15716. Epub ahead of print.

LACK OF STATIN THERAPY AFTER ISCHEMIC STROKE

Statins have been shown to reduce the risk of adverse vascular events after a transient ischemic attack or stroke. Poor adherence to statin treatment has been reported in approximately one third of patients

with a history of stroke. This study investigated the impact of not using statins after an ischemic stroke (IS).

This retrospective study included consecutive adult patients with IS, admitted to one of 20 Finnish hospitals between January 1, 2005, and December 31, 2017. Data were combined from national registries which had recorded hospital admissions, mortality, and prescription medications. Ongoing statin use during follow-up was analyzed in 90-day intervals, with a median follow-up of 5.7 years. The primary outcome variable was all-cause death.

Of the 59,588 patients followed, at 90 days post-discharge, statin therapy was not used by 27.1% of the patients. At 12 years, this percent rose to 36%. At one-year, all-cause mortality was 7.5% in the non-use group and 4.4% in the statin use group ($p<0.0001$). At 12 years, all-cause mortality was 56.8% in the non-use group and 48.6% in the statin use group ($p<0.0001$). The cumulative rates of major adverse cerebrovascular or cardiovascular events were higher in those not using statins at one and 12 years ($p<0.0001$ and $p<0.0001$, respectively). Early statin use was not associated with hemorrhagic stroke during follow-up.

Conclusion: This population-based study of patients hospitalized with an Ischemic stroke found that patients who were not placed on statin medications had an increased risk of mortality as measured up to 12 years after discharge.

Aivo, J., et al. Lack of Statin Therapy and Outcomes after Ischemic Stroke: A Population-Based Study. *Stroke.* 2023, March; 54: 781-790.

META-ANALYSIS OF THERAPIES FOR POSTSTROKE UPPER LIMB IMPAIRMENT

Recovery of upper extremity (UE) movement after a cerebral vascular accident (CVA) is thought to be

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mainly due to spontaneous neurobiological recovery. While many individuals participate in stroke rehabilitation, roughly 36% of survivors continue to have significant upper limb disabilities for five years post-stroke. This study evaluated the relative efficacy of interventions designed to improve stroke recovery.

A literature review was performed to identify randomized, clinical trials of adult patients who had experienced a stroke and were treated with an unconventional therapy. The primary outcome of interest was the Fugl-Meyer, UE (FMUE). Data were analyzed from 176, randomized, controlled trials, including 6,781 participants and examining 20 non-conventional interventions. Compared with conventional care, eleven of the interventions were found to result in significantly better UE function. These included constraint induced movement therapy (mean difference (MD) 6.7), high frequency repetitive transcranial magnetic stimulation (MD 5.4), mental imagery (MD 5.4), bilateral arm training (MD 5.1), intermittent theta burst stimulation (MD 5.1), cathodal transcranial direct current stimulation (MD 4.8), neuromuscular electrical stimulation (MD 4.4), action observation (MD 4), low frequency repetitive transcranial magnetic stimulation (MD 3.5), mirror therapy (MD 3.2), and electromyography triggered neuromuscular electrical stimulation (MD 3).

Conclusion: This meta-analysis identified therapeutic interventions that were found to be more effective than conventional care for the treatment of acute stroke.

Saikaley, M., et al. Network Meta Analysis of Non-Conventional Therapies for Improving Upper Limb Motor Impairment Post-Stroke. *Stroke*. 2022, December; 53(12): 3717-3727.

COVID-19 NEUROLOGICAL COMPLICATIONS ASSOCIATED WITH DEXAMETHASONE AND REMDESIVIR

Data suggest that COVID-19 may be associated with a range of multisystem complications. This study explored whether treatment with remdesivir and/or dexamethasone is associated with a decreased frequency of major neurologic complications.

Data were obtained from the International Severe Acute and

Emerging Respiratory Infection Consortium (ISARIC), World Health Organization Clinical Characterization Protocol. Data were included from over 303,000 hospital inpatients with COVID-19 from 306 sites. Patients eligible for this study were 18 years of age or older, hospitalized with COVID-19 between January 31, 2020, and June 29, 2021. Those requiring supplemental oxygen during admission were designated as a severe COVID-19 group, with the remaining placed in a non-hypoxic COVID-19 category. Neurologic symptoms occurring during hospitalization were recorded. The outcomes were compared among those who received remdesivir, dexamethasone, or both, and those who received the standard of care.

