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POSTER PRESENTATION

(P) 001

SPONTANEOUS SPINAL EPIDURAL HEMATOMA FOLLOWING ANTICOAGULANT THERAPY RESULTING IN TETRAPARESIS

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INTRODUCTION: Spinal epidural hematoma (SEH) is an accumulation of blood in the epidural space that can mechanically compress the spinal cord. It is an exceedingly rare disorder in the absence of trauma or malformation of spinal vessels. We present a case of SEH following anticoagulant therapy resulting in tetraparesis, neurogenic bladder, neurogenic bowel, pressure injury, and severe functional outcomes. **REPORT:** A 42-year-old lady with an underlying ventricular septal defect was diagnosed with extensive left lower limb deep vein thrombosis (DVT) and pulmonary embolism during hospitalization for intractable per vaginal bleeding. IVC filter was inserted prior to the total hysterectomy procedure. Postoperatively, she was started on an oral anticoagulant. Five months post hysterectomy, she developed neck pain and progressive lower limb weakness. On examination, the motor power of upper extremities were 3/5 bilaterally, while the lower limbs were 0/5. The best sensory level was at T1. The lower limbs were flaccid and areflexic. The spine MRI within the same month revealed extensive cervicothoracic extradural hematoma from C5-T1, causing spinal stenosis, cord compression, and edema. She was managed conservatively. The hospitalization was complicated by hospital-acquired pneumonia, grade 4 sacral ulcer, and major depressive disorder in addition to persistent left lower limb DVT, warranting lifelong anticoagulant. The upper limb motor power gradually improved to 4/5, but the lower limbs remained 0/5. She also had neurogenic bladder and bowel. A defunctioning transverse colostomy was performed as part of the sacral ulcer management. Following three months of inpatient rehabilitation, she was still severely dependent on bed mobility and transfer with a Modified Barthel Index of 22/100. **CONCLUSION:** SEH should be suspected when a patient on anticoagulant develops a neurological deficit. Although uncommon, timely diagnosis and intervention may prevent debilitating sequelae from spinal cord compression to ensure favourable clinical and functional outcomes.

(P) 002

MIXED VARIANT ALIEN HAND SYNDROME SUPERIMPOSED ON CALLOSAL DISCONNECTION SYNDROME IN A CORPUS CALLOSAL INFARCT

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INTRODUCTION: The corpus callosum connects both cerebral hemispheres permitting communication and inhibitory influences on cognitive, somatosensory, motor, executive and visual information. Its neural connections are extensive, and its exact functions are still not clear. Corpus callosum ischemic stroke is rare due to its rich dual blood supplies. We present a case of corpus callosum infarct presenting as callosal disconnection syndrome (CDS) with superimposed mixed variant alien hand syndrome (AHS). **REPORT:** A 57-year-old right-handed woman presented with a sudden onset of left hemiparesis and slurry speech. The Glasgow Coma Scale (GCS) was full, and the motor power scale of the left upper and lower extremities was 4/5. Computed tomography (CT) brain revealed an acute right temporal infarct. A repeat CT brain on day two due to a drop in GCS revealed an evolution of acute right temporal infarct with new acute corpus callosum infarct extending from the right genu to the left splenium. She manifested a myriad of features suggestive of AHS from all three variants: the frontal, callosal and posterior. That includes the paretic hand object grasping and manipulation, intermanual conflict where the left hand antagonized the right hand's actions, and involuntary arm levitation during ambulation. The presentation was complicated by the features suggestive of CDS, such as ideational apraxia, dissociative phenomenon, pseudobulbar affect, cognitive impairment, and transcortical motor aphasia. She also manifested frustration due to the inability to control the left-hand movement by frequently hitting the left hand hard onto the table (autocriticism). Treatments include clonazepam for AHS, limb restraint approach, verbal cue, mirror box therapy, and relaxation technique. **CONCLUSION:** Clinical manifestations of corpus callosum lesions are wide, non-specific, and pose unique challenges to rehabilitation practitioners. More studies are needed to address the treatment and rehabilitation strategies for callosal lesions and AHS.

(P) 003

A REPORTY ON SARS-CoV-2 VACCINE-ASSOCIATED ACUTE TRANSVERSE MYELITIS

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INTRODUCTION: Coronavirus disease (COVID-19) has been associated with several neurological manifestations such as stroke, Guillain- Barré syndrome, and meningoencephalitis, amongst others. However, there are only a few reported cases of transverse myelitis. We present a case of transverse myelitis following SARS-CoV-2 BNT162b2, Pfizer vaccine resulting in incomplete paraplegia, and neurogenic bladder. **REPORT:** A 66-year-old man presented with urinary hesitancy for two days and bilateral lower limb weakness and numbness for one day following the second dose of covid-19 vaccination. On examination, the MRC motor power was 3/5 for the right lower limb and 0/5 for the left lower limb, reduced light touch and pinprick sensation from T8 downwards, hyporeflexia, and downgoing plantar responses. On per-rectal examination, deep anal pressure was preserved with weak anal tone and absent bulbocavernosus reflex. The spine MRI revealed subtle enhancement with thickened conus medullaris and a mild increase in T2/STIR signal intensity, suggestive of an early stage of acute transverse myelitis. Cerebrospinal fluid analysis was unremarkable. He received a combination of intravenous methylprednisolone, plasmapheresis, and immunoglobulin, followed by a tapering dose of prednisolone. Three months after onset, the motor power had improved to 4/5 over the right lower limb and 3/5 over the left lower limb. He achieved independent ambulation by using a walking frame. A repeat MRI revealed improvement in inflammatory changes. He continued to report urinary hesitancy, urge incontinence, and an incomplete voiding sensation. Single channel cystometry revealed low pressure and compliant bladder with significant residual urine. He started performing the clean intermittent self-catheterization technique following the cystometry. **CONCLUSION:** To our knowledge, this is one of the early reported cases of transverse myelitis post- COVID-19 vaccination in Malaysia. The scarcity of literature associating SARS- CoV-2 vaccines with transverse myelitis necessitates further investigation to ascertain the underlying correlation.

(P) 004

MORBID HUNGER AND HYPERPHAGIA POST TRAUMATIC BRAIN INJURY IN A YOUNG MALE: A REPORT ON REHABILITATION APPROACH

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INTRODUCTION: Morbid hunger and hyperphagia are uncommon consequences of traumatic brain injury, manifesting in behaviors of disinhibition, impulsiveness, poor insight, and self-neglect around food. Our case report elucidates strategies to overcome these unique conditions. **REPORT:** A 23-year-old male sustained a severe traumatic brain injury following a motor vehicle accident. CT brain revealed multiple intracranial hemorrhages, which were conservatively managed. Upon examination, he appeared alert and obeyed simple commands. His mini mental state examination (MMSE) score was 15/30. He was 180cm in height and weighed 71 kilograms. He had colossal cravings for high-calorie and sweet food and displayed irritability and self-harm when his demands were unmet. He demanded food round the clock and consumed double the daily calories needed. He consumed only 65% of the daily protein requirement. He also experienced visual and auditory hallucinations. Despite that, his agitated behavioral scale (ABS) was 6. Although initiation of antipsychotics ameliorated his hallucinations, he continued to manifest morbid hunger and gained 5 kilograms within two weeks (76.6kg). He was started on escitalopram 5 mg daily for the hyperphagia. We implemented several rehabilitation approaches. Food portion was controlled by increasing fiber intake for satiety and providing a high protein diet. Food was kept away from the patient's sight other than mealtime. He was kept occupied with therapy and bedside training activities. We incorporated cardio-endurance exercises for weight loss along with ambulation training. The hyperphagia gradually resolved, and by six months post rehabilitation, the escitalopram was discontinued as the symptoms completely disappeared. **CONCLUSION**: Morbid hunger and hyperphagia post-traumatic brain injury can be well managed with pharmacological and non-pharmacological approaches such as dietary and environmental modifications, along with therapeutic exercises aiming gearing toward weight loss.

(P) 005

A TOOL FOR MONITORING ACCESSORY RESPIRATORY MUSCLES DURING QUIET AND FORCEFUL BREATHING AMONG PEOPLE WITH SPINAL CORD INJURY

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INTRODUCTION: The aim of this study is to monitor and compare the sternocleidomastoid (SCM) and rectus abdominis (RA) muscles' activity during quiet and forceful breathing among people with spinal cord injury (SCI) using a simple muscle measurement device. **METHODS:** Two mechanomyography (MMG) sensors were attached to the SCM and RA muscles from three people with SCI. The signal was collected while at rest during quiet breathing. Meanwhile, during forceful breathing, the participants inhaled and exhaled three times. Throughout the forceful breathing, moments of inhaling and exhaling were identified accordingly. **RESULTS:** Compared to RA, the sensor from SCM was able to differentiate between inhale and exhale activities more significantly ($P < 0.05$). This is in line with the responsibility of SCM during deep and vigorous breathing. Meanwhile, RA showed no significant difference between inhale and exhale activities. This may suggest that RA muscle was less responsive during forceful breathing due to the level of injury (above T6). **CONCLUSION:** The muscle sensors from MMG were able to detect and differentiate SCM and RA performances during quiet and forceful breathing. This validates the MMG sensors as a tool to monitor the accessory respiratory muscles among people with SCI. Future research should explore the potential of the sensors in other conditions to detect residual motor functions that may not be palpable during clinical examination.

(P) 006

VitalStim –PROVING VITAL IN THE TREATMENT OF DYSPHAGIA

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INTRODUCTION: Neuromuscular electrical stimulation (NMES) has gained important practical grounds in the field of rehabilitation medicine. It incorporates usage of electrical currents to produce muscle contractions aiming to restore motor function. Transcutaneous NMES (VitalStim) has been approved by the US Food and Drug Administration in 2001 for dysphagia treatment. **REPORT:** Mr. PK, a 73-year-old male, was diagnosed with a left transverse sinus thrombosis secondary to malignant otitis externa. His impairments upon presentation were cognitive dysfunction, right upper limb hemiparesis and dysphagia which were present for 11 months. He was functionally total carer dependent. 6 months following an outpatient program, he was admitted for inpatient rehabilitation aiming to improve his swallowing function using VitalStim. He was frail and cachexic. On the bedside water test, he coughed upon the first trial of thin fluid, with presence of poor hyolaryngeal elevation (HLE), delayed swallow and wet voice. He underwent 11 daily sessions of VitalStim. Flexible endoscopic evaluation of swallowing (FEES) post-treatment showed oropharyngeal dysphagia. However, he was deemed safe for swallowing nectar thick consistency of fluids and soft diet. Meal assessment post-FEES showed he was able to safely consume soft diet furthermore finished three quarters of his meal. **CONCLUSION:** VitalStim is safe, easy, practical and an effective adjunct to the treatment of dysphagia.

(P) 007

FIBULA ABDUCTION, AN UNCOMMON CAUSE OF CHRONIC STUMP PAIN

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INTRODUCTION: Limb amputation may lead to painful and non- painful sensation that can be grouped into 3 categories: phantom limb pain, residual limb pain and phantom sensation. It is reported that up to 95 percent of amputees experienced at least one of these categories. In contrast, delayed or gradual abduction fibula deformity that leads to more prominent bony prominence and stump pain is relatively uncommon. **REPORT:** We present a case of a 46-year-old gentleman who had MVA in 2015. He sustained left femur fracture and crush injury on left shin; and underwent femur interlocking nail and left transtibial amputation. This was later complicated by a distal fibula prominence observed since 2018, of which, he was advised for surgical excision, but refused. He complained of stump pain for many years which was initially tolerable, but for the past few weeks worsens, characterized by dull and localized pain. This is aggravated when standing and walking with prosthesis. Upon examination of left stump, no wound or pressure ulcer was observed, instead there is tenderness at palpation of distal fibula. By comparing with previous imaging, current X- ray revealed that the fibula is abducted from tibia resulting in more distal bony prominence. Surgical revision is often necessary upon detection. If this is left untreated, fibula will abduct further and distal end becoming more prominent, exacerbated by gradual weight bearing with prosthesis, resulting in worsening pain as we observed in this case. **CONCLUSION:** This case demonstrates the importance of complication prevention by excision of the fibular remnant shorter than tibia when identified. Patients need to be advised on the potential complication of not doing surgery excision of fibula, which includes not only chronic pain or soft tissue injury, but also problematic fibula abduction.

(P) 008

CATHODAL tDCS AS A POTENTIAL SEIZURE THERAPY IN LOCAL PRACTICE

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INTRODUCTION: The main effect of transcranial direct current stimulation (tDCS) is thought to be stimulation of neural activity through depolarizing (anodal) or inhibition through hyperpolarizing (cathodal) of the membrane potential. In local practice, anodal tDCS is commonly used to stimulate the recovery of speech & motor function in post stroke patients with no history of seizure. Presently, there are emerging studies showing potential use of cathodal tDCS for epilepsy treatment. **REPORT:** We present a case of a 36-year-old lady with focal cortical dysplasia & seizures originating from the left sensory cortex. She underwent awake resection of the sensory cortex 10 years ago. Despite being on 5 antiepileptic drugs, she was still having frequent seizures. She was admitted to Neurology ward and then referred to the Rehabilitation Medicine team for tDCS. Patient was explained carefully on the tDCS benefit and risk of seizures. The cathodal placement is targeted at the epileptic waveforms identified from electroencephalogram; while for anodal placement, it is best to avoid epileptic waveforms. Patient received 10 sessions of tDCS (montage: cathodal at C3/Cz, anodal at right supraorbital or shoulder, intensity: 1 mA, duration: 20min inhibition, 20min rest, 20min inhibition), and was closely monitored for any seizures during and after the therapy. No seizures occurred during and immediately after tDCS. After completing 10 sessions, her seizure frequency reduced from 5 times per day to 1 or none per day. In the following 2 months of clinic follow-up, her seizure frequency markedly improved, reducing from a daily occurrence to only twice per week. **CONCLUSION:** tDCS is a useful neuromodulation with cathodal and anodal electrodes, which both has its own separate therapeutic effect and benefit. This case demonstrates potential use of cathodal tDCS for intractable epilepsy.

