

94.2%; $P < .0001$). All 8 mean CDIP-58 subscale scores decreased significantly from baseline after the first treatment and at each subsequent assessment (each $P < .0001$). Muscular weakness (7.0%), dysphagia (6.4%), and neck pain (3.8%) were the most common AEs.

Conclusion: In a real-world treatment setting in subjects who were naive to BoNT at baseline, onabotulinumtoxinA significantly decreased CD symptoms, disability, and severity, and improved quality of life, with no new safety signals.

Poster 252

Modifiable Gait Parameters Associated with Functional Mobility in Lower Limb Amputees

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Objective: To quantitatively describe the relationship between health factors, amputation characteristics, spatiotemporal gait changes, and ambulatory mobility in Veterans with traumatic and non-traumatic amputation.

Design: Retrospective cross-sectional study.

Setting: A large Veterans Affairs Regional Amputation Center.

Participants: 81 male Veterans; 49 with traumatic unilateral lower limb amputation (LLA), 32 with non-traumatic LLA; 58 with transtibial amputation, 23 with transfemoral. Mean age (standard deviation) 57.8 (13.8), BMI of 28.1 (4.8), Comorbidity Index score of 3.2 (1.9).

Interventions: Not applicable

Main Outcome Measures: All participants completed a 2-Minute Walk Test (2-MWT) and a minimum of three trials of over ground walking evaluated using the GAITRite Electronic Walkway system. Differences in spatiotemporal gait parameters, walking speed, and 2-MWT distance were quantified using independent t-tests. Factors contributing to variability in 2-MWT distance were tested using forward stepwise regression.

Results or Clinical Course: Differences were found between the traumatic and non-traumatic groups for step length symmetry ratio (0.93 vs. 0.89, respectively; $P = < .05$), 2-MWT distance (146.12m vs. 129.46m, respectively; $P = 0 < .05$), and number of comorbidities (2.7 ± 2.64 vs. 3.9 ± 1.92 , respectively; $P < .05$). Amputated limb stance time, amputated limb step length, and period of double support were found to contribute to 2-MWT and combined to account for 56% (adj. $r^2 = 0.56$) of the variation in distance walked. In this sample, increased amputated limb step length by 1 cm correlated with increased 2-MWT distance of 2.1 meters ($P = .001$).

Conclusion: A shorter 2-MWT distance and increased comorbidities indicates that Veterans with non-traumatic amputation also have complex health conditions that may alter gait mechanics and decreased ambulatory mobility. Spatiotemporal measures of gait—amputation stance time, step length, and double support—are of particular clinical relevance, explaining more variance in 2-MWT distance than age, spatiotemporal symmetry, or health related conditions. These findings provide clinicians with modifiable targets for the improvement of global ambulatory mobility.

Poster 253

Rehabilitation Functional Independence Measure Change Following Bilateral Open Reduction Internal Fixation for Pathologic Fracture Due to Severe Vitamin D Deficiency From Gastric Bypass Surgery: A Case Report

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Case Description: This is a 38-year-old woman with morbid obesity with a history of Roux-en-Y (RYGB) gastric bypass who presented with bilateral hip pain aggravated by weight bearing without a history of trauma. Despite surgery, she had minimal weight loss with a body mass index of 52. Imaging revealed bilateral subtrochanteric fractures. The patient underwent bilateral open reduction internal fixation (ORIF) with intramedullary nailing. Further workup revealed severe vitamin D deficiency with associated hyperparathyroidism and hypocalcemia. She also developed peripheral neuropathy due to severe pyridoxine deficiency resulting in balance impairment. The patient had been non-compliant with vitamin supplementation following bypass surgery. Following ORIF, she was admitted to acute inpatient rehabilitation. Her course was complicated by a post-op hematoma requiring orthopedic drainage.

Setting: Inpatient rehabilitation facility.