Data were completed for 89,297 subjects, of whom 64,088 had severe COVID-19. Reduced mortality was noted among those treated with dexamethasone (odds ratio (OR) 0.86) as well as with the combination treatment (OR 0.67), but not with remdesivir alone (OR 0.9). In patients with severe COVID-19, neurologic complications were less likely among those treated with dexamethasone (OR 0.76), remdesivir (OR 0.69), or the combination (OR 0.54). Among those with non-hypoxic COVID-19, neurologic complications were less likely among those treated with dexamethasone (OR 0.78) or the combination dexamethasone/remdesivir (OR 0.63).

Conclusion: This study of patients hospitalized with COVID-19 found that treatment with dexamethasone, remdesivir, or both was associated with a lower frequency of neurologic complications.

Grundmann, A., et al. Fewer Covid-19 Neurological Complications with Dexamethasone and Remdesivir. *Ann Neurol*. 2023, Jan; 93: 88-102.

S100B TO PREDICT POST-CONCUSSION SYNDROME IN CHILDREN

Among children with a mild traumatic brain injury (TBI), 10 to 30% develop a cluster of cognitive, physical, and emotive symptoms referred to as post-concussion syndrome (PCS). As studies in adults have shown that S100B is elevated after a TBI, this study evaluated the diagnostic utility of S100B in children at three months post-injury.

The subjects were children seven to 16 years of age, presenting within

three hours of a head trauma, with a Glasgow Coma Scale (GCS) score of 13 to 15 and a loss of consciousness (LOC) of under one hour. Serum levels of S100B were measured during the initial evaluation. At three months, patients were assessed using the Rivermead Post-Concussion Symptoms Questionnaire (RPQ). The levels of baseline S100B were compared between those with and those without PCS.

The subjects were 60 patients with a mean age of 11 years. Of these, 45 demonstrated cranial lesions on CT (CT+). The mean level of S100B level in the serum of those without cranial lesions (CT-) was $0.150 \mu\text{g L}^{-1}$, while that in CT+ subjects was $0.587 \mu\text{g L}^{-1}$. The mean value of S100B in the 38 patients without signs of PCS was $0.266 \mu\text{g L}^{-1}$, while that in those with PCS was $0.845 \mu\text{g L}^{-1}$ ($p < 0.0001$). The concentrations of S100B in the groups of CT- patients with GCS scores of 13, 14, and 15 were not significantly different from one another as calculated by ANOVA.

Conclusion: This prospective study of children with an acute traumatic brain injury found that serum levels of S100B protein correlated with the number of lesions on CT, and the presence of post-concussion syndrome.

Kelmendi, F., et al. Ability of S100B to Predict Post-Concussion Syndrome in Pediatric Patients Who Present to the Emergency Department with Mild Traumatic Brain Injury. **Br J Neurosurg.** 2023, February; 37 (1): 53-58.

LONGITUDINAL STUDY OF COVID-19 COGNITIVE AND PSYCHOLOGICAL ALTERATIONS

Most of the studies of the cognitive effects of COVID-19 have been cross-sectional. This study provides longitudinal evidence of neuropsychological changes through 22 months after recovery from respiratory COVID-19.

From April of 2020 to March of 2021, 657 patients diagnosed with COVID-19 who received care for acute infection at the Manzoni Hospital were screened by infectious disease specialists to monitor for persistent respiratory, neurological, and psychological sequelae. Of these, five percent reported subjective cognitive complaints, with 74 referred for neurologic examination. Of these, 21 agreed to undergo a neuropsychological

assessment at six, 16, and 22 months.

At baseline, 12 of 21 (52%) patients had cognitive deficits in at least one domain. At baseline, long-term memory was compromised in five patients (24%), visuoconstructive ability in 19%, immediate recall in 14%, and verbal working memory in nine percent. Depressive symptoms were present in six of 19 (32%). At six months, 16% demonstrated continued deficits in at least one domain. When including borderline performances, this number rose to 53%. Most tests with borderline performance were memory tests, including short-term memory and verbal learning.

Conclusion: This study of patients hospitalized with COVID-19 found a high prevalence of cognitive changes at six months after the acute stage, which progressively diminished by 18 months after the acute infection.

Diana, L., et al. Monitoring Cognitive and Psychological Alterations in COVID-19 Patients: A Longitudinal Neuropsychological Study. **J Neurol Sci.** 2023, January 17; 444: 120511.

THE BERMUDA TRIANGLE OF FALLS

Falls constitute the most common cause of accidental death in older people. Frequently cited causes of these falls are orthostatic hypotension (OH), deficits in mobility/gate/balance (mobility impairment (MI)), and cognitive impairment (CI). This study examined the predictive value of these three geriatric conditions in community dwelling adults.

Orthostatic hypotension was defined as a drop of 20 mmHg systolic blood pressure after standing from a seated position. Cognitive performance was measured by the Mini Mental State Examination, with CI defined as a score of ≤ 24 and/or self-reporting memory as fair or poor. Mobility impairment (MI) was defined as a Timed Up and Go score of ≥ 12 seconds. Falls were recorded and labelled as explained or unexplained.