(P) 009

CASE REPORT: BACK ON TRACK POST RIGHT HEMISPHERE STROKE

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INTRODUCTION: Right hemisphere stroke can lead to left-sided body weakness, hemineglect, and cognitive- communication disorder. Recent years have seen the emergence of neuromodulation for stroke recovery. We would like to share our experience using chemical and electrical neuromodulation during the subacute stroke phase in this patient who showed good post-stroke recovery. **REPORT:** We present a case of Mr. XX, a 42-year-old e-hailing driver with underlying type 2 diabetes, hypertension, and dyslipidaemia who was diagnosed with total anterior circulation infarct after he was found lying on the bathroom floor (National Institute of Health Stroke Scale - NIHSS 17). CT brain angiogram of the brain confirmed an occlusion at the distal M2 segment of the right middle cerebral artery (Alberta Stroke Program Early CT score - ASPECTS 5). In view of late presentation, he was deemed ineligible for stroke reperfusion therapy. A repeated CT brain 48 hours later revealed early haemorrhagic transformation at the frontal lobe. Mr. XX was then transferred to our rehabilitation ward on post-stroke day 12 for management of severe left hemineglect and cognitive- communication disorder. He was started on NeuroAid on post-stroke day 19. After 3 days of NeuroAid initiation, we noted a complete resolution of his left hemineglect. Subsequently, 10 sessions of online Transcranial Direct Current Stimulation (tDCS) were carried out for him, targeted to improve the cognitive-communication disorder. He progressed well with improvement seen in his cognition, speech, motor function and Activity of Daily Living -ADL (Figure 1). He received a total of 4 weeks of in-patient rehabilitation. Post-discharge, patient and family reported good functional recovery in communication especially noted instance where Mr. XX was able to communicate effectively to prospective tenants of his rental properties. He returned to work as a delivery man. **CONCLUSION:** Neuromodulation given during the subacute stroke phase in combination with rehabilitation can enhance recovery post-stroke and maybe the future of stroke rehabilitation.

(P) 010

RESPIRATORY DISTRESS AS PART OF AUTONOMIC DYSREFLEXIA: AN UNUSUAL PRESENTATION

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INTRODUCTION: Respiratory impairment is common following cervical/thoracic spinal cord injury (SCI) due to reduced lung capacity and autonomic dysfunction. Autonomic dysreflexia (AD) occurs in SCI at or above the T6 level and the symptoms include severe headache, bradycardia, and facial flushing, along with pallor, cold skin, and sweating in the lower part of the body. Bronchospasm can occur due to unopposed vagal response in systemic sympathetic activation during AD. Here we describe how respiratory distress can be part of AD. **REPORT:** Mr. T, sustained traumatic SCI C3 AIS B with right 1st-3rd ribs fracture with right haemothorax, and left pleural effusion. He required high setting of ventilatory support and was difficult to wean down the ventilator setting despite resolution of effusion and absence of pneumonia. The first presentation of AD with desaturation occurred due to neuropathic pain over bilateral lower limbs. His saturation improved after adequate pain control with analgesia. Another episode of AD with desaturation occurred due to unregulated bowel. His saturation improved after manual evacuation of impacted stool. During the AD episodes, he presented with persistent hypertension, hyperhidrosis with respiratory distress, as evidenced by respiratory acidosis and hypercapnia in ABG. With the cessation of noxious stimulation and oxygen administration, the signs and symptoms of AD resolved with improvement of respiratory parameters. **CONCLUSION:** The acute parasympathetic response in the airway to systemic sympathetic activation during AD may cause bronchospasm, hence results in respiratory insufficiency. This case revealed that respiratory insufficiency may be one of the signs during an episode of AD.

(P) 011

FUNCTIONAL OUTCOME OF INTENSIVE IN-PATIENT REHABILITATION FOR STROKE PATIENTS

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INTRODUCTION: Stroke is a common cause of mortality and disability globally including Malaysia. Stroke rehabilitation plays an important role in post stroke care to reduce disability and mortality. Geriatric Rehabilitation Ward in Hospital Kuala Nerang was the first in-patient rehabilitation service established in Kedah state under cluster hospital project since November 2017. It received all adult patients regardless of age who required in- patient rehabilitation service, and the vast majority of them were stroke patients. The objective of this study is to analyse the functional outcome of stroke patients after receiving intensive in-patient rehabilitation program in Geriatric Rehabilitation Ward. **METHODS:** This was a retrospective cross-sectional study, data collection was done via retrieving the medical records for all patients admitted from 1/1/2018 until 31/12/2019. Non-stroke patients were excluded from the data analysis. Modified Barthel Index (MBI) was used as the outcome measure for functional recovery. It was categorized into 4 categories which are total dependent (0-39), moderate dependent (40-59), mild dependent (60-79) and independent (80-100). R statistical software, Version 3.5.2 was used for data entry and analysis. **RESULTS:** There were total of 85 stroke patients admitted during that study period, 7 cases had intra-cranial bleed, the rest were ischemic stroke patients. The mean age was 65.7 years old, 62.4% were male, 88.2% were Malay. Upon admission 41.2% of the patients were total dependent, 51.8% were moderate dependent and 7.0% were mild dependent. After intensive in- patient rehabilitation program with median length of stay of 12 days, the total dependent group reduced to 15.3%, moderate dependent group reduced to 35.3%, mild dependent group increased to 43.5% and independent group increased from 0 to 5.9%. There were total of 57 cases (67.1%) achieved at least 1 category improvement. The mean MBI upon discharge (58.4) was significantly higher than mean MBI upon admission (40.7) with p value < 0.001. Age, gender, ethnicity, education level, Charlson morbidity index and severity of stroke did not show significant difference between those achieved at 1 category functional recovery compared to those did not achieve. **CONCLUSION:** Intensive in-patient rehabilitation service helped 2/3 of the stroke patients to achieve at least 1 category of functional recovery regardless of age, gender, ethnicity, education level, co-morbidity, and severity of stroke.

(P) 012

PAROXYSMAL SYMPATHETIC HYPERACTIVITY POST TUMOUR DEBULKING

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INTRODUCTION: Paroxysmal sympathetic hyperactivity (PSH) is a disorder in the regulation of autonomic function commonly observed in patients with traumatic brain injury (TBI) however, a small percentage of patients with brain tumour has the possibility of developing PSH. Here we report a case of PSH in a patient post craniotomy and brain tumor debulking. **REPORT:** A 37-year-old lady, with past history of left parasagittal low grade glioma post- radiotherapy 4 years prior, presented to the emergency department with seizures, headache, and vomiting. Urgent computed tomography (CT) and magnetic resonance imaging (MRI) of the brain showed new left frontal and right parietal lesion. She then underwent craniotomy and tumour debulking. Histopathology (HPE) of the lesion came back as grade IIIB glioblastoma multiforme (GBM). At day 10 post surgery, she was transferred to the rehabilitation ward. On admission, she was noticed to have frequent episodes of high blood pressure, tachypnea, tachycardia, profuse sweating, and right upper limb dystonia. These symptoms occurred periodically lasting from few minutes to 30 minutes the longest. Urgent Electrocardiogram was normal, SpO2 and her blood parameters were all within range. Paroxysmal Sympathetic Hyperreflexia- Assessment Measure (PSH-AM) score was 22, which indicates 'probable' PSH. She was started on T. Propranolol 40mg BD and T. Clonazepam 1mg ON. The air-conditioning was turned on for 24 hours and a standing fan was put next to her. On the next day, the PSH episodes became less frequent and shorter in duration. Three days later, the PSH symptoms resolved completely and on day 5, T. Propranolol was discontinued and lonazepam was continued. No further recurrence of PSH was noted. **CONCLUSION:** There should be a high suspicion of PSH in patients with brain tumour or early period post- tumour debulking. It is important to recognize PSH early and treat immediately. A delay in diagnosis may lead to unnecessary testing and treatment, prolongs the duration of hospital stay and hinder the participation in rehabilitation program.

(P) 013

STROKE AFTER TRAUMATIC BRAIN INJURY: CASE SERIES

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INTRODUCTION: Post traumatic cerebral infarction (PTCI) is a recognized complication of traumatic brain injury (TBI). Here we reported 3 cases of PTCI following initial brain insult secondary to motor vehicle accident (MVA) and discussed its features and management. **REPORT:** The details of the cases presented with PTCI at our centre are as follows; clinically, these cases presented with left hemiplegia, left hemineglect and cognitive impairment. All patients had post traumatic amnesia, but none presented with agitation. Antiplatelet was started for all these cases but on a different day based on the resolution of ICB. Only one patient continued the inpatient rehabilitation programme. He showed improvement in cognition, mobility, and function. **CONCLUSION:** Identification of patients at risk for PTCI can aid in early diagnosis. Immediate rehabilitative interventions can improve patient functional outcomes leading to a better prognosis.

(P) 014

LOW LEVEL LASER THERAOY AS ADJUNCT TOOL TO PROMOTE DIABETIC FOOT ULCER HEALING: CASE SERIES

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INTRODUCTION: Diabetic foot ulcer (DFU) is a common complication of diabetes mellitus. Chronic DFU requires a long time to heal and often end with foot amputation. Low level laser therapy (LLLT) is known to promote cell function and tissue repair. The aim of this article is to present a series of clinical cases using total contact cast (TCC) and LLLT to promote diabetic foot ulcer healing. **REPORT:** The first case is a 60-year-old lady, and the second case is a 47-year-old lady. Both patients had a history of long-standing Diabetes Mellitus Type II (DMT2) and were presented to Diabetic Foot Clinic University Malaya Medical Centre (UMMC) with chronic recurrent foot ulcer. It was a non-infective ulcer and had no features of osteomyelitis. Both patients agreed for TCC in combination with LLLT. The LLLT was administered using LaserCat500. It emits laser light in the red and infrared wavelength area. The duration of LLLT is 5 minutes for each session. The patients were reviewed at our clinic weekly. Both patients' ulcers improved after several weeks the treatment. **CONCLUSION:** Treatment with TCC in combination with LLLT was found to heal the ulcer, shorten the healing duration, and did not cause harmful effect to the patient as observed in this case series.

(P) 015

NOVEL STRATEGY IN CHRONIC POST-AMPUTATION PAIN (PAP) MANAGEMENT: A CASE SERIES OF ULTRASOUND -GUIDED INTERENTION APPROACH

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INTRODUCTION: PAP is a disabling condition that is impactful on a person's quality of life and interferes with prosthesis usage[1]. 95% of PAP is either Residual Limb Pain (RLP) or Phantom Limb Pain (PLP)[2]. Targeting PAP with a multi- treatment approach is now the way forward. **REPORT:** Case 1: 38-year-old gentleman, three years post bilateral transfemoral amputation secondary to limb ischemia. Functionally K3 and prosthetically restored 1 year ago. He developed intractable chronic PLP over bilateral stump mostly distal to amputation level. The baseline pain score was Numerical Rating Scale (NRS) 4 with intermittent severe pain at NRS 7. USG bilateral adductor canal and right femoral cutaneous nerve block were performed. Pain reduced to NRS 2. At 5 months, background pain remains NRS 2 with infrequent breakthrough pain (at most NRS 5). Case 2: 56-year-old lady, post-left transtibial amputation secondary to a diabetic foot ulcer, functionally K3 and prosthetically restored since 2011. She developed severe RLP over the posterior aspect due to neuroma with NRS 7 and a positive Tinel sign despite pharmaco- therapy. USG hydro dissection of the left popliteal nerve was performed using lignocaine and dextrose 5%. She had complete pain relief with Tinel sign negative which lasted for 1 month. At 6 weeks, pain maintained 50% lesser than baseline. **CONCLUSION:** USGI is a promising modality to reduce pain in chronic PAP concurrently with other strategies of multimodal approaches (physical activities, pharmacotherapy, and prosthetic adaptations) for residual pain control. Intermittent repetitive USGI approach to be considered for more effective and longer pain relief.

(P) 016

SUCCESSFUL COLLABORATION BETWEEN HOSPITAL TENGKU AMPUAN AFZAN(HTAA) AND HOSPITAL REHABILITASI CHERAS (HRC): MULTIDISCIPLINARY AND MULTI-CENTER MANAGEMENT OF POST OPERATION SOFT TISSUE RELEASE IN SPASTIC DIPLEGIC CEREBRAL PALSY

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INTRODUCTION: Cerebral palsy (CP) is a non-progressive brain injury which mainly affects the motor function of the body. Spastic diplegic CP is the commonest type which involves more on lower limbs. Surgical intervention is essential to improve functions of spastic muscle and walking ability in cases of worsening spasticity or contracture despite rehabilitation. This case discusses the importance of multidisciplinary and multi-center management to produce a comprehensive pre- and post-operative rehabilitation program in helping patients to achieve the greatest outcome. **REPORT:** A 6-year-old boy, spastic diplegic cerebral palsy GMFCS IV with limited speech has received his initial rehabilitation at HTAA. Based on initial assessment, he was noted to have a potential to stand but it was hindered by the lower limbs contracture. He underwent 2 times of soft tissue operations and had received post-operation rehabilitation as outpatient at HTAA after the 1st operation. However, he did not show any progress due to poor compliancy to therapy in view of transportation issue. He was referred to HRC after his 2nd operation for intensive rehabilitation. Assessment were done using WeeFIM to measure patient functional ability and weekly progress reported by interdisciplinary units. Upon admission, WeeFIM scoring was 42. He was able to stand on the 3rd week of admission and walk with reverse walker on the 5th week with improvement in his communication. He continuously showed good progress until he was discharged with WeeFIM scoring of 62. **CONCLUSION:** Multidisciplinary approach and treatment plan based on International Classification of Functional (ICF) framework is recommended to provide the relevant intervention for the patient. For instance, in this case, the good selection of potential patients and the best timing of referral to HRC by rehabilitation team HTAA contributed to the successful rehabilitation of this patient.