Results or Clinical Course: On admission her case mix index was 1.54 compared to the nation average of 1.25 for bilateral hip fractures. Her Functional Independence Measure change was 34 compared to the nation mean of 30.7 for bilateral hip fractures. The patient had excellent functional outcomes due to an interdisciplinary team approach that included nutrition, endocrine and orthopedic interventions.

Discussion: While there is substantial literature reviewing metabolic sequelae following bariatric surgery, the majority is focused on the effect of surgery on bone mineral density as a result of increased bone turnover markers, vitamin D deficiency and hypocalcemia. A smaller percentage of the literature discusses the potential increased risk of bone fractures due to these metabolic changes. There is minimal literature to date that examines rehabilitation outcomes following complications from RYGB.

Conclusion: As the number of patients undergoing RYGB for weight loss management increases, so too will the impact of potential complications. Some impairments related to metabolic sequelae of RYGB respond well to a comprehensive Inpatient Rehabilitation Program. Further investigation regarding rehabilitative approaches and functional outcomes is warranted.

Poster 254

Outcomes of Acute Inpatient Rehabilitation for Chronic Graft-Versus-Host-Disease (cGVHD)

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Objective: To assess the functional gains of chronic graft-versus-host disease (cGVHD) patients in an acute inpatient rehabilitation facility.

Design: Retrospective analysis from 2012 – 2015.

Setting: Acute inpatient rehabilitation unit at a large academic hospital center.

Participants: 42 adult patients with chronic graft-versus-host disease (cGVHD) who are admitted for acute inpatient rehabilitation.

Interventions: Not applicable. Chart review.

Main Outcome Measures: Functional Independence Measures (FIM) scores measured on admission, discharge, length of stay, and FIM change per day (FIM efficiency).

Results or Clinical Course: A paired t-test shows p value of .0008 between admission and discharge FIM scores with $n=42$, showing that patients significantly improved in FIM scores based on acute inpatient rehabilitation. Mean admit FIM scores for the patient group was 67.8 with a mean discharge FIM score of 77.2. The total average FIM gain during patient length of stay was 9.4 points, with an average FIM Efficiency of 0.44. When the FIM scores are broken down by category, the scores showed mean Admission Motor score = 40.6, Admit Cognitive = 27.2. Comparatively, the mean Discharge Motor = 49.8 and Discharge Cognitive = 27.4. Therefore, the majority of functional gains were motor recovery. Five out of

forty-two patients (12%) were re-admitted to acute rehabilitation for a second hospitalization. For this small subset of patients (n=5), their admission FIM (70.8) and discharge FIM (86.5) had a paired t-test value with $P = .078$ showing a trend towards significance.

Conclusion: Patients with chronic GVHD show significant improvement in physical functioning from acute inpatient rehabilitation as measured by FIM scores. Furthermore, in a small subset of patients readmitted for acute rehabilitation, they also show functional gains despite previous medical decline.

Poster 255

Pathological Humeral Fracture Secondary to Malignant Melanoma Metastases Misdiagnosed as Pneumonia- the Role of Rehabilitation Medicine: A Case Report

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Case Description: A 57-year-old Caucasian woman with a history of systemic lupus erythematosus and malignant melanoma diagnosed two decades prior, presented to our clinic with several weeks of severe right sided body pain, most severe at the shoulder. Emergency department (ED) evaluation two weeks prior to her visit resulted in computed tomography (CT) of the chest with a diagnosis of pneumonia made and treated with antibiotics. Persistent pain resulted in a repeat ED visit, psychiatry consult for suicidal ideation secondary to intractable pain, and treatment with intramuscular toradol. Our shoulder examination revealed severe pain across her entire range of motion, tenderness to palpation of the humeral head, and pain limited weakness. We administered a corticosteroid injection, ordered magnetic resonance imaging (MRI), and prescribed non-steroidal anti-inflammatory medication. The MRI revealed comminuted impacted fracture of the humeral neck with foci of abnormal signal intensity within the humerus. We obtained a chest CT also which showed new mixed lytic and osseous right posterior pathological rib fractures.