Participants were 2,108 adults, ≥ 65 years of age at baseline, who had completed at least two years of follow-up. Over 2/3 had one of the three deficits noted above, and almost 10% had all three. During follow-up, 470 subjects had an unexplained fall, while 182 had a fall-related fracture. In a fully adjusted model, the cluster of OH, CI, and MI was most strongly associated with unexplained falls ($p <$

0.001) and incident fracture ($p = 0.045$).

Conclusion: This prospective study found that the combination of orthostatic hypotension, cognitive impairment, and mobility impairment, labeled the Bermuda Triangle of falls, is independently associated with an increased risk of unexplained falls.

O'Donnell, D., et al. The Bermuda Triangle of Orthostatic Hypotension, Cognitive Impairment, and Reduced Mobility: Prospective Associations with Falls and Fractures in The Irish Longitudinal Study on Aging. **Age Ageing.** 2023, February; 52(2): 1-10.

REGIONAL VULNERABILITY OF THE CORPUS CALLOSUM AND CARDIOVASCULAR RISK

When addressing cognitive health, and to focus therapeutic efforts, it is important to differentiate white matter burden that reflects systemic and cardiovascular health from that of other disease pathologies. As diffusion tensor imaging (DTI) of the corpus callosum (CC) has been shown to distinguish early-stage neurodegenerative processes from normal aging, this study assessed whether the CC has distinct regions of vulnerability that could distinguish pathology resulting from vascular disease and that caused by neurodegenerative disease.

Subjects were 394 adults without dementia. All underwent MRI scans, with DTI data acquired. Cognitive function was assessed, with testing for episodic memory, processing speed, and executive function. Risk factors of interest included hemoglobin A1C, resting heart rate, hypertension, and plasma markers, including tumor necrosis factor alpha and interleukin six. Fractional anisotropy (FA) and mean diffusivity (MD) measured via DTI were used as proxies for white matter integrity. The data were examined for independent relationships between the integrity of the anterior (genu) and posterior (splenium) regions of the corpus callosum and compared these to systemic and cardiovascular risk factors.

After controlling for risk factors, a lower FA of the genu, but not of the splenium, was found to be associated with greater systemic and cardiovascular risk factors. These included higher systolic blood pressure ($p = 0.02$), hemoglobin A1C ($p = 0.016$), and IL-6 ($p = 0.005$). The FA of the genu was uniquely

associated with cognitive processing speed ($p=0.015$) and executive function ($p=0.012$).

Conclusion: This study found that disruption of the frontal white matter microstructure of the corpus callosum is correlated with elevated blood pressure and blood sugar, with this disruption associated with slower information processing and worse executive function.

VandeBunte, A., et al. Regional Vulnerability of the Corpus Callosum in the Context of Cardiovascular Risk. *J Geriatr Psychiatry Neurol.* 2023. Published ahead of print.

PLASMA MARKERS FOR TRAUMATIC SPINAL CORD INJURY

Several biomarkers have been studied in patients with neurologic injuries. Glial fibrillary acidic protein (GFAP) is an astroglial protein, widely accepted as diagnostic in traumatic brain injury. Neurofilament light (NfL) is a marker of axonal injury correlated with diffuse axonal injury and poor outcome in patients with severe traumatic brain injury. This study assessed the efficacy of these biomarkers for predicting a patient's neurologic outcome after a traumatic spinal cord injury (SCI).

Subjects were adults with a traumatic SCI enrolled between 2006 and 2019. Healthy adults undergoing routine lumbar surgery for spinal stenosis or disc herniation were recruited as a control group. In both groups, cerebrospinal fluid (CSF) was obtained for up to three to four days, to measure levels of GFAP and NfL. These levels were compared to outcomes at six months.

Data were obtained for 118 patients. Baseline AIS grades were AIS A in 78 (66%), AIS B in 20 (17%), and AIS C in 20 (17%) patients. Compared to controls, serum NfL was significantly higher in AIS A and AIS B patients at all four timepoints. A serum NfL threshold of 170 pg/ml at 72 hours predicted those patients who would be classified as "motor complete" (AIS A/B), as compared to "motor incomplete" (AIS C/D), at six months, with a sensitivity of 87% and a specificity of 84%. A serum GFAP threshold of 13,180 pg/ml at 72 hours yielded a sensitivity of 90% and a specificity of 84% for the same prediction.

Conclusion: This study of patients with an acute spinal cord injury found that baseline serum levels of neurofilament light and glial

fibrillary acidic protein were useful in distinguishing between motor incomplete and motor complete cases at six months.