(P) 017

GOOD THINGS COMES WITH REHAB

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INTRODUCTION: Heterotopic ossification (HO) is defined as production of lamellar bone within the soft tissue that results in persistent pain, nerve entrapment, loss of range of motion and loss of functional capacity over the affected area. HO is a rare complication of stroke that mostly occurs around the hip joint and affects the paretic side. Early diagnosis and rehabilitation may improve patient's quality of life. This report presents a case of hemorrhagic stroke developed HO on the left elbow after 3 months. **REPORT:** A 59-year-old man, had not seen by rehabilitation before, presented to our clinic after 3 months post stroke with left hemiplegia due to basal ganglia hemorrhage. Patient was not ambulating yet and motor recovery in the left upper limb was Brunnstrom stage 1 and left lower limb was Brunnstrom stage 3. Upon examination, the left elbow was warm, erythematous, and swollen and there was focal tenderness. Left elbow flexion was limited to 20 degrees. Serum calcium, C-Reactive protein and erythrocyte sedimentation rate were within the normal range except ALP was borderline high, 150 U/L. Left elbow radiograph showed calcified HO around the elbow joint. Rehabilitation of patient was passive stretching, cryo-cuff therapy, pressure garment together with the lower limb strengthening and gait retraining. Indomethacin and Alendronate was started for the treatment of HO. After undergoing therapy for 5 weeks, patient was independent of his self-care and able to ambulate with aids. **CONCLUSION:** This case highlights that rehabilitation may aid in better outcome and improve patient quality of life in post stroke patients with HO, however early diagnosis and rehabilitation can prevent further complication and permanent disability. In addition, non-pharmacological and pharmacological approach can give a good outcome in managing HO.

(P) 018

A PLOT TWIST

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INTRODUCTION: Midbrain stroke syndrome is a rare cluster of symptoms which account for as low as 0.9% of cerebrovascular accidents recorded. It can be challenging to diagnose and yet appear to be tricky in achieving effective rehabilitation. Generally, this syndrome causes an ipsilateral cranial nerve palsy and contralateral hemiplegia or hemiparesis with a particular feature according to the specific involved area. Among the commonest midbrain stroke syndromes are Weber syndrome and Benedikt Syndrome **REPORT:** A 55-year-old gentleman with no known comorbid presented with a history of right sided body weakness and slurring of speech. He is alert and conscious with hypertensive crisis episodes up to 220/110. On examination, unilateral left eye ptosis and contralateral hemiparesis were apparent. NECT brain suggesting acute left PCA territory infarct with subsequent CTA reporting a left PCA thrombosis with left occipital, midbrain, and left cerebral peduncle infarction without evidence of PCOM. Patient was diagnosed as Weber Syndrome and subsequently transferred to rehabilitation ward for intensive rehabilitation. Although his motor power recovery was noticeable, it was striking during therapy sessions that he struggled with his coordination and balance. Thus, a shift in therapy focus was made directing more onto his ataxic issue and with the new additional impairment figured; the diagnosis of Benedikt Syndrome was completed and re-established. **CONCLUSION:** This case highlights a dilemma in establishing the accurate diagnosis of midbrain stroke syndrome. Its peculiar features prompt more attention and details in order to be addressed and not to be missed. Therefore, the understanding of this disease collectively is pivotal to ensure the accurate diagnosis made and the best outcomes generated.

(P) 019

FROM BEDRIDDEN TO INDEPENDENT WALKING: A CASE REPORT ON SUCCESFUL MULTI-MODAL APPROACH TO CONTRACTURE MANAGEMENT

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INTRODUCTION: Joint contracture is a common complication of prolonged ICU stay. 39% of patient has contracture upon discharge from ICU. It is associated with higher mortality and disability for mobility more than 3 years after discharge. Contracture management aims to restore the range of movement and improve the patient's functional outcome. We report the role of eclectic non- surgical intervention combined with multimodal pain management in a patient with multilevel contracture. **REPORT:** Mr. II, a 34-year-old gentleman developed multilevel lower limb contracture with neuropathic pain and allodynia of bilateral lower limb post ICU admission for septic shock with multiorgan involvement. He required a tracheostomy following prolonged ventilation. He had weakness in both upper and lower limbs and was diagnosed with critical illness neuropathy confirmed by a nerve conduction study. He was electively admitted to our ward 9 months post ICU discharge for contracture management with the aim to improve mobility and function. Gradual stretching and serial casting was initiated, however it was limited by hypersensitivity and allodynia. A combination of medication, physical modalities, Extracorporeal Shock Wave Therapy (ESWT) and Photobiomodulation was added to manage his pain. Improvement range of motion of bilateral knees and ankle was achieved after 4 months of admission. Functional improvement from total dependency to mild dependency upon discharge was achieved. Subsequent outpatient sessions shows improvement of mobility from bedridden to walking with walking aids. **CONCLUSION:** Multi-modal non-surgical approaches with adequate pain control may be considered as contracture management to improve mobility and function.

(P) 020

REMOVABLE RIGID DRESSING FOR TRANSTIBIAL AMPUTEE

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INTRODUCTION: Post-amputation pre-prosthetic care is important in preparing the residual limb for prosthetic fitting and earlier ambulation. Residual limb maturation is influenced by wound healing and residual limb volume. Various dressings have been applied to reduce edema and achieve residual limb maturation. Removable rigid dressing (RRD) offers numerous benefits than traditional soft dressing approaches, including reduced limb edema, pain, external trauma to residual limb; prevention of knee flexion contracture; allow regular inspection of surgical wounds with greater ease; which resulting faster wound healing and faster prosthetic fitting. **REPORT:** A 54-year-old lady with underlying diabetes mellitus was admitted for infected right diabetic foot ulcer. She underwent a right transtibial amputation and was then transferred to rehabilitation ward for inpatient training and stump care management. Initially, she had stump pain with a pain score of 7 and her stump shape was bulbous. Soft dressing- figure of 8 bandaging was introduced. However, she had difficulty to perform due to her poor vision and dexterity hand function. Therefore, there was no improvement in her stump pain and shape. RRD was subsequently applied. She was able to be compliant to RRD due to ease of application and removal. After three weeks of applying, her stump pain improved from NRS 7 to 3. Stump size was reduced with an improved shape. Her surgical wound was also healing well. There was no knee flexion contracture or external trauma to her stump. Two stump socks were required to apply for her second cast in order to maintain a comfortable snug fit and to facilitate progressive shrinkage. She would be planned for prosthetic fitting once her wound had completely healed. **CONCLUSION:** For post-operative care of transtibial amputees, RRD should be considered as the first treatment option in order to reduce stump pain, edema, healing time, knee flexion contracture, injury due to fall and time to prosthetic fitting.

(P) 021

EFFECTS OF AMANTADINE IN MINIMALLY CONSCIOUS STATE (MCS): A CASE SERIES IN A MALAYSIA REHABILITATION SETTING

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INTRODUCTION: Amantadine has been suggested to improve cognition for patients in vegetative state and MCS following traumatic brain injury (TBI). Here we present 2 cases of severe TBI patients and the outcome with amantadine. **REPORT:** Case 1: Madam N, a 48-year-old Malay lady with history of motor vehicle accident in October 2019. Case 2: Mr. G, a 61-year-old Chinese gentleman with history of fall in February 2020. Both patients has quadriparesis with poor Glasgow Coma Scale (GCS) recovery requiring tracheostomy, Ryle's tube feeding and are fully dependent on their caregivers. They were both initiated on tablet Amantadine 50mg BD and tapered up to the optimised dose of 200mg BD after 1 week. Coma Recovery Scale-Revised (CRS-R) was done and both patients had improvement, more noticeable in case 1. She was also seen to improve in her attention, ability to understand instructions and more participating in therapy. Case 2, however, was initially inconsistent in his participation but improved in following commands during our clinic review four months later. **CONCLUSION:** In this case series, the effects of amantadine for both patients has been positive with incorporation of interdisciplinary effort to provide enriched environment for them to achieve an optimal outcome.

(P) 022

TREATMENT OUTCOME OF MULTIDISCIPLINARI DIABETIC FOOT CLINIC IN UNIVERSITY MALAYA MEDICAL CENTRE

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INTRODUCTION: There has not been a single study in Malaysia looking into the outcome of outpatient diabetic foot ulcer (DFU) management, especially in a centre that offer multidisciplinary (MDT) approach beyond one year period. The primary objective of this study is to determine the outcome of outpatient MDT diabetic foot care clinic in University Malay Medical Centre (UMMC). The secondary objective is to determine the factors associated with undesirable / poorer outcomes. **METHODS:** This is a retrospective cohort study involving newly referred patient to MDT diabetic foot care clinic in UMMC from 1st January 2017 until 31st December 2017. Treatment outcome will be evaluated after three years of outpatient follow up. **RESULTS:** A total of 243 patients has been included. Desirable outcome is seen in 220 (90.5%) patients while the remaining 23 (9.5%) patients has undesirable outcome. Low incidence of new amputation (0.8%) and reamputation rate (0.8%) with total of only 4 amputations has been recorded. Ulcer recurrence is observed in 5 (2.1%) patients in which 3 of them has previous history of lower extremity amputation (LEA). New ulcer formation is observed in 9 (4.2%) patients with 6 of them are from the high-risk group. Complete healing is achieved in 44% (n=12) while another 11.1% (n=3) show slower healing rate. These figures combined give an overall healing rate of 55.1%. Better results are observed among health centres adopting MDT approach for DFU management. **CONCLUSION:** MDT approach is the key to move forward in management of diabetic foot ulcer (DFU). In this study, we found that foot risk category at time of presentation, presence of diabetic charcot foot (DCF) and presence of diabetic retinopathy (DR) to be the risk factors associated with undesirable outcomes.

(P) 023

3 POINT SHOULDER INJECTION(PSI) – INTERVENTIONAL CASE SERIES

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INTRODUCTION: Shoulder pain can be costly and debilitating among the general population with a lifetime prevalence of up to 70%. Rotator cuff disorders, acromioclavicular joint (ACJ) disease and glenohumeral joint (GHJ) disorders are the most common causes of shoulder pain. Due to the high recurrence rates and considerable number of patients with multisite pain encompassing various structures in the shoulder, treatment can be expensive and repetitive interventions may be required. **REPORT:** We report a prospective interventional case series on the effect of ultrasound-guided 3PSI approach that employs a single point injection into 3 structures which includes the ACJ, subacromial space (long head of biceps tendon, subacromial-subdeltoid bursae and coracoacromial ligament) and GHJ. Five patients aged 48 to 83 years old with shoulder pain for at least three months, limited range of motion (ROM) and a Pain Numerical Rating Scale (NRS) ≥ 5, were included in the study. Ultrasound imaging revealed corresponding pathology over their ACJ, subacromial space and GHJ. A single prolotherapy injection (Dextrose concentration of 12.5% - 25%) was introduced from the ACJ to the GHJ under ultrasound guidance. Dextrose was administered to the innermost structure GHJ, followed by the subacromial space and finally the ACJ as the needle was being withdrawn from the same injection site. Patients reported a 50% to 100% reduction in pain immediately post intervention. In addition, ROM and stretching exercises were taught to patients. Clinically significant improvement of NRS and ROM were reported by patients during follow up. **CONCLUSION:** Patients with shoulder pathologies which include the ACJ, subacromial space and GHJ, may benefit from this unique single-point injection procedure and reduce recurrence of shoulder pain. Higher concentration of dextrose solution (25%) shows improved pain control in our patients.

(P) 024

MORE THAN JUST BACK PAIN': A CASE REPORT ON PARAPLEGIA SECONDARY TO TARLOV CYSTS

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INTRODUCTION: Tarlov cysts or perineural cysts are rare condition and found most commonly in sacral region. The pressure on nerve elements by Tarlov cysts causes lower back pain, radiculopathy, cauda equina syndrome or headache. The lesion is usually diagnosed incidentally on MRI. **REPORT:** A 35-year-old man, with no known comorbid presented with history of lower back pain associated with radiculopathy and progressive lower limb weakness with paresthesia for 1 month duration. Symptoms were not associated with bowel and bladder incontinence. Prior to those symptoms, patient had a history of severe headache with Numerative Rating Score (NRS) of 7-8/10 and significant loss of weight with history of prolonged fever. On examination, reduce bilateral L4-S1 motor power and reduce sensation from L1-S2. Patient had signs of incomplete paraplegia with lower motor neuron signs; areflexia of bilateral lower limbs. The voluntary anal contraction and deep anal pressure was intact. Other investigations to rule out infection, demyelination, muscular and neuropathies was negative. Lumbosacral plain radiograph showed no abnormality. Lastly MRI was done and reported a perineural cyst seen at S1-S3 Level 1.7cm x 4.8cm (AP x CC). Functionally, the patient is able to walk but with a high stepping gait and needs assistive device for functional activities. Patient underwent inpatient rehabilitation. The neuropathic pain was well controlled with desensitization and medications. He also underwent gait retraining with orthosis (Posterior Spring Leaf AFO), strengthening and balance training. **CONCLUSION:** This case highlights that rehabilitation plays an important role in paraplegic patients, especially to achieve a better outcome and improve patients' quality of life. However, practitioner should consider Tarlov cysts as differential diagnosis and patient would benefit from early rehabilitation referral.

(P) 025

FACTORS ASSOCIATED WITH REHOSPITALIZATION IN THE FIRST YEAR OF SPINAL CORD INJURY

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INTRODUCTION: Spinal cord injury (SCI) is one of the leading causes of permanent disability causing devastating changes in physical functioning and independence. This may predispose individuals with SCI to medical complications that may warrant rehospitalization. Rehospitalization rates among SCI individuals has been reported to be high particularly in the first year of injury. **METHODS:** Data were collected from inpatient referral data from January 2018 until December 2019. Information on sociodemographic profile, SCI characteristic, initial hospitalization and rehospitalization within the first year of spinal cord injury obtained through medical records. All variables that were possibly associated with rehospitalization were analyzed with Chi-square test. **RESULTS:** A total of 149 newly diagnosed SCI individuals were referred to the Spinal Cord Injury Rehabilitation (SCIR) team, University of Malaya Medical Centre (UMMC) within 24 months. 4 individuals were excluded as they passed away during acute hospitalization. 27.6% (n=40) had rehospitalization. The three most common reasons are disease related to genitourinary, respiratory, and skin and subcutaneous tissue. Length of hospital stays (LOHS) during acute hospitalization, and marital status were shown to have significant association with rehospitalization ($p<0.05$). Further exploration among patients with longer LOHS during acute hospitalization identified that most of them were above 60 years old and sustained non-traumatic SCI from either neoplastic disease, infection, or degenerative disease. The nature of non- traumatic SCI which is associated with concurrent pathologies and multiple sequelae results in worsening of the disease. In addition, older individuals aged 65 years and above often have longer LOHS. This may be attributed to increased frailty and reduced physiological reserve contributing to occurrence of medical complication during hospitalization. Social support has a substantial contribution to the physical and emotional well-being of individuals with SCI, particularly from their spouses. Those who were single most probably lacked social support, hence increased risk for rehospitalization. **CONCLUSION:** Rehospitalization rates within the first year of injury among SCI individuals locally, is consistent with other study findings. The most common health conditions that contributed to rehospitalization are preventable and warrants early identification and management.