Setting: Outpatient cancer rehabilitation practice of an urban tertiary care hospital.

Results or Clinical Course: Intractable right sided pain was evaluated by multiple physicians before we made the diagnosis of pathological fractures likely from melanoma metastases. We initiated inpatient admission to perform a full oncology workup.

Discussion: Melanoma metastases to the humerus is exceedingly rare. As musculoskeletal specialists, cancer physiatrists can play a unique role in the management of oncology patients as they are well positioned to diagnose late sequelae in patients who are otherwise misdiagnosed. This is critical in cancers such as melanoma which are not known as typical culprits of bone metastases.

Conclusion: Physiatrists are uniquely suited to diagnose late sequelae of malignancy and thus decrease morbidity and mortality in the pre and post treatment oncology population.

Poster 256

Wegener's Granulomatosis and the Rehabilitation Challenges in the Setting of Steroid Induced Myopathy: A Case Report

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Case Description: The patient is a 57-year-old woman with past medical history significant for autoimmune vasculitis with Wegener's granulomatosis on chronic steroids, hypothyroidism, diabetes, and steroid induced Cushing's disease who presented to the hospital for significant lower extremity weakness. Subsequent workup revealed that the patient's weakness was likely related to steroid induced myopathy. Patient was evaluated by rheumatology and was not a candidate for plasma exchange. Hospital course was complicated by PCP pneumonia requiring intubation. After a prolonged hospital course, patient was noted to require maximum assistance with most ADLs.

Program Description: Acute inpatient rehabilitation.

Setting: Acute inpatient rehabilitation.

Results or Clinical Course: Attempts were made during the patient's acute rehabilitation stay to wean off steroids, however, patient was unable to tolerate oral prednisone doses of less than 60 mg daily without worsening of vasculitis related skin lesions. This steroid dose complicated the management of her diabetes as well as her blood pressure. The patient had frequent bouts of hypotension due to adrenal suppression and had difficulty tolerating therapy in the acute setting.

Discussion: Wegener's granulomatosis is an autoimmune disorder affecting small vessels with nonspecific symptoms including fatigue, weakness, arthralgias, and neurologic dysfunction. Current treatment regimens include the use of steroids to suppress the disease. Myopathy is a less common side effect and presents as proximal motor weakness. There are three proposed pathophysiologic mechanisms of steroid induced myopathy: steroids may 1) directly catabolize skeletal muscles; 2) inhibit the IGF-1 cascade leading to myocyte apoptosis; or 3) suppress an intracellular kinase protein, Akt1, which increases ubiquitin-ligase atrogen 1 (MAFbx) promoting muscle degradation.

Conclusion: There is currently no gold standard for the treatment of steroid induced myopathy. Acute inpatient rehabilitation for 3-4 weeks emphasizing aerobic exercise, resistance training, endurance, ADLs, and avoidance of high intensity exercises helps significantly. Future research in therapy protocols for steroid induced myopathy is warranted. Physiatrists need to be aware of the side effects of steroid use and the treatment modalities for steroid induced myopathy.

Poster 257

One Handed System for Zipping Up a Jacket or Coat

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Objective: To design and build a device that allows a one-armed person to independently zip up a jacket or coat as part of a senior design course. The intended user is a man with a traumatically induced brachial plexopathy of his non-dominant upper limb. He would like to perform this task without his wife's assistance. The students, in one semester, created a reliable and helpful working prototype that has implications for other users such as stroke survivors.

Design: Face-to-face discussions were conducted to determine the patient's needs, the physical limitations of previous devices, the types of jackets and coats to be worn and their material, and the most challenging aspects of zipping up a coat. Working with the patient, the team studied alternative methods for bringing together the ends of the jacket and coat.

Setting: Conference room at free-standing rehabilitation hospital; computer lab and machine shop at College of Engineering.