Stukas, S., et al. Association of CSF and Serum Neurofilament Light and Glial Fibrillary Acidic Protein, Injury Severity, and Outcome in Spinal Cord Injury. *Neurol.* 2023. Published ahead of Print. DOI: 10.1212/WNL.0000000000206744.

CHANGE IN HAMSTRING INJURY RATES IN MEN'S PROFESSIONAL FOOTBALL

In 1999, the Union of European Football Associations (UEFA) created the Elite Club Injury Study (ECIS) to evaluate the risk of injury for top level football players in Europe. Using early data, researchers proposed interventions to reduce the incidence of hamstring injuries. This study reviewed the hamstring injury incidence in professional football players over 21 seasons.

Data were obtained from 54 teams in 21 European countries from 2001 through 2022. Team medical staff were asked to record individual player exposure and time lost due to injury. New variables were added for the 2011 to 2012 season, describing affected muscles. An injury was defined according to time loss. The injury incidence was defined as the number of injuries per 1,000 hours of exposure.

During the 2001 through 2021 seasons, medical staff reported 2,636 hamstring injuries, with 34% occurring during training and 66% during match play. The proportion of injuries diagnosed as hamstring increased from 12% in the first season to 24% in the last season. The number of days absent from participation increased from 10% in the first year to 20% in the last year of analysis. Hamstring injury was found to be 10 times higher during match play than during training, with a relative risk of 9.67. Of all hamstring injuries, 18% were recurrences.

Conclusion: This longitudinal study of hamstring injuries in men's professional football in Europe found that of the number of injuries and total absent days due to injury doubled during the 21 years of the study.

Ekstrand, J., et al. Hamstring Injury Rates Have Increased during Recent Seasons and Now Constitute 24% of All Injuries in Men's Professional Football: The UEFA Elite Club Injury Study from 2001/2002 to 2021/2022.

Br J Sports Med. 2022; 57(5): 292-298.

EARLY MEASUREMENT OF INTERLEUKIN 10 IN MILD TRAUMATIC BRAIN INJURY

Recent studies have demonstrated that levels of the anti-inflammatory cytokine interleukin 10 (IL-10) are elevated in the early hours after traumatic brain injury (TBI). This study was designed to determine the potential diagnostic utility of the early measurement of IL-10 for differentiation between subjects with and those without mild TBI.

Subjects were consecutive patients seen at Khatam Al-Anbia Hospital in Zahedan, Iran, between September of 2020 and October of 2020. Consecutive patients presenting with head trauma within 24 hours were reviewed, undergoing brain CT, blood sampling within three hours of injury, and Glasgow Coma Scale (GCS) assessment. The participants were stratified as CT negative and CT positive groups. The IL-10 levels were compared with clinical and CT outcomes.

Data were analyzed from 300 patients. Those who were CT positive had significantly higher IL-10 levels ($p<0.001$). With sensitivity set to 100%, when assessed within 90 minutes of admission, the specificity of IL-10 for predicting negative and positive cases were 59% and 49%, respectively. For mild TBI patients over 36 years of age, classification performance increased significantly at the 100% sensitivity level, with a specificity of 93%.

Conclusion: This study demonstrates that serum levels of interleukin 10 may be able to distinguish between patients with and without CT findings after a mild traumatic brain injury.

Khosh-Fetrat, M., et al. Determining the Value of Early Measurement of Interleukin 10 in Predicting the Absence of Brain Lesions in CT scans of Patients with Mild Traumatic Brain Injury. *J Neurol Sci.* 2023, March 15; 446: 120563.

BODY MASS INDEX AND SPINAL PATHOLOGY IN THE ELDERLY

Globally, the proportion of adults 65 years of age or older is projected to reach 17.8% by 2060. As the prevalence of obesity has increased among older adults, this study assessed the relationship between

body mass index (BMI) and spinal pathology.

Subjects were community dwelling adults, 65 years of age or older, living in Ikoma City, Nara, Japan. Data collected included body mass index (BMI), and MRI measurements of the spine, including the cross-sectional area (CSA) of the paraspinal muscles, lumbar disc degeneration, assessed using the Pfirrmann classification system, the sagittal vertical axis (SVA), endplate and bone marrow, measured using the Modic system, and isometric extension strength. Quality of life was assessed with the Oswestry Disability Index (ODI) and the EuroQoL-5 Dimension (EQ5D). A visual analog scale (VAS) was used to quantify pain.

Data were completed for 300 participants with an average age of 73.4 years. The mean back extensor strength was significantly lower in the underweight than in the other groups ($p < 0.001$). A multiple nonlinear regression analysis indicated that increased BMI was related to sagittal vertical axis SVA ($p = 0.001$) and that SVA was increased with increased BMI.