(P) 026

PUSHER SYNDROME: A CHALLENGE IN POST-STROKE REHABILITATION

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INTRODUCTION: Pusher syndrome is a clinical disorder whereby patients actively push away from the non-paretic side towards the paretic side, leading to postural imbalance. It occurs in 10% of hemiparetic patients after a right-sided or left-sided brain damage and is associated with neglect or aphasia respectively. Pushers require an additional 3-6 weeks to achieve the same functional outcome as non-pushers. **REPORT:** A 63 years old “roti canai” chef, developed right basal ganglia bleed complicated with right MCA infarct with midline shift secondary to hypertensive emergency in September 2021 - medically optimised. He developed impairments in attention, speech, swallowing, left hemiparesis, and left hemineglect. He was admitted to Hospital Alor Setar for post-stroke rehabilitation. He depicted features of pusher syndrome while at rest, sitting and during transfer. This phenomenon posed a challenge to his rehabilitation progress. “Scale for Contraversive Pushing” (SCP) objectively measures pusher syndrome. It consist of three criteria with a maximum score of 1 for each, assessed in sitting and standing positions. The criteria are: spontaneous body posture, abduction and extension of non-paretic extremities, and resistance to passive correction of tilted posture.1,4 Based on the SCP, he scored a maximum value of 3 in sitting position but was unable to score in standing position due to his dense hemiplegia and poor standing balance. Mirror visual feedback with a vertical line was incorporated during inpatient rehabilitation (10 minutes daily) and continued in the outpatient setting. His pusher syndrome resolved at 12 weeks post-stroke, with an SCP value of 0 for all three criteria and he showed marked functional improvement. **CONCLUSION:** Early detection of pusher syndrome and implementation of effective therapeutic measures is vital in improving functional recovery.

(P) 027

DOES A DOCTOR IMPAIRS THE REHABILITATION OUTCOME MEASURES?

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INTRODUCTION: Cyclic vomiting syndrome (CVS) is a chronic functional gastrointestinal disorder (FGID) characterized by recurrent episodes of nausea and vomiting with no apparent cause and separated by regular symptom-free period. Although once thought to be a paediatric disorder, there has been a considerable increase in recognition of CVS in adults. This case report aims to highlight the relationships between CVS and rehabilitation outcome measure. This is a single descriptive case report of an individual with right transtibial amputation secondary to right diabetic foot ulcer for pre-prosthesis training. **REPORT:** A 60-year-old lady with right transtibial amputation secondary to right diabetic foot ulcer with underlying diabetes mellitus, hypertension, dyslipidemia, and gastritis was admitted twice for pre-prosthesis training in amputee ward Hospital Rehabilitasi Cheras. Her first admission noted to have multiple episodes of nausea and vomiting which resulted in acute kidney injury secondary to dehydration and urinary tract infection whereby she was treated accordingly. Hence, proper rehabilitation cannot be carried out due to her circumstances and was discharged prematurely. Her second admission after two months noted to have same semiology. However, there was a symptom-free period in between both admissions. Further history taken, she complains that her symptoms started on the day of admission. She claimed it was her anxiety, concern of admissions and doctors' consults that prompt as her triggering factor. Subsequently, she was referred to a clinical psychologist for stress induced vomiting management. Psycho-education and coping skills complemented with pharmacological treatment was executed in resolving her symptoms and improving her rehabilitation outcome. **CONCLUSION:** Rehabilitation outcomes are multi-factorial related. CVS is an uncommon disorder that will lead to poor outcomes. Hence it requires thorough evaluation and management.

(P) 028

PATIENT WITH SECONDARY SUNKEN SKIN FLAP SYNDROME POST AUTOLOGOUS CRANIOPLASTY WITH NEUROLOGICAL REGRESSION AFTER REHABILITATION: A CASE REPORT

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INTRODUCTION: The "Sunken Skin Flap Syndrome (SSFS)" is a syndrome in which neurological regression occurs after removal of a large skull bone flap which is performed for various neurosurgical conditions involving cerebral swelling causing mass effect. The purpose of the case report is to discuss secondary SSFS, a rare complication post autologous cranioplasty and the rehabilitation progress. **REPORT:** This case report discusses a 38-year-old Malay gentleman who suffered left frontal subdural haemorrhage secondary to motor vehicle accident. He underwent left decompressive craniectomy and evacuation of clot plus external venous drainage in September 2020 then subsequently developed delayed hydrocephalus. Right parieto-occipital VP shunt was inserted and left autologous cranioplasty was done in December 2020. Post cranioplasty, patient noted to have improved physically, functionally from carer training rehabilitation to functional <50% and cognitively. However, his wife reported a functional decline in October 2021. This resulted in the patient being more dependent on his wife and he was referred to neurosurgical team and underwent re- cranioplasty in February 2022. Post cranioplasty noted improvement, cognitively, functionally, and physically. **CONCLUSION:** SSFS can happen post craniectomy or post cranioplasty, both can cause significant neurological regression. However, with prompt recognition of this rare complication and intervention, patient can still improve post re-cranioplasty with rehabilitation.

(P) 029

MIMICS OF VESTIBULAR DISEASE: HYDROCHLOROTHIAZIDE USE AND ITS SIDE EFFECT

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INTRODUCTION: Hydrochlorothiazide is a common antihypertensive and its common side effects are hypokalemia, orthostatic hypotension, abdominal pain and diarrhea/constipation. Here we would like to report about Madam M who experienced vestibular disease-like symptoms while on hydrochlorothiazide and its impact on her life. **REPORT:** Madam M ,66 years old Malay lady with underlying hypertension for the past 2 years presented with imbalance during walking, dizziness upon postural change and light headedness for the past 5 months which interrupt her daily chores especially domestic activities such as cooking. She was started on T. hydrochlorothiazide 25 mg od prior to the start of her symptoms. Among the investigations done such as CT brain, Dix Hallpike and Frentzel glass test did not show any abnormalities. She was referred to a vestibular rehabilitation clinic due to her vestibular-like symptoms. Upon assessment there was no neurological deficit and blood pressure measurement showed no postural drop. Her hydrochlorothiazide was discontinued and Perindopril 2mg was increased to 4mg.Subsequently her symptoms improved within 2 weeks. Dizziness Handicap Inventory which assesses the impact of dizziness upon daily functioning showed improvement from 32/100(mild handicap) to 4/100 (no handicap). The other assessments such as videonystagmography, rotating chair and video head impulse test were normal. The assessment done by physiotherapist which includes Berg Balance Scale, Dynamic gait index and sensory organization test were normal. **CONCLUSION:** Studies have shown that Hydrochlorothiazide has an association with headache about 1.92% and vertigo 1.44% as the commonest side effect however this case report has shown that disability that results from this medication can be quite profound.

(P) 030

PTYALISM IN AMYOTROPHIC LATERAL SCLEROSIS(ALS): A CASE REPORT ON A SUCCESFUL ULTRASOUND GUIDED (USG) BOTULINUM TOXIN INJECTION(BoNT-A)

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INTRODUCTION: Amyotrophic lateral sclerosis (ALS) is a progressive neurodegenerative disorder of the motor neuron (MND). It manifests as upper and lower motor neuron signs which include ptyalism (sialorrhea). Sialorrhea occurs in up to 25% of the MND population and is known to be the most disabling symptom. Sialorrhea is caused by the inability to swallow secretions due to various reasons. Non-invasive and invasive interventions are potential treatment options for sialorrhea. Abobotulinum and Onabotulinum toxin A are considered effective in treating sialorrhea with limited side effects. **REPORT:** A 69-year-old female diagnosed with classical ALS since 2021. Her impairments were dysphagia, sialorrhea, and respiratory involvement requiring Non-Invasive Ventilation (NIV). Sialorrhea was interrupting her NIV usage. She was started on various medications individually which were sublingual Atropine drops, Scopolamine Patch, and Amitriptyline. Pharmacotherapy was ineffective and caused side effects. USG BoNT-A injection (Dysport® 500 U) at bilateral parotid gland (75U each) and bilateral submandibular gland (50U each) performed (Fig.1). Her Drooling Frequency and Severity Scale (DFSS) pre- procedure was 8 and after two weeks reduced to DFSS 4 without experiencing any side effects including dysphagia. **CONCLUSION:** BoNT-A injection is a potential minimally invasive treatment option for severe sialorrhea in ALS patients besides pharmacological, behavioral, dental, and surgical intervention. Injecting the optimal dosage of BoNT-A is essential in effectively reducing hypersalivation. DFSS is a reliable tool to quantify sialorrhea.

(P) 031

ULTRASOUND-GUIDED STELLATE GANGLION BLOCK IN THE TREATMENT OF CENTRAL POST-STROKE PAIN: A CASE REPORT

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INTRODUCTION: Central post-stroke pain (CPSP) is a common pain syndrome after a stroke. The pain is distressing, and the treatment is challenging due to the resistance to pharmacotherapy. Stellate ganglion block (SGB) is a valuable method in treating neuropathic pain conditions but the least reported modality for treating CPSP. A brief appearance of ipsilateral Horner's syndrome is a meaningful sign of a successful blockade. **REPORT:** We report a case of recalcitrant CPSP to pharmacotherapy, successfully alleviated post- SGB. Mr. Z is a 65-year-old right-handed gentleman who suffered from a 2-year history of recurrent stroke. The first left subcortical stroke resulted in mild right hemiparesis. However, it was associated with severe burning pain predominantly affecting the right hand, which worsened a month post-stroke. Coincidentally during the same period of worsening pain, he had a recurrent stroke of the contralateral subcortical region resulting in marked hemiparesis and hemisensory loss, leading to further debilitation. The pain was resistant to pharmacotherapy despite optimising his medicine. His severe pain significantly affected his sleep and residual hand function and caused intolerance to therapy, leading to emotional distress. Brain imaging correlates with his clinical findings. He also has a long-standing left Horner's syndrome that developed after the previous removal of a benign lesion on his left neck. He underwent ultrasound-guided SGB at our daycare centre. Right Horner's syndrome indicating a successful block caused a brief distressing moment for him that turned out to be a rewarding experience on subsequent follow-up. Post-procedure, he reported marked improvement in pain with the Numerical Rating scale (NRS) from 10 reduced to 5. At 5 months post- procedure, the SGB effect is still sustained. The NRS was maintained at 5 with less dose of analgesic agents. Functionally, he can perform more activities like feeding and grooming and participate well in therapy. Furthermore, his mood improved due to improved sleep quality. **CONCLUSION:** Ultrasound-guided SGB is a reliable treatment option to alleviate CPSP refractory to pharmacotherapy.

(P) 032

BRACHIAL PLEXOPATHY IN A COVID-19 PATIENT TREATED WITH LOW-LASER THERAPY: A CASE REPORT

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INTRODUCTION: Low-Level Laser Therapy (LLLT) has been used since the late 1970s as a therapy for neural rehabilitation. It promotes nerve recovery by producing both structural and cellular changes in exposed neurons, reducing pain and improving motor function. We present a case of brachial plexopathy in a patient with COVID-19 treated with LLLT. **REPORT:** A 23-year-old, right-hand dominant lady, with underlying bronchial asthma and obesity class III, presented with fever, dry cough and pleuritic chest pain for four days. She was diagnosed with COVID-19 infection. She required endotracheal intubation and was admitted to the Intensive Care Unit (ICU). Prone position was applied for three cycles. She was successfully extubated after ten days. However, she noticed neuropathic pain and numbness of her left upper limb with left wrist drop since extubation. Examination revealed hypotonia and weakness of her left upper limb without muscle wasting. Sensation was reduced on ulnar distribution over the left hand. Nerve conduction study and electromyography confirmed brachial plexus injury. She underwent physical therapies for her left upper limb, and a left-hand splint was provided. LLLT was administered on the area of the neck overlying the brachial plexus. The patient had neurological and functional recovery but still has weak hand-prehension. There were no adverse effects as a result of LLLT. **CONCLUSION:** LLLT is a non-invasive and safe therapeutic modality. It can be considered as part of the multimodal approach in the treatment of patients suffering from peripheral neuropathy. More studies will need to be done to elucidate the exact treatment effect of LLLT among patients.

(P) 033

FUNCTIONAL RECOVERY OF PEDIATRIC PATIENT WITH NEUROLOGICAL MANIFESTATION IN COVID -19 INFECTION: REPORT OF TWO CASES

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INTRODUCTION: Coronavirus 2019 (COVID-19) infection may present primarily with neurological symptoms in paediatrics. **REPORT:** Case One: An 11-year-old boy, presented with 2 weeks history of lower limbs weakness and difficulty to walk. Neurological examination noted muscle power Medical Research Council (MRC) of lower limbs proximally 2/5, distally 1/5. The cerebellar signs noted positive predominantly at the left sided and Babinski responses were upgoing bilaterally. Admission screening tests were positive for COVID infection. MRI T2W/FLAIR image showed hyperintensities at left superior cerebellar peduncle, posterior part of pons, occipital lobe and entire spinal cord extending from the cervical-medullary junction to T11/T12 level (Figure 1). He was served 1 dose of Intravenous Immunoglobulin, 5 days of IV Methylprednisolone and tapering dose of oral prednisolone. He improved and was discharged after 17 days of admission, with proximal lower limbs MRS 5/5 and distal lower limbs MRS 4/5. Subsequent follow-up noted he achieved full neurological recovery 4 months later with rehabilitation programme. Case Two: A 14-year-old boy, presented with one day history of altered consciousness and neck pain. Neurological examination noted bilateral upper and lower limbs weakness, only managed horizontal movements. COVID infection was confirmed during admission screening. MRI T2W showed intramedullary hyperintensity at C2 to C3 level (Figure 2). He was given IV Methylprednisolone for 5 days and tapering oral prednisolone. He was intubated for 3 days for respiratory failure and admitted for a total of 10 days. He was discharged well with muscle strength MRC 4/5 generally, able to ambulate with minimal assist. He achieved full neurological and functional recovery in 2 months with a rehabilitation programme. **CONCLUSION:** Neurological manifestation of COVID-19 infection may be the primary presentation in paediatric patients even without pulmonary involvement. Early diagnosis, treatment and rehabilitation confers good prognosis in the functional recovery.