A regression analysis revealed that, compared with normal weight, overweight or obese weight was significantly related to disc degeneration, and type III Modic changes. BMI was also related to ODI ($p < 0.001$), which began to worsen when BMI exceeded 23 kg/m^2 . BMI was associated with scores on the VAS for pain, gradually worsening when BMI exceeded 23 kg/m^2 .

Conclusion: This study of community dwelling adults 65 years of age or older found that increased BMI was associated with the deterioration of back extensor strength, decreased muscle mass, low back pain, and poorer quality of life.

Takeuchi, Y., et al. Relationship between Body Mass Index and Spinal Pathology in Community-Dwelling, Older Adults. *Euro Spine J.* 2023, February; 32(2): 428-435.

BUCKET HANDLE TEARS OF THE MEDIAL MENISCUS, REPAIRED DURING ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION

Meniscal injuries are frequently associated with anterior cruciate ligament (ACL) injury. Surgical treatment consists of repair or meniscectomy. This investigation addressed the outcomes of patients

undergoing repair of bucket handle medial meniscal tears (BHMMT) during ACL repair.

This study included a retrospective analysis of prospectively collected data. Subjects were patients with BHMMT who underwent meniscal repair during a primary ACL repair between January of 2003 and December of 2019. Meniscal tears were prepared with a shaver, reduced using a probe, and repaired. All patients were followed for up to 24 months. Failure of the repair was defined by the need for additional meniscus surgery.

Data were included from 253 patients, including 114 who underwent all-inside repair, 61 who underwent suture hook plus all-inside repair, and 78 who underwent suture hook plus outside-in repair. At 94 months, 36 failures had occurred (14%). All inside repairs were over four times more likely to result in further meniscal surgery, than suture hook plus outside-in repairs (hazard ratio [HR], 4.103; $p = 0.0117$). Failure was also higher for patients < 30 years of age (HR, 2.943; $p = 0.0159$), than with those ≥ 30 years of age (HR 2.94; $p = 0.016$).

Conclusion: This study of patients undergoing ACL repair and meniscal repair of bucket handle tear found that those who underwent repair using inside repair techniques were more likely to require additional meniscal surgery.

Helou, A., et al. Failure Rates of Repaired Bucket Handle Tears of the Medial Meniscus Concomitant with Anterior Cruciate Ligament Reconstruction: A Cohort Study of 253 Patients from the SANTI Study Group with a Mean Follow-Up of 94 Months. *Am J Sport Med.* 2023, March; 51(3):585-595.

ASPIRIN OR LOW MOLECULAR WEIGHT HEPARIN AFTER FRACTURE REPAIR

Venous thromboembolism (VTE) is a well-recognized, potentially fatal complication after orthopedic trauma. This study, the Prevention of Clot in Orthopedic Trauma Trial (PREVENT CLOT), examined the effectiveness and safety of thromboprophylaxis with aspirin as compared with low molecular weight heparin (LMWH) after a pelvic or extremity fracture.

The subjects were adult patients with an extremity fracture, treated operatively, or a fracture of the pelvis or acetabulum treated either operatively or non-operatively. The

patients were randomly assigned to receive aspirin 81mg twice per day, or 30mg of subcutaneous LMWH twice per day. The primary efficacy measure was death from any cause at 90 days. Secondary outcomes included cause-specific death, non-fatal pulmonary embolism, and deep vein thrombosis.

Data were collected for 12,211 patients with an average age of 44.6 years. During the 90-day follow-up, death occurred in 0.78% of the aspirin group and 0.73% of the low molecular weight heparin group ($p < 0.001$ for noninferiority). A diagnosis of DVT occurred in 2.51% of the aspirin group and 1.71% of the low molecular weight heparin group. Pulmonary embolism was diagnosed in 1.49% of each group. Bleeding complications and other serious adverse events did not differ between the groups.

Conclusion: This study of patients with extremity fractures treated surgically or any pelvic or acetabular fracture found that thromboprophylaxis with aspirin was noninferior to low molecular weight heparin for preventing death, deep venous thrombosis, or pulmonary embolism.

Major Extremity Trauma Research Consortium (METRC). Aspirin or Low Molecular Weight Heparin for Thromboprophylaxis after a Fracture. *N Engl J Med.* 2023, January 19; 388 (3): 203-213.

DIAGNOSING MYASTHENIA GRAVIS USING ORTHOPTIC MEASURES

Myasthenia gravis (MG) is an autoimmune disease with antibodies targeting proteins at the neuromuscular junction. This group is difficult to distinguish from other diseases such as graves orbitopathy (GO), chronic progressive external ophthalmoplegia (CPEO), and ocular pharyngeal muscular dystrophy (OPMD). This study explored the efficacy of orthoptic measures for diagnosing MG.

The subjects were a convenience sample of MG, GO, CPEO, and OPMD patients. The patients with MG were divided into three groups; chronic (C-MG), recently diagnosed (RD-MG), and seronegative (SN-MG). The subjects wore glasses with a green filter in front of the tested eye and a red filter in front of the reference eye. The patient was instructed to place a green light from a laser pointer, only visible to the

tested eye, for each of the points on the red line, only visible to the reference eye. Gaze deviations between eyes were measured using standard Hess chart, with one-minute persistent gaze used to assess MG-related fatigue.

Data were completed for 16 healthy controls, 20 with recently diagnosed MG, 19 with C-MG, 14 with SNMG, six with C-MG, six with OPMD, and six with GO. Drift during persistent gaze occurred only with the MG patients. The sensitivity and specificity of the presence of drift was 81% and 100%.

Conclusion: This study, comparing the extraocular eye movements of patients with myasthenia gravis to those of patients with graves orbitopathy, chronic progressive external ophthalmoplegia, and ocular pharyngeal muscular dystrophy, found that ocular drift occurred only in patients with myasthenia gravis.

Keene, K., et al. Diagnosing Myasthenia Gravis Using Orthoptic Measurements: Assessing Extraocular Muscle Fatigability. *J Neurol Neurosurg Psych.* 2023; 94: 151-160. doi:10.1136/jnnp-2022-329859.

UPPER EXTREMITY PAIN AFTER STROKE

Pain is a common symptom after stroke, with a prevalence of up to 50%. The most common location of pain after stroke is the upper extremity (UE). This study examined the presence of UE pain after a stroke until thirty months after starting rehabilitation.

The Stroke Cohort Outcomes of Rehabilitation (SCORE) study is an observational, prospective study describing the outcomes of consecutive patients with stroke who received multidisciplinary rehabilitation in the Netherlands. Consecutive adult patients with an acute stroke who received inpatient or outpatient multidisciplinary rehabilitation were invited to participate. All participants were assessed within the first week of rehabilitation, with measures including sociodemographic and clinical characteristics. Outcome measures, assessed through 30 months of follow-up, included UE pain, the Stroke Impact Scale, and the Hospital Anxiety and Depression Scale.

Upper extremity pain was reported by 41.8% at three months,

36% at 18 months, and 32.7% at 30 months. The median pain intensity was 5/10 at all three time periods.

Conclusion: This prospective study demonstrated that nearly 1/3 of patients have upper extremity pain, continuing at 30 months.

van Meijeren, W., et al. The Trajectory of Pain and Pain Intensity in The Upper Extremity after Stroke Over Time: A Prospective Study in a Rehabilitation Population. *Disabil Rehab.* 2023. Jan 10: 1-6.

SHORT-TERM FOLEY CATHETERS AFTER JOINT ARTHROPLASTY

In patients undergoing joint replacement surgery, indwelling Foley catheters are often placed intraoperatively to prevent post-operative urinary retention (POUR). However, catheter use has been associated with urinary tract infections (UTIs). This study evaluated the efficacy of routine, short-term urinary catheter placement after joint replacement surgery.

This study included 388 patients scheduled for total joint replacement (TJR). The participants were randomized to receive an indwelling Foley catheter in the operating room (C+), or to a control group who did not (C-). The catheters were removed when patients arrived at the orthopedic floor, approximately two to three hours after surgery. All subjects were assessed for POUR, defined as the use of straight catheterizations or the placement of an indwelling urinary catheter when indicated by retention of ≥ 450 mL on bladder scans. Secondary outcomes included a UTI within three weeks or requiring \geq straight catheterizations.

Data were completed for 228 patients undergoing TKA and 160 undergoing THA. Of these, 2.3% developed POUR, including 2.1% of the C+ and 2.6% of the C- group. No significant difference was found in the number of patients who required at least one straight catheterization. Similarly, no difference was found between groups in the number who developed a UTI.

Conclusion: This study of patients undergoing total joint arthroplasty found no meaningful difference in the rate of post-operative urinary retention, urinary tract infections, or complications between those who received short-term Foley catheters and those who did not.

Weintraub, M., et al. Short-Term Indwelling Foley Catheters Do Not Reduce the Risk of Postoperative Urinary Retention in Uncomplicated Primary THA and TKA: A Randomized, Controlled Trial. *J Bone Joint Surg.* 2023, February 15; 105(4): 312-319.