(P) 034

EARLY REFERRAL TO A MULTIDSCIPLINARY TEAM REHABILITATION PROGRAMME IMPROVES OUTCOME IN FND: A CASE SERIES

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INTRODUCTION: Functional Neurological Disorder (FND) is a medical condition of common neurological movement disorders caused by an abnormality in how the brain functions. Symptoms are clinically recognisable, but are not categorically associated with a definable organic disease such as limb weakness, movement disorder, seizures and etc. Patients benefit from a multidisciplinary approach in managing their symptoms. **REPORT:** Case 1 is a 19-year-old lady with underlying Major Depressive Disorder with anxiety attack. She complained of back pain with body weakness in April 2021. She was diagnosed with Functional Neurological Disorder in October 2021 and referred to HRC for improvement in her activity of daily living and ambulation. Case 2 is a 57-year-old gentleman with underlying dyslipidaemia. He developed involuntary movement with headache since March 2013 and was diagnosed to have Parkinson disease. However, he was not responding with medication. His diagnosis were revised to Functional Parkinsonism in 2022 and was referred to HRC. The aim was to manage his tremor, energy conservation, work simplification, pain management and ambulation. **CONCLUSION:** Both cases improved in function and were able to achieve their rehab goal. In overall, case 1 was able to return to previous life role in full capacity. Furthermore case 2 was able to ambulate unaided, reduce tremor and return to work with light work duty. Case 1 have a better prognosis as it was referred earlier. In conclusion, rehab is an important aspect of recovery for FND patients regardless of the time of their diagnosis.

(P) 035

APPROACH TO MOVEMENT DISORDER IN REHABILITATION SETTING

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INTRODUCTION: A growing number of the population is affected by movement disorders, and they are progressive and incurable. Hence, rehabilitation to minimize impairment and maximize ability and participation of patients in their activity of daily living (ADLs) is important. These interventions must be directed to the person and not solely the diagnosis, as we aim to improve the "functional health" of the patient. **REPORT:** CASE 1: Mrs. J, a 57-year-old lady, with underlying hypertension was admitted for rehabilitation following a right pontine bleed which occurred in October 2020. She was diagnosed to have post stroke hemiballism over the left upper limb with an ataxic gait. CASE 2: Mr. N, a 27 year old gentleman, with no comorbidities had a history of motor vehicle accident in 2013 and sustained severe traumatic brain injury. He had received post-traumatic rehabilitation at a few hospitals before the patient was referred to us in November 2021. He was noted to have truncal with bilateral limb ataxia which affected his daily functioning. Both patients were initially dependent on their carer to perform ADLs. However, with intensive rehabilitation involving core muscle strengthening, weighted exercises, and application of physical aids, they progressed to be more functional. **CONCLUSION:** The above cases shed light that an intensive rehabilitation programme which includes weighted exercises can be effective in improving functional outcomes and more importantly improvement in ADLs for patients with ataxia in chronic neurological condition.

(P) 036

UNILATERAL FACIAL NERVE PALSY AS INITIAL PRESENTATION IN GUILLAIN-BARRE SYNDROME POST COVID-19 INFECTION

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INTRODUCTION: Guillain-Barré Syndrome (GBS) is a collection of clinical syndromes manifesting as an acute immune-mediated polyradiculoneuropathy typically characterised by ascending limb weakness and areflexia. It is a rare but significant neurological complication of COVID-19 infection. Cranial nerves involvement can occur in GBS in which bilateral facial nerve palsy appears to be most common. Rarely, unilateral facial nerve palsy can occur as initial presentation of GBS. **REPORT:** We present a case of a 33-year-old gentleman who was day-6 tested positive for COVID-19 infection presented with right lower motor neuron (LMN) facial nerve palsy, slurred speech with no limb weakness. He was treated as Bell's palsy and discharged home. 12 days later, he presented again to hospital with bilateral LMN facial nerve palsy, progressive ascending bilateral lower limb weakness with power 1/5, areflexia and reduced sensation over right lower limb. Investigations were in favor of diagnosis of GBS in which cerebrospinal fluid analysis revealed cytoalbuminologic dissociation and nerve conduction study showed bilateral symmetrical sensorimotor demyelinating polyneuropathy with secondary axonal loss. He had near- complete recovery 3 weeks post Intravenous Immunoglobulin (IVIG) and was discharged home well. **CONCLUSION:** GBS is a potentially life-threatening complication of COVID-19 infection. In GBS, facial nerve palsy, usually facial diplegia, often follows limb weakness. In this case report however, we saw unilateral facial nerve palsy as the initial presentation of GBS and it later became bilateral as the disease progressed followed by ascending limb weakness. In GBS with an atypical presentation, diagnosis and treatment is often delayed. Atypical GBS are also found to have a more rapid disease progression. Thus, clinicians should have high index of suspicion for diagnosis of GBS in patients post-COVID-19 infection presenting with lower motor neuron facial nerve palsy either unilateral or bilateral.

(P) 037

WALKING WITH AMC

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INTRODUCTION: Arthrogryposis multiplex congenital (AMC) is a complex condition characterized by deformed joints with an intact sensory system. Consequences of muscle weakness and joint contractures and limb lengths in the lower limbs influence walking ability. With orthoses most of these children achieve functional ambulation. The challenges for these children will be the needs for constant changes of orthoses designs and fabrications at a low cost. **REPORT:** MA, a 10-year-old boy with AMC and Di George Syndrome was first referred at the age of 4 years old for ambulation post temporary hemiepiphysiodesis of left distal femur and left proximal tibia. He was initially prescribed with resting splint to maintain his left knee range of motion, in addition to regular physiotherapy for range of motion exercises, strengthening exercises in preparation for functional ambulation. With the limited left knee range of motion, limb length discrepancy and poor cosmetic outcome, MA also went through multiple limb corrective and lengthening surgical interventions over the years. After each surgical intervention, a new orthosis has to be fabricated, but with the absence of an in-house Certified Prosthetist and Orthotist, making the prescription and designing suitable and functional orthosis a great challenge for us. However, with the close collaboration between the medical team and the in-house orthotic technicians, orthosis with various designs were fabricated accordingly after each surgical interventions, it evolved from a non-hinged knee ankle foot orthosis (KAFO) to extension thermoplastic KAFO, including the special light weight foot component extension to accommodate for his muscle power and range of motion during ambulation. **CONCLUSION:** Every prescription of an orthosis has to be based on the presence of muscle power, joint contractures, or the needs for joint stabilization during the gait cycle for a child with AMC. Here, all orthoses were custom-made according to the growth development and post-surgical interventions to achieve independent functional ambulation.

(P) 038

GENICULAR NERVE BLOCK (GNB) FOR INTACT LIMB OSTEOARTHRITIC KNEE PAIN TO FACILITATE PRE-PROSTHETIC TRAINING

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INTRODUCTION: Transfemoral amputees are twice as likely to develop symptomatic osteoarthritic knee pain in the intact limb as compared with nonamputees thus, minimally invasive pain control via perineural injections such as GNB could provide longer term pain relief compared to oral analgesia. USG guided GNB regardless of pharmacological agents shows sustained improvements in both pain and knee function up to 6 months with minimal side effects. **REPORT:** This clinical case report aims to highlight how GNB successfully alleviated pre-existing chronic KOA pain in the intact limb of a 70-year-old lady with underlying left Transfemoral amputation secondary to chronic venous insufficiency who was admitted for inpatient pre-prosthetic training. Radiographically right KOA is Kellgren-Lawrence grade 4. Pre-prosthetic training was hampered by persistent pain of Numerical Rating Scale (NRS) 7/10 at right knee over medial and lateral joint line even with optimised oral analgesia. Post USG guided GNB to superior-medial, lateral, and inferior-medial branches (1cc lignocaine + 3 cc bupivacaine), pain score reduced to 1/10 which was maintained throughout inpatient stay which translated into improvement from initial wheelchair mobility to hopping with walking aid for 12 meters, Modified Barthel Index score from 62% to 71% and KOOS (Knee Injury& Osteoarthritis Outcome Score) 37% to 71%. **CONCLUSION:** Our findings suggest that GNB effectively relieves chronic KOA pain thus improving function and participation. Further studies are needed to determine efficacious dosage and comparison with other modalities.

(P) 039

WHEN AUTONOMIC DYSREFLEXIA BECOMES A NIGHTMARE

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INTRODUCTION: Autonomic Dysreflexia (AD) is a dangerous condition affecting spinal cord injury (SCI) patients in lesions above T6 resulting from noxious stimuli below the level of SCI causing over-activation of sympathetic autonomic nervous system including hypertension, sweating, and headache, as well as paroxysmal bradycardia. Left unmanaged, AD can cause stroke, cardiovascular events and death. **REPORT:** Mr. F is a 33-year-old man who sustained a traumatic SCI 7 months ago with neurological level of injury C6 AIS A with motor ZPP C7, complicated with pulmonary embolism requiring anti-coagulation and right lower limb deep vein thrombosis. He was on an indwelling urethral catheter (IDUC) on 2-weekly change with episodes of urinary tract infection requiring antibiotics. He had several episodes of AD during his in-patient rehabilitation period. This report illustrates one episode of AD that was particularly challenging to manage. It happened following his routine 2-weekly IDUC change. Thirty minutes following the change, he developed AD symptoms. Urine outflow was absent, and the catheter was removed immediately. Frank bleeding was noticed from the urethra and subsequent attempts of catheter reinsertion failed due to resistance. At this point, the urology team was consulted, also met with failure of catheter reinsertion. As suprapubic catheterization was contraindicated due to anti-coagulants, he was scheduled for cystoscopy-guided catheter insertion, subjected to operating theater availability. Due to the persistent noxious stimuli from the distended bladder and urethral injury, his blood pressure continued to be dangerously elevated, with AD symptoms. Initial AD management was performed, with multiple doses of sublingual glyceryl trinitrate 0.5mg every 5-10 minutes and subsequent sublingual captopril 25mg and analgesics. After 4 hours, our team suggested a suprapubic urine aspiration, performed by the Urology team which resolved the AD. However, he developed hypotension. Definitive treatment for his urinary retention was only performed 12 hours later. **CONCLUSION:** AD management is challenging when there are difficulties in removing the noxious stimuli safely.

(P) 040

PREOPERATIVE REHABILITATION AS A STANDARD CARE MODEL FOR ADOLESCENT IDIOPATHIC SCOLIOSIS PRIOR SURGERY: A CASE STUDY

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INTRODUCTION: Rehabilitation for adolescent idiopathic scoliosis (AIS) recommended to start as early as Cobb's angle 10'. Preoperative rehabilitation referral will facilitate to explore on weakness, pain, anxiety and their functional status, participation level, strength of support system and to build relationship with parents and patient in order to optimise the outcome post- surgery. **REPORT:** This article presents a case of a 17-year-old boy with AIS, underwent scoliotic surgery with intra-operative complication of incomplete spinal cord injury. He was referred for rehabilitation on postoperative day 2 and classified as T4 AIS C. His left lower limb power was 0/5, while both upper limb and right lower limb power was full. His sensory level was T4 hence truncal balance was poor. His injury was complicated with severe allodynia and bilateral lower limb spasm. After intensive structured rehabilitation interventions with multidisciplinary approach, he was able to be independent for basic functional need and mobile with wheelchair assistance. However, his transitional care to home and community was unsuccessful, and he had prolonged hospital stay of 6 months. The challenge was to empower parents to be involved in his rehabilitation process as they were resistance towards the disability. Rehabilitation team was unable to deliver a family centered care post operatively which hindered smooth transitional care. **CONCLUSION:** Rehabilitation for AIS should be started preoperatively. There is a need to develop a standard care model preoperatively for AIS involving multidisciplinary approach.

(P) 041

MERALGIA PARESTHETICA TREATED WITH PROLOTHERAPY: A CASE REPORT

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INTRODUCTION: Meralgia paraesthetica (MP) is a clinical symptom caused by the Lateral Femoral Cutaneous Nerve (LFCN) entrapment. It presents as paresthesia of anterolateral aspect of thigh. Pain reduction and restoration to normal function are the major goals.1 This case report illustrates the use of neural prolotherapy in pain management for MP. **REPORT:** A 70-year-old lady with L4/L5 spondylosis, spinal cord stenosis and nerve root impingement went for Extreme Lateral Interbody Fusion (XLIF) L3/L4. About one-week post-surgery, she developed left anterolateral thigh paresthesia. It disrupts her daily activities such as dressing, sleeping, standing activities, and walking. Upon reviewing her after seven months post-surgery, she was on Pregabalin 150mg BD, Amitriptyline 12.5mg BD, Tramadol 50mg TDS and Paracetamol 1g QID to control her pain. On examination, her Numerical Rating Scale (NRS) for pain is 9-10/10. There was tenderness over the left Anterior Superior Iliac Spine (ASIS) with reduced sensation over left lateral thigh but no motor deficits. Tinel sign was positive over left LFCN. Her Brief Pain Inventory Short Form (BPI-SF) baseline mean score for Pain Severity/Pain Interference was 9.25/8. She was treated with Neural Prolotherapy technique over the tender point at left ASIS and along the lateral thigh over the LFCN distribution. Each tender point was injected with 2cc of hypertonic dextrose 5%, for a total of four occasions, four days apart. There was no complication post-injection. After completing four sessions, she reported NRS for pain improved to 1/10 with improvement of BPI-SF Pain Severity/Pain Interference score 1.25/1.3. Her medications were left only with Pregabalin 75mg BD. She can walk unaided, sleep and perform standing activities for longer period. Her pain score is maintained at 1/10 after review 4 weeks later. **CONCLUSION:** Treatment of MP with neural prolotherapy is simple, safe, tolerable, and efficient. It effectively reduces pain while also restoring function and quality of life. Neural Prolotherapy injection would be a valuable tool in the management of MP.