PHENYTOIN FOR EARLY POST-TRAUMATIC SEIZURE

Early post traumatic seizures within the acute stage of head injury may result in subsequent pathology. As some anti-seizure medications have been shown to negatively impact neuroplasticity and cognitive performance, this study evaluated the effectiveness of a short-term course of prophylactic administration of phenytoin to prevent early post-traumatic seizures.

This prospective, double-blind trial included patients with a head injury who presented within 24 hours of trauma. Glasgow Coma Scale scores were documented at the initial presentation. The patients were randomly assigned to either a phenytoin or control group and were observed for seizures until seven days post-trauma. Those in the phenytoin group received a loading dose of 15 mg/kg body weight, followed by 5 mg/kg body weight per day every eight hours for two days. The participants were observed for seizure-like activity.

Data were collected from 94 patients, with 47 in each group. Seizure activity was found in 21.3% of the control group and 2.1% of the treatment group ($p=0.008$). All seizures in the control group occurred within 24 hours of trauma, at a mean of four hours post-trauma.

Conclusion: This prospective study of patients with traumatic brain injury found that prophylaxis with phenytoin for 48 hours was effective in reducing the incidence of post-traumatic seizures.

Oyemolade, T., et al. Efficacy of 48-Hours Dose of Phenytoin in Prevention of Early Post-Traumatic Seizure. *BMJ Neurol Open.* 2023. doi:10.1136/bmjno-2022-000377.

TEA CONSUMPTION AND MORTALITY

Previous studies have demonstrated that green tea consumption is inversely related to mortality. This study assessed the

association between black tea consumption and mortality.

Data were obtained from the United Kingdom biobank, a prospective cohort of adults residing in the United Kingdom where black tea consumption is common. Data were reviewed from individuals 40 to 69 years of age who were registered with the United Kingdom National Health Services. Consents were obtained from 502,488 patients who completed a physical examination and a comprehensive questionnaire of sociodemographic lifestyle and health related information. The participants were asked to record the number of cups of tea consumed each day. Among tea drinkers, 89% reported drinking black tea and seven percent green tea. Genetic testing was completed with a genetic caffeine metabolism score created. Mortality data were obtained from the National Health Service.

Data were analyzed for 498,043 participants with a mean baseline age of 56.5 years. During the 14 years of follow-up, 29,783 deaths occurred. A multivariate analysis revealed that, relative to non-tea drinkers, the mortality risk was less for those who reported daily tea consumption of one or fewer cups (Hazard Ratio (HR) 0.95) two-three cups (HR 0.87), four-five cups (HR 0.88), six to seven (HR 0.88), eight to nine cups (HR 0.91), or 10 or more cups (HR 0.89). The genetic scores of caffeine metabolism did not alter this association.

Conclusion: This British study found that tea consumption was associated with a lower risk for all-cause mortality.

Inoue-Choi, M., et al. Tea Consumption and All-Cause and Cause-Specific Mortality in the UK Biobank: A Prospective Cohort Study. *Ann Intern Med.* 2022; (9):1201-1211.

DEPRESCRIBING MEDICATIONS FOR OLDER ADULTS FROM HOSPITALIZATION THROUGH POST-ACUTE CARE

Polypharmacy is prevalent among older hospitalized patients and is associated with adverse post-discharge outcomes. This study evaluated the efficacy of a patient centered, deprescribing intervention for those discharged to a post-acute care (PAC) facility.

The Shed-MEDS randomized, clinical trial recruited patients 50 years of age or older, scheduled for discharge to a PAC facility, each of

whom had been prescribed five or more prehospital medications. Data extracted from the records included sociodemographics, medical diagnosis, and medications. The subjects were randomized to a usual care group or to the Shed-MEDS intervention, which consisted of a pharmacist- or nurse practitioner-led, comprehensive medication review, with deprescribing actions initiated in the hospital and continued throughout the PAC facility stay. The primary outcome variables were the total medication counts at hospital and PAC discharge.

Data were collected from the records of 372 patients with a mean age of 76.2 years. The median number of prehospital medications was 16. Compared to the control group, the intervention group was prescribed 14% fewer medications at PAC facility discharge ($p < 0.001$) and 15% fewer medications at 90-day follow-up ($p < 0.001$).

Conclusion: This study found that a deprescribing intervention was safe and effective in reducing the total medication burden at post-acute care discharge and 90 days after discharge.

Vasilevskis, E., et al. Deprescribing Medications among Older Adults from End of Hospitalization through Post-Acute Care: A Shed MEDS Randomized, Clinical Trial. *JAMA Intern Med.* 2023. doi:10.1001/jamainternmed.2022.6545.

INTRAVENOUS THROMBOLYSIS PLUS ENDOVASCULAR THROMBECTOMY VERSUS THROMBOLYSIS ALONE IN LARGE VESSEL OCCLUSION STROKE

Acute ischemic stroke (AIS) resulting from large vessel occlusion (LVO) typically results in severe neurologic deficits. The best acute treatment strategy for mild LVO AIS is unknown. This study was designed to compare the efficacy and safety of Intravenous thrombolysis (IVT) plus Endovascular Thrombectomy (EVT) versus IVT alone for patients with mild LVO AIS.

This multi-center retrospective analysis was performed using prospectively collected data from the Safe Implementation of Treatment in Stroke (SITS) International Stroke Thrombolysis and Thrombectomy register (ISTR). The subjects were patients with AIS treated within 4.5 hours of their last known normal, with

baseline NIHSS scores of five or less, and with proximal anterior circulation LVO. The primary functional outcome was functional independence at three months as measured by a Modified Rankin Scale (MRS) score of 0-2, with favorable functional outcomes defined as an MRS score of 0-1. Safety outcomes were mortality at three months and symptomatic intracranial hemorrhage. Hemorrhagic transformation was categorized using the ECASS II trial definition.

Data analysis was completed for 312 patients in each of the two groups. In the unadjusted logistic regression analysis, patients treated with IVT alone were more likely to achieve a favorable outcome than were patients who received IVT plus EVT ($p=0.019$). In addition, those who received IVT alone were more likely to achieve functional independence than were those who received the combination of IVT plus EVT ($p=0.002$). Similar results were found in the adjusted logistic regression analysis, with a favorable outcome and functional independence more likely among those receiving IVT alone than those receiving IVT plus EVT ($p=0.007$ and $p=0.0001$). There was no significant difference between the groups in the rate of symptomatic intra-cerebral hemorrhage or death.

Conclusion: This study of patients with mild strokes resulting from large vessel occlusions found that those receiving thrombolysis alone experienced superior outcomes compared to those receiving thrombolysis plus endovascular thrombectomy.

Schwarz, G., et al. Intravenous Thrombolysis Plus Endovascular Thrombectomy Versus Thrombolysis Alone in Large Vessel Occlusion Mild Stroke: A Propensity Score Matched Analysis. *Eur J Neurol.* 2023; 00:1-8.

BEMPEDOIC ACID AND CARDIOVASCULAR OUTCOMES IN STATIN-INTOLERANT PATIENTS

Bempedoic acid, an ATP citrate lyase inhibitor that targets the synthesis of cholesterol, has been shown to be effective for reducing LDL cholesterol. This study assessed the efficacy of bempedoic acid in reducing cardiovascular events.

The Cholesterol Lowering via Bempedoic Acid [ECT1002], an ACL-Inhibiting Regimen (CLEAR) Outcomes trial is a double-blind

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*Jonathon Teng, M.D.
Jake Gooing, D.O.
Hana Hadiprodjo, D.O.
Eric Nguyen, D.O.
Raquel Orosa, D.O.
Neema Sheshebor, D.O.
Preethika Venugopal, D.O.
Derek Wang, D.O.
Clara Yuh, M.D.
UC Irvine, Irvine, CA

*David Quan, M.D.
Megan Andrews, M.D.
Gurtej Bajaj, M.D.
Tejas Shah, M.D.
Univ. of Penn, Philadelphia, PA

*Kelsey Lau, D.O.
Ziyi Chen, M.D.
Sam Moshofsky, M.D.
Jake Stephan, D.O.
Chiamaka Ukoha, M.D.
Univ. of TX SW Med Ctr., Dallas, TX

*Joshua Wilson, M.D.
Jessica Sher, M.D.
Univ. of Washington, Seattle, WA

Executive Editor Emeritus
Donald F. Langenbeck, Jr., M.D.

Subscription Manager
Michael P. Burke, M.S.

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randomized placebo-controlled trial involving patients 18 to 85 years of age with elevated cardiovascular risk factors. The patients were randomized to receive 180 mg per day of bempedoic acid or a matching placebo. The primary endpoint was a composite of major adverse cardiovascular events, including death from cardiovascular causes, non-fatal myocardial infarction, nonfatal stroke or coronary revascularization.

Data were collected from 13,970 patients with a mean age of 65.5 years. The primary endpoint occurred in 11.7% of the bempedoic acid group and 13.3% of the placebo group ($p=0.004$). The occurrence of adverse events did not differ significantly between the groups.

Conclusion: This study of patients unwilling or unable to take recommended doses of statins found that treatment with bempedoic acid resulted in a significant reduction in major adverse cardiovascular events.

Nissen, S., et al. Bempedoic Acid and Cardiovascular Outcomes in Statin-Intolerant Patients. *N Engl J Med*. 2023, March 4; 10.1056/NEJMoa2215024. Online ahead of print.

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