(P) 042

IS AEROPHAGIA COMMON IN CEREBRAL PALSY?

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INTRODUCTION: Cerebral palsy is a motor disorder that affects posture and movement and has various associated conditions like cognitive impairment, feeding disorder etc. The prevalence of cerebral palsy is approximately 2 per 1000 livebirth. Aerophagia is characterised by excessive and repetitive swallowing of air. It is uncommon in children however it was diagnosed in 8.8% of cognitively impaired patients where there is in coordination between swallowing and respiration. Hence aerophagia can also happen in this population. **REPORT:** HH, a 6-year-old boy with mixed spastic dystonic cerebral palsy (GMFCS V) who was admitted for assessment and rehabilitation. A plain abdominal and pelvic radiograph was taken on admission as part of assessment and was incidentally found to have significant gastric and bowel dilation with some stool present in the colon. Mother did not report gastrointestinal issue on admission and did not notice patient had frequent belching, but patient was using pacifier. On examination, patient was comfortable and appeared as his usual self. His abdomen was soft but there was tympanitic fullness over the upper quadrant of the abdomen and presence of bowel sound. Blood investigation (FBC, RP and LFT) taken was unremarkable. Case was discussed with paediatric surgical on call and diagnosed as Aerophobia and no surgical intervention required. Patient was given enema to help with bowel movement and abdominal massage technique was taught to mother together with reduction in pacifier usage advice. Subsequent days patient was reported to passing more frequent flatus and the abdominal distension become lesser. **CONCLUSION:** Better recognition of this diagnosis will reduce unnecessary investigation and intervention. More study needed to be done to understand the prevalence in Cerebral Palsy population.

(P) 043

ILLUSTRATING THE EFFECT OF EGB 761 ON COGNITIVE RECOVERY IN CHRONIC ACQUIRED BRAIN INJURY SURVIVORS: CASE SERIES

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INTRODUCTION: Cognitive impairment is a common debilitating complication in chronic acquired brain injury survivors. Poor cognitive function is a significant limitation in ensuring an excellent overall functional outcome due to poor therapy engagement and retaining its effect. Pharmacotherapies have been described as an adjunctive approach to conventional behavioural therapy in promoting its recovery. EGB 761, widely known as Ginkgo Biloba extract, has demonstrated good clinical evidence of its benefits in improving cognitive performance in neurodegenerative and neuropsychiatric disorders. It possesses several neuroprotective properties, which include mitochondrial function enhancement, reduction of blood viscosity, and promotion of microperfusion. It also modulates serotonin levels in various brain areas. **REPORT:** We would like to demonstrate the effect of EGB 761 as an adjunctive method in addition to conventional intervention in boosting cognitive performance in the chronic acquired brain injury population. We will describe the demographic characteristics, etiological background, the duration of injury, the dosage of EGB 761, pre-and post-cognitive objective outcome measures, and its domains of 10 acquired brain injury survivors with its safety profile. **CONCLUSION:** These patients are chronic post-stroke survivors, traumatic brain injury patients, and hypoxic ischaemic encephalopathy with minimal conscious state who demonstrated improvement in several cognitive domain outcomes upon initiation of EGB 761. These case series provide the initial evidence of EGB 761 in the treatment of chronic cognitive impairment and entice the interest to embark on a high-quality study pertaining to the effectiveness of EGB 761 in influencing the neurorehabilitation outcome.

(P) 044

A RETROSPECTIVE STUDY OF HIP SURVEILLANCE IN CHILDREN WITH CEREBRAL PALSY ATTENDING REHABILITATION MEDICINE CLINIC IN KEDAH

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INTRODUCTION: Hip surveillance is the process of identifying and monitoring the early indicators of progressive hip displacement. A retrospective study of hip surveillance in children with cerebral palsy attending Rehabilitation Medicine Clinics in Kedah was done to ensure all children with cerebral palsy undergo hip surveillance at recommended intervals to prevent hip displacement and its sequelae. **METHODS:** It is a retrospective study with data collection done on 132 children with cerebral palsy. The age limits were between 18 months old to 18 years old. The data was collected over duration of 12 months starting from January 2018 till December 2018. **RESULTS:** Based on the data collected, the children were functionally categorized into Gross Motor Functional Classification System (GMFCS) Level V (43.9%), followed by GMFCS Level III (19.7%), Level IV (15.9%), Level I (10.6%) and Level II (9.8%). Nearly half of the total patients included in the study has done pelvic radiograph (Table 1). In 40.2% of the subjects, the hip migration percentage was not measured mainly due to rotated radiograph. **CONCLUSION:** Almost all children with cerebral palsy (88.7%) had pelvic radiograph as per recommended guidelines. A hip surveillance checklist was created in our center to ensure comprehensive and timely monitoring for hip displacement in accordance with guidelines. By implementing the hip surveillance checklist, our department aim to improve adherence to hip surveillance and facilitate early detection of hip displacement, thus preventing its sequelae.

(P) 045

NEUROREHABILITATION OF FOLATE DEFICIENT PERIPHERALNEUROPATHY IN YOUNG ADULT

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INTRODUCTION: Peripheral neuropathy is defined as disturbance in function of peripheral nerves. There may be selective involvement of motor, sensory, or autonomic fibres. The clinical deficit is usually a mix of sensory and motor symptoms. **REPORT:** A 16-year-old boy attending boarding school, presented with frequent falls due to progressive bilateral lower limb weakness. He has subjected himself to an extreme dietary regime for four months in an attempt to lose weight with his friends. His initial weight was 110 kg, and his weight on admission is 75kg (35kg body weight reduction in four months' time). He denies intense fear of gaining weight, binge-eating/purging and disturbed self-worth. On admission to the acute ward, nerve conduction study showed electrophysiological evidence of predominant motor axonal neuropathy of bilateral lower limbs with an impression of acute motor axonal neuropathy variant of Guillain Barre Syndrome. Serum folate was low (<5nmol/L) with normal B12 level and thyroid function test. Treatment with intravenous vitamins and oral supplements were commenced. He was admitted in rehabilitation ward Hospital Alor Setar for inpatient active rehabilitation. Physical examination revealed reduced sensory and motor power predominantly distal weakness with poor hand function and high stepping gait. During his two weeks inpatient stay, he was prescribed with intensive strengthening physical therapy, therapeutic walking with aid and stairs climbing for 1-hour session twice per day. Writing assessment and hand function retraining were done by occupational therapist. Dietary education was established. Upon discharge, he is able to write without using a large handle and walk with bilateral posterior spring leaf ankle foot orthosis (AFO) and forearm crutches. **CONCLUSION:** Serum folate deficiency is a rare cause of peripheral neuropathy in Malaysia. Early intensive rehabilitation is necessary to optimise function.

(P) 046

PAIN IS INEVITABLE, SUFFERING IS OPTIONAL

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INTRODUCTION: Osteoarthritis (OA) is a significant cause of disability worldwide.1 Patients with knee OA are treated with various non pharmacological, pharmacological and/or surgical interventions. Despite these, patients may continue to suffer from refractory knee pain which causes limitation in their functional capacity. 2 Latest studies have suggested that Genicular Nerve Block (GNB) when administered with corticosteroid can provide short term pain relief. **REPORT:** A 75-year-old lady, complaint of progressively worsening bilateral knee pain for the past 2 years. This has limited her mobility thus becoming bed bound. She was diagnosed with bilateral knee OA 2 years ago and opted for intra-articular corticosteroid injections. Her pain score was 8 despite on oral and topical analgesia. During our assessment, she was only able to roll slightly, required maximum assist for sitting and transfer. Physical examination showed both knees in valgus deformity, tenderness and crepitus felt bilaterally. X-ray bilateral knee showed Kellgren and Lawrence grade 4. Ultrasound knee showed bilateral lateral and medical collateral ligament partial tear, osteophytes, degenerative changes, and meniscal extrusion. Our main aim was to reduce her pain to assist in bed mobility and transfer technique. She underwent bilateral knee GNB as well as LCL and MCL prolotherapy which were done on separate occasions. The GNB consisted of 1 cc lignocaine and 1cc triamcinolone. Post procedure her pain score improved to 2. Elderly Mobility Scale scoring improved from 0/20 to 5/20. She was able to roll independently, pull to stand, stand transfer with standby help and sit to stand independently. **CONCLUSION:** GNB with addition of corticosteroid could prolong the analgesic effect and improve functional capacity of patients with chronic knee pain.

(P) 047

COVID-19 DISEASE: A CASE REPORT OF ORGANIZING PNEUMONIA AND PULMONARY EMBOLISM, COMPLICATED WITH TENSION PNEUMOTHORAX IN A HEALTHY YOUNG ADULT–REHABILITATION PROGRAM FOR COMPLICATED CASE AT DISTRICT HOSPITAL

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INTRODUCTION: Covid-19 infection may cause severe debilitating effects even in a healthy and young individual. **REPORT:** We reported a case of a 38-year-old gentleman with no known co-morbidity, non-smoker with moderately active lifestyle. He fortunately received his first dose of COVID-19 vaccination. A month post COVID-19 vaccination, patient developed fever, cough, and shortness of breath. He was admitted to HDW for COVID-19 category 5A which he received NIV support. A CTPA done showed severe organizing pneumonia and pulmonary embolism over multiple areas of bilateral lungs. He received COVID-19 treatment as per guideline. On the 26th day of COVID-19 infection, he suffered from worsening shortness of breath (post bowel straining) and subsequently intubated for respiratory distress secondary to left sided tension pneumothorax. Chest tube insertion was done in which later patient developed subcutaneous emphysema that was confirmed with a HRCT. Rehab team was involved in managing the pulmonary function since Day 16 of COVID-19 admission. A structured and organized pulmonary rehabilitation program was design throughout his stay which includes secretion management, cough & breathing technique, gradual respiratory muscle strengthening exercises, gradual intensity in limbs activities, endurance, and mobility. Close cardiopulmonary monitoring was performed during intervention (continuous SPO2, HR monitoring) together with few outcome measures (SPO2, PEFR, PCF, BORG, MRC dyspnoeic scale, MBI, 3MWT) to monitor the progress. His condition subsequently improved and was enrolled in our outpatient post COVID rehabilitation program (PCRP) after discharged. **CONCLUSION:** Severe COVID-19 and its devastating complication can occur in any individual even in healthy young adults. Despite limited resources and facilities in our centre, it is possible to manage such a complicated case and with early pulmonary rehabilitation can greatly improve its outcome and has shown to improve patient's overall condition in the long run. Therefore, we suggest that an excellent outcome can be achieved if early intervention is given.

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THE SELECTION CRITERIA AND OUTCOME MEASURES FOR ROBOTIC EXOSKELETON SYSTEM GAIT TRAINING IN POST STROKE ADULT PATIENT: A CASE REPORT

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INTRODUCTION: Robotic exoskeleton rehabilitation of lower limbs is an emerging treatment approach for balance and gait training (Valles et al, 2016). It applies repetitive, intensive, and task-oriented movement to maximize neural recovery. Evidence-based treatment models include identifying patient treatment criteria and reliable measurable outcomes. **REPORT:** A 35-year-old gentleman with large right basal ganglia haemorrhagic stroke. Cognitive performance was MOCA score 14/30. He had hemi neglect and dense left hemiparesis with MRC grading of 0/5. Within 4 months, his MOCA showed improvement to 20/30, hemi neglect resolved and left side limb spasticity of MAS 2. Co-contraction of quadriceps/hamstring muscles were noted. Objective measure of functional status was MBI 61%. Treatment aim: Safe walking with quadripod, indoor. Treatment methods: i) stretching and strengthening exercise (20 minutes), ii) Static balance training/endurance (10 minutes) and, iii) gait training with exoskeleton system (30 minutes); frequency: weekly for 2 months. Selection criteria: Mild cognitive impairment, height <200 cm, weight <100 kg, able to sit and stand without assistance, standing endurance >2 minutes, impaired limb hip flexion MRC 2/5, knee flexion/extension MRC 2/5. Spasticity MAS grade ≤ 2. Contraindication: Osteoporosis T-score femoral <2.5, open wound at area of contact with exoskeleton system, lower limb contracture, untreated pain, pregnancy. Outcome measures: Time up-and-Go, 6 Minutes-Walk Test, Berg Balance Scale, MRC grading, MAS spasticity grading, walking distance (meter), walking speed (meter/sec). Patient progress: A total of 120 minutes (2 sessions) were achieved at the time of this report. Distance walking achieved (with exoskeleton system) was 52 meters. Independently sit to stand and independent standing duration of 1 minute. Walking indoor with one person assistance and quadripod was 10 meters. **CONCLUSION:** Robotic gait training can provide a positive outcome if accurate selection criteria are followed.

(P) 049

BOTULINUM TOXIN INJECTION TO SALIVARY GLANDS FOR PALLIATIVE MANAGEMENT OF SIALORRHEA: A CASE REPORT

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INTRODUCTION: Sialorrhea occurs from saliva overproduction or from coordination failure between swallowing and constant saliva production in various neurological conditions. First line treatments usually comprise of oral, transdermal, or intravenous anticholinergics coupled with swallowing rehabilitation. We describe a case of aggressive sialorrhea management with abobotulinumtoxin A in an advanced cancer patient. **REPORT:** A 72-year-old gentleman, diagnosed with stage 4 lung adenocarcinoma presented with sialorrhea, bulbar speech, dysphagia, and left hemiparesis. MRI of the brain revealed multiple cerebral and right pontine metastatic lesions. Despite nasogastric tube insertion, risk of aspiration from saliva was high, attributed to bulbar palsy. High Drooling Severity and Frequency Scale (DSFS) and bedside swallowing screening failure warranted further investigation with Flexible Endoscopic Examination of Swallowing (FEES). Findings showed frank aspiration to saliva (Penetration Aspiration Scale 8), thus indicating an urgent need for botulinum toxin injections to salivary glands. Both parotid and submandibular glands were each injected with 60 units of a botulinum toxin A under ultrasound-guidance. Significant reduction in sialorrhea and eventually xerostomia (DFSS 0) occurred within days. Other secondary gains include reduced perioral maceration, improvement in coughing, speech clarity and increased self confidence in absence of persistent drooling. **CONCLUSION:** Sialorrhea and dysphagia management is still beneficial to reduce the risk of aspiration pneumonia and improve quality of life in patients with terminal cancer.

(P) 050

TETHERED CORD SYNDROME IN A REPAIRED LIPOMENINGOCELE: A CASE REPORT

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INTRODUCTION: Tethered cord syndrome (TCS) is an important delayed complication following lipomeningocele repair. TCS symptoms usually manifest during the pre-adolescent period when the growth spurt begins. Early recognition of TCS is crucial, as early surgical release can prevent disease progression and further neurological deterioration. **REPORT:** We report a case of a 10-year-old girl diagnosed with lipomeningocele at birth and was referred to our centre for corrective repair. Post-repair, she was physically well, developmentally up to age, and excelled academically. Surveillance imaging modalities remained normal; hence her follow-up frequency was gradually reduced to yearly. In each follow-up review, education regarding the possible risk of TCS, its associated alarming features, and immediate measures warranted was regularly emphasized. Unfortunately, during her scheduled follow-up, she reported a 6-month history of urinary incontinence, worsening bilateral lower extremity weakness and tightness, resulting in gait deterioration and frequent falls. Regrettably, she was not brought to seek immediate medical attention. Examination findings revealed Para paresis with bilateral plantar-flexor spasticity. Urgent spine MRI confirmed TCS, and cord-untethering surgery was immediately arranged. Post-surgery, she reported only minimal improvement in lower extremity strength, and bilateral plantar-flexor spasticity still significantly affected her gait. She underwent inpatient rehabilitation for a month which included spasticity management, ambulation training, and bladder management. Upon discharge, she was able to achieve spontaneous voiding and achieved therapeutic walking with a reverse walker. However, she still needed assistance with long-distance ambulation, and an arrangement to facilitate her returning to school was initiated. **CONCLUSION:** This is a classic example of deteriorating neurological and functional status following a TCS. The literature describes its delayed presentation as associated with a less favourable outcome. To date, no guideline states the recommended follow-up frequency for spina bifida patients. As growth spurt associated increased TCS risk is widely known, we wondered if a more frequent follow-up should be considered at the pre-pubertal age to ensure early detection, early treatment, and perhaps a better outcome.

(P) 051

RHABDOMYOLYSIS AFTER A TRIVIAL FALL: A CASE REPORT OF AN AUTISTIC PATIENT WITH RHABDOMYOLYSIS POST FALL

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INTRODUCTION: Rhabdomyolysis is a condition caused by muscle necrosis and the release of intracellular muscle components, such as creatinine phosphokinase (CPK) and electrolytes, into the bloodstream 1. The injury is mainly mediated by high intracellular calcium load and proteases, which disrupt the membrane integrity. The usual clinical presentation triad is myalgia, weakness, and tea-colored urine. Common complications include fluid and electrolyte imbalances such as metabolic acidosis, hyperkalemia, hyperphosphatemia, hypocalcemia, acute renal failure, compartment syndrome, and disseminated intravascular coagulation (DIC) 1. Peripheral nerve injury is rare in patients with rhabdomyolysis. Children with autism spectrum disorder (ASD) have more injuries than children without ASD2. In this report, we present the case of an autistic patient who developed neuropathy as a complication from rhabdomyolysis due to a trivial fall. **REPORT:** A 22-year-old autistic lady, who was premorbidly pADL independent and ambulated without aids, had presented with a fall in a seated position in the washroom. She was only discovered several hours later and brought to medical attention. Post fall, she developed bilateral lower limbs swelling, bilateral foot drop with impaired sensation and proprioception of right foot and was unable to ambulate. Initial blood investigation showed elevated CPK level of 25,000 units/L. MRI thoracolumbar did not show any evidence of spinal canal stenosis or nerve roots impingement. CT abdomen/pelvis revealed generalised subcutaneous edema, multiple ill-defined hypodense area at bilateral gluteal region extending to lateral thigh, features in keeping with rhabdomyolysis with extensive subcutaneous edema. After medical management and inpatient rehabilitation, patient was able to ambulate with AFO and walking frame after 2 months. **CONCLUSION:** Rhabdomyolysis is a severe condition that can lead to permanent disability. Early diagnosis, medical management and rehabilitation can improve its outcome.

(P) 052

ANALYSIS OF ENERGY EXPENDITURE USING HEART RATE VARIABILITY IN SIT-TO-STAND MOVEMENT AMONG SPINAL CORD INJURY

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INTRODUCTION: Rehabilitation in spinal cord injury (SCI) requires long, intensive, and disciplined patient specific treatment plan to regain as many functionalities could. One approach is to equip SCI patients with lower limb exoskeleton (LLE) for overground walking practices. For SCI with lesion level higher than T4, autonomic cardiac modulation is at risk of sudden failure due to impaired neural pathway and excessive heart exertion during therapy. Clinicians and athletes use heart rate variability (HRV) in evaluating the state of health, fitness, recovery, and readiness to extrapolate information regarding disease risk, stress, recovery, activity intensity, training effect, and energy expenditure. **METHODOLOGY:** This study aims to bridge the gap between how energy expenditure in SCI can be quantified and monitored using HRV. The parameters could also be used in analysing SCI patients' autonomic level and adopted for monitoring cardiac performance when conducting free daily living. This study leverages on incorporating sit-to-stand movements (TUG and FTSTS) with exoskeleton aid to induce heart exertion, additional to the treatment plan (walking therapy). These two tests are functional mobility tasks that are commonly used for pathological population during rehabilitation sessions. The level of heart exertion when performing these activities were determined from its cardiac performance in HRV parameters. **CONCLUSION:** Prime expectation is to observe an increase in HRV during activity and autonomic fluctuations. Assessing energy expenditure in terms of heart rate provides a clearer overall picture and assessment of cardiac exertion during independent activities carried out by SCI, thus, this study hopes to normalise HRV as one of the monitoring parameters in SCI during exercise.

(P) 053

STROKE ASPIRATION PNEUMONIA: PREDICTORS AND OUTCOMES IN MALAYSIAN STROKE POPULATION

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INTRODUCTION: Aspiration pneumonia is among the common complications after a stroke that may pose a higher risk of mortality. This study was conducted to investigate the predictors and outcomes of stroke aspiration pneumonia among patients admitted to a university hospital over a 3-year period. **MATERIALS AND METHODS:** A retrospective cohort study was conducted among all stroke patients aged 18 years and above admitted to Sultan Ahmad Shah Medical Center (SASMEC @IIUM) from 1st January 2018 to 31st December 2020. The patients were followed up until death or censoring at 12 months post admission. Analytical statistics using chi-square and independent t-test were done to identify risk factors and outcomes of stroke aspiration pneumonia. **RESULTS:** The prevalence of aspiration pneumonia among stroke patients in SASMEC @IIUM was 38.16% with a significantly increased risk of ICU admission, extended length of hospitalization, and mortality. Stroke aspiration pneumonia is significantly associated with ICU admission ($p < 0.05$), extended length of stay ($p < 0.01$) and has 5.3 times increased odds for mortality within 12 months (95% CI: 2.9-9.8). In this study, the age group of more than 60 years old was a significant predictor of stroke aspiration pneumonia, with 2.5 times increase in odds (95% CI: 1.3-4.8). **CONCLUSION:** Stroke aspiration pneumonia which leads to increased morbidity and mortality is a marker of poor outcomes in stroke patients. It also increases the cost of care in stroke management thus burdening the healthcare system. Hence, multidisciplinary care in the prevention and management of stroke aspiration pneumonia should be emphasized.

(P) 054

POST - COVID 19 BRAIN ATROPHY – A VERY POSSIBLE RARITY

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INTRODUCTION: Coronavirus disease 2019 (COVID-19) has had a catastrophic impact on the world's demographics with more than 6 million deaths worldwide as of March 2022. The disease can present with an array of symptoms, with severities ranging from mild to severe followed by multiple complications. Commonly affected organ systems include pulmonary, renal, cardiac, hematologic, gastrointestinal, hepatobiliary, endocrinologic, neurologic and cutaneous. Recent studies suggest that COVID-19 infections can lead to changes in the brain including loss of grey matter, tissue abnormalities and shrinkage. **REPORT:** Mr. SMF, a 54-year-old bus driver, who was premorbidly independent in all activities of daily living (ADL) with no known past medical history including neurologic disorders. He was first seen by the rehabilitation team in November 2021. He had a history of admission for COVID-19 category 3A infection in June 2021 during which he was treated with intravenous and oral steroids. Post-discharge he presented with giddiness, imbalance, and bilateral upper and lower limb weakness, with frequent falls. Cognitive assessment revealed moderate impairment with a Montreal cognitive assessment score (MoCA) of 15/30. Neurological examination revealed presence of cerebellar signs including scanning dysarthria and bilateral dysdiadochokinesia, dysmetria and intention tremor. The heel shin test was positive on the left side and his gait was broad based. Functionally, he was able to ambulate however with high risk of fall and was independent in all personal ADLs except climbing steps. He was also unable to return to work. **CONCLUSION:** Brain atrophy post-COVID 19 infection is a rare but possible complication of the disease, which occurrence is gaining popularity with advancement in research.

(P) 055

HYPERSOMNOLENCE AND APNEA AS PRESENTING FEATURES OF POSTERIOR CIRCULATION INFARCT STROKE IN AN INPATIENT REHABILITATION SETTING: A CASE SERIES

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INTRODUCTION: Hypersomnolence and apnea can be symptoms of posterior circulation infarct (POCI). They can present both as a risk factor and a consequence of stroke. This case series aims to highlight the symptoms of hypersomnolence and apnea in two individuals diagnosed with posterior circulation infarct during inpatient rehabilitation setting. METHODS: Single institution descriptive case series of two individuals with posterior circulation infarct presented with hypersomnolence and apnea. **REPORT:** Case 1: A 52-years old lady was referred for inpatient neurorehabilitation for recurrent anterior circulation stroke with involvement of bilateral internal capsules and right inferomedial temporal lobe. During inpatient rehabilitation, she demonstrated excessive daytime hypersomnolence and frequent apnea episodes, with concurrent findings of ophthalmoplegia. Subsequent CT brain revealed right midbrain infarct. She was monitored closely for worsening hypersomnolence and apnoea, which subsequently resolved without any morbidity. Case 2: A 48-years old gentleman was referred from medical ward for intensive neurorehabilitation for multifocal infarct with findings correlating with Weber Syndrome. Initial CT brain revealed multifocal infarcts at left subcortical region, left thalamus, and left cerebral peduncle. Prior to rehabilitation admission, he developed right eye nystagmus with CT brain showed basilar artery dense sign, suggestive of acute basilar artery thrombosis, with no further specific intervention. During inpatient rehabilitation, he developed left hemiparesis, aphasia and dysphagia with interrupted sleep and excessive daytime somnolence, and regression in functional outcome. Repeated CT brain was negative for stroke progression. A week later, patient had worsening hypersomnolence, grunting and reduced GCS, necessitating airway management and urgent transfer to acute setting. CTA showed V4 left vertebral artery thrombosis with proximal V3 segment left vertebral artery stenosis confirms provisional diagnosis of top on basilar syndrome. Patient succumbed 10 days later due to evolving stroke. **CONCLUSION:** Hypersomnolence and apnea are red flag signs of POCI and signify involvement of CNS particularly the reticular activating system. High index of suspicion and vigilant monitoring during the inpatient stroke rehabilitation phase is important for early detection of POCI and prevention of morbidity and mortality.

(P) 056

VOIDING DYSFUNCTION IN A TODDLER – A CASE OF NON-NEUROGENIC NEUROGENIC BLADDER (NNNB)

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INTRODUCTION: Bladder dysfunction is common in the pediatric population. One of the causes is NNNB which defines as bladder problems with normal anatomical and neurological. We report a case of a child who was presented with infrequent voiding. **REPORT:** A 3-year-old boy with normal developmental milestones was noted to have dry diapers for more than 12 hours. He showed no signs of distress/pain and thriving well. No anatomical nor neurological abnormalities were noted. The bladder was palpable and could hold about 300 ml of urine with significant residual. Urine analysis not suggestive of infection; normal renal function test; US KUB and MRI spine revealed normal study, except overdistended bladder. The child underwent UDS that revealed an atonic bladder. He underwent circumcision and was on an indwelling catheter for six weeks. Following that, he was on CIC 4 hourly, done by his parents. He was later trained for time voiding with minimal PVR and was catheter free. NNNB usually occurs during childhood and may persist into adulthood1. It can affect the filling or emptying phase. Symptoms of NNNB are enuresis or intermittent urinary incontinence urinary retention, and urinary stream abnormalities1. The delay in diagnosing NNNB can lead to complications such as UTI, VUR, and scarring, causing kidney failure2. The patient was still young and not yet toilet-trained, and the problem was bladder emptying with no concomitant constipation. At this age, the patient cannot convey his needs and has a limited understanding of complex tasks. Hence, we decided to put him on CIC while waiting for his ability to void spontaneously and examine the residual urine. The challenge for this case was that the child had intact sensations, and this caused a problem during CIC. Tremendous efforts were made to find the most suitable type of catheter and ensure great analgesic lubricants before the procedure. Training a toddler for time voiding is challenging but it can be done. **CONCLUSION:** NNNB should be diagnosed and treated promptly to avoid its complications.

(P) 057

REHABILITATION EXERCISE PROGRAM FOR A GERIATRIC PATIENT WITH INTERSTITIAL LUNG DISEASE RELATED SYSTEMIC SCLEROSIS

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INTRODUCTION: Systemic sclerosis (SSc) is an autoimmune connective tissue disease, which is characterized by immune dysregulation and progressive fibrosis that typically affects the skin, with variable internal organ involvement. 1 SSc is a rare disease with an incidence of 10–50 cases per million people per year, a prevalence of 40–340 cases per million people, and substantial geographic variability.2 The lung is frequently involved in SSc, with interstitial lung disease (ILD) a common manifestation. **REPORT:** Mrs. TI, 64 years old, a lecturer, came to PMR department with chief complaint: easily fatigue since 1 year ago, especially when she walked about 200 meters and go up and down stairs (about 10 steps). This fatigue is also felt when patient is doing household activities and accompanied by the short of breath, relieved by sitting for a few minutes. The patient has had systemic sclerosis for the past 25 years, but the patient stopped consuming the drug about 10 years ago due to getting bored with the medicine. She still could do the ADL and IADL independently. She teaches with hybrid teaching, sometimes she works from home with the online teaching but sometimes she does the offline. Her hobby is travelling. The patient was worried about the presence of complications of her disease-related shortness of breath that made her cannot return to work. From physical examination, vital signs were within normal limit. The body mass index is categorized as underweight. We also found that she has mask-like facies (+), mouth opening: 4 cm, and chest expansion were only 2, 5cm/2 cm/2cm. Manual muscle test showed functional grade. The ANA test result of the patient was positive and had a Reynaud phenomenon. High Resolution CT-scan (HRCT) suggested interstitial lung disease (Warrick score 14: moderate stage). She has low endurance from 6MWT. Pulmonary function test showed moderate restriction. The Scleroderma HAQ (SSc HAQ) 5 for quality of life was. Rehabilitation exercise program include the flexibility exercise to improve shoulder girdle range of motion and increase chest expansion, the breathing exercise with an incentive spirometer and combination of the aerobic training and resistance exercise that begins at low intensity and under supervision of physiatrist. **CONCLUSION:** Rehabilitation programs improve her pulmonary function test from the moderate restriction to mild restriction. She also can reach 40-60 % HRR intensity in 40 minutes of core exercise without supplementary oxygen and improve the SSc HAQ score.

(P) 058

A CASE REPORT OF EARLY INTENSIVE NEUROREHABILITATION FOLLOWING POSTPARTUM CEREBRAL VENOUS SINUS THROMBOSIS

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INTRODUCTION: Puerperium Cerebral Venous Sinus Thrombosis (CVST) is a rare cause of pregnancy related stroke (2%). Postpartum women are at risk of venous thromboembolic events due to the transient prothrombotic state with various clinical manifestations are depending on the thrombotic sites. **REPORT:** A 25-year-old lady, presented to the emergency department with generalised tonic-clonic seizure at 7 weeks postpartum. CECT brain revealed prominent hyperdense superior sagittal sinus with haemorrhagic venous infarcts in bilateral high parietal regions. 6 days later, GCS reduced and repeated CT Brain showed significant cerebral oedema causing midline shift; necessitating an emergency left decompressive craniectomy (DCH). Post-DCH, she presented with right sided hemiplegia, cognitive impairment and ADL-dependent [Modified Rankin Scale of 4], complicated with painful extensive right lower limb deep vein thrombosis. Patient was transferred for inpatient neurorehabilitation on day 9 post-DCH. Interdisciplinary neurorehabilitation was focused on high intensity and task-specific training, during both formal therapy hours and additional self-directed practice in ward. After 24 days, her motor function improved significantly [Berg Balance Scale (BBS): 28 to 44; 10MWT: 130 seconds to 10 seconds; 6MinWT: 55m to 112m]. There was increment in Fugl-Meyer Assessment (FMA) especially in motor function domain. She was discharged home with Modified Barthel Index (MBI) from 26/100 to 98/100, Absolute MBI Functional Gain of 72 and Rehabilitation Efficiency Index of 3, signifying high rehabilitation efficiency. **CONCLUSION:** CVST is a rare puerperium complication which leads to multiple impairments thus early diagnosis and treatment is important. Early initiation of intensive neurorehabilitation programme leads to favourable outcome in the long run.

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ASSESSING HEALTHCARE PROFESSIONALS' ACCEPTANCE OF TELEREHABILITATION SERVICES

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INTRODUCTION: Telerehabilitation is a relatively new practice and is more likely to be utilised successfully in the field of rehabilitation. As a result of COVID-19, there has been a sudden and major shift towards telerehabilitation. The purpose of this study is to obtain preliminary data on healthcare professionals' acceptance of telerehabilitation services. This is a unique opportunity to investigate the utilisation of telerehabilitation by healthcare providers. **METHODS:** In this cross-sectional study, a researcher created survey questionnaire link was sent out via online to 100 selected healthcare professionals at Hospital Rehabilitasi Cheras using a Google Form survey. Seventy-six individuals responded. However, seventy-one were inclined to participate in the survey and complete the questions. The results were presented descriptively as numbers and percentages. **RESULTS:** Seventy-one healthcare professionals were included in this study, with 39.4% were occupational therapists, physiotherapists (38.0%), speech therapists (9.9%) and others, i.e., audiologists, medical officers, nurses, and medical assistants (12.7%). The majority of respondents (94.4%) were aware of telerehabilitation, but only 52.1% utilised it. They used telerehabilitation primarily for education (91.2%), knowledge sharing (88.2%), consultation (82.4%), and therapy/rehabilitation (79.4%). 58.8% of the respondents were satisfied with the telerehabilitation services and rated their overall quality as satisfactory to good. 44.5% rated the technical quality as satisfactory, and 67.6% rated the quality of care delivered via telerehabilitation as satisfactory to good compared to regular or conventional care. Discussions: The present study sheds light on the awareness of telerehabilitation services among healthcare professionals. The results indicated that the majority of the respondents were aware of the telerehabilitation services but did not use them due to dissatisfaction with the technical quality of the service, such as unstable internet lines, limited telerehabilitation software that can be used, and lack of equipment/tools. In addition, telerehabilitation was not utilised for diagnostic and treatment processes, prevention, or group therapy. However, they considered the quality of telerehabilitation services as promising in comparison to regular or conventional care. **CONCLUSION:** This study suggests that education courses, reliable internet connections, and equipment must be provided to healthcare professionals in order to increase the quality and accessibility of telerehabilitation services.

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ROLE OF MEDICAL OFFICERS AND NURSES IN IMPLEMENTING ENVIRONMENTAL ENRICHMENT – AN IMPORTANT ELEMENT IN NEUROREHABILITATION

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INTRODUCTION: Environmental enrichment (EE) is an important element in neurorehabilitation to facilitate neuroplasticity and neuro-recovery. EE encompass provision of a dynamic environment which encourages sensory-motor activities, cognitive stimulation and socialization beyond direct therapy time and requires proactive involvement of rehabilitation personnels. Method: An illustrative report on the proactive role of medical officers and nurses in promoting and implementing EE concept in an inpatient neurorehabilitation setting. **REPORT:** Multi-prong initiatives from medical officers and nurses were coordinated to produce a stimulating environment in the neurorehabilitation setting. EE Orientation and Information Sessions were regularly held to promote understanding of neuroplasticity and importance of self-directed practice. EE apparatus and EE activities are designed to be multifaceted and incorporate self-directed practice and nurse-led group activities, outside of formal therapy period. Patients were offered round-the-clock access to EE apparatus for individual and communal use via special EE Trolley and EE Trays. To encourage self-directed activities, EE Catalogue Brochure, EE. Demonstration Box and EE Short Videos accessible via QR-code were made available to patients for reference. Narrative responses showed positive feedback to EE implementation. **CONCLUSION:** EE complements the recovery phase for individuals undergoing concurrent structured inpatient neurorehabilitation programme. Medical officers and nurses play important roles in successfully promoting and implementing EE in neurorehabilitation setting.

(P) 061

GRADED EXERCISE TRAINING AND AMBULATORY OXYGEN THERAPY FOR SEVERE AND MODERATE POST COVID PATIENTS: A CASE SERIES

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INTRODUCTION: Rehabilitation in COVID-19 patients is challenging. Various exercises protocol has been introduced during pandemic to help them recovers well. We share our experience in handling 10 patients with severe and moderate organizing pneumonia who were presented to us at 3 months in our centre. **METHODS:** All patients who are referred to the rehabilitation team will be assessed by a doctor, physiotherapist, and occupational therapist. We assessed the patients with 1-minute sit-to-stand (1MSTS) and 6-minute walking test (6MWT), to predetermine the severity of post exertional dyspnea. Based on the level of oxygen during the assessment, the ambulatory oxygen for exercise program was set. We adopted the protocol from the British Thoracic Society guideline for ambulatory oxygen therapy. Patients went through 6-7 exercise stations consisting of cardiovascular endurance and muscle strengthening for the upper limb and lower limb. The initial intensity of each type of exercise was determined by METS. Patients will have a weekly session for 6 weeks duration. The intensity of exercise in each station will be increased on a weekly basis if the targeted heart rate was achieved, and the dyspnea rate score was improved. **RESULTS:** There were improvement in the Visual Analog Scale and Modified Dyspnea Scale in all 10 patients. The mean improvement in the number of repetitions for 1-MTST pre and post training was 3.7. Generally, the mean nadir oxygenation improvement during 1-MTST was 6.9%. The mean distance measurement for 6MWT pre and post training was 78.9 meter. Post-exertional hypoxia and fatigue are the main symptoms that hinder the exercise training post covid especially, in moderate and severe organizing pneumonia. Based on the consensus, exercise training should start with low intensity, involve more than one type of exercise, close monitoring and individualized prescription. A thorough clinical and physical assessment should be done prior to training. At current, no specific protocol is applied for post COVID for supplemental oxygen therapy however in the study with COPD patients the benefits are inconsistent, which the improvements were reported in duration of exercise tolerance, numbers of walking distance and Borg scale. **CONCLUSION:** Graded exercise and ambulatory oxygen therapy during exercise training improve the symptoms and exercise capacity of the patient in severe and moderate COVID-19.

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FOR RICHER OR POORER: SUCCESSFUL CASES OF PLATELET-RICH PLASMA (PRP) AND PLATELET-POOR PLASMA (PPP) INJECTION IN ROTATOR CUFF INJURY

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INTRODUCTION: PRP is an autologous derivative of whole blood, rich with growth factors (GF) that can modulate the inflammatory pathway and encourage the healing of the tendon, ligament, muscle, and bone. PPP, an abundant by-product in the preparation of PRP (Fig.1) contains GF that can stimulate healing and provide extended anti-inflammatory relief. The potential for biologic healing augmentation combined with a low risk for adverse reaction makes PRP an attractive treatment option for many musculoskeletal pathologies**. REPORT:** Case 1: 72-year-old lady with right Acromioclavicular Joint (ACJ) arthropathy with multiple rotator cuff tendinopathy with Supraspinatus (SSP) tear. PRP injected at SSP tear with PPP injected at Subacromial-subdeltoid (SASD) and ACJ. At 5-month review, pain reduced from Numerical Rating Scale (NRS) 7 to 2. Case 2: 71-year-old lady, has right SSP partial thickness tear and biceps tendinopathy post fall. PRP injected at the SSP tear, PPP injected at ACJ, biceps tendon and SASD. Pain reduced from NRS 6 to 1 at 1-month review, and NRS 2 at 5-month review. Case 3: 70-year-old lady with right SSP tendinosis with complete tear at the anterior aspect of the tendon and SASD bursitis. PRP injected at right SSP and PPP injected at right SASD and biceps tendon. Immediate pain relief from NRS 7 to 1 and pain-free at 4 months review. Post procedure, all cases experienced significant pain reduction, improved range of motion, negative special tests, and reduced analgesic requirement. **CONCLUSION:** PRP is a potential non-operative regenerative treatment incorporated with conventional rehabilitation for rotator cuff injury despite its limitation of being costly and lack of standardized formulation and dosage. PPP to be maximally utilized as an effective and safe anti-inflammatory agent.

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SAME, BUT DIFFERENT: THE MIMICRY OF CALLOSITY IN DIABETIC FOOT

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INTRODUCTION: Diabetic foot is a highly common advanced complication of Diabetes Mellitus (DM). Foot issues including callosity and infection can lead to ulceration and subsequent amputation1. Hence, any active foot issue warrants a thorough assessment to make an accurate diagnosis leading to provision of appropriate treatment. **REPORT:** 65-year-old gentleman with long standing Type 2 DM on treatment. For the past 2 years, he has been treated for recurrent bilateral foot callus requiring regular 3monthly removal. He was subsequently referred to our Diabetic foot clinic for diabetic foot assessment and footwear suggestion. On presentation, he manifested the typical changes of diabetic foot involving bilateral lower limbs autonomic skin changes with Loss of Protective Sensation (LOPS) and sensory neuropathy. Hyperkeratotic skin changes are observed all over the soles of the foot, scattered in clusters of several small lesions with black pinpoints, not limited to the typical pressure tolerant areas (Fig.1). He was subsequently referred to a Dermatologist for suspicion of foot warts where he was eventually diagnosed with viral plantar warts and is still receiving cryotherapy treatment. **CONCLUSION:** Plantar warts might appear like Diabetic foot callus as both occur predominantly at pressure-exposed regions and are characterized by thick layers of keratotic skin2. Distinguishing warts from callus might pose a challenge in DM foot. In hyperkeratotic lesions refractory to conventional therapy, plantar warts should be considered as a differential diagnosis. In the suspicion of viral warts, treatment should be commenced with caution under specialised supervision as the use of acids and cryotherapy itself may induce foot lesions and subsequent infections in people with DM.

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UPPER LIMB DIAGNOSTIC NERVE BLOCKS: AN APPROACH TO COMPLEX POST-STROKE SPASTICITY

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INTRODUCTION: Post-stroke spasticity (PSS) is often associated with pain, soft tissue stiffness, and joint contracture, that are sometimes hard to differentiate. It can decrease patient quality of life because of limitations in doing functional task performance. Diagnostic Nerve Block (DNB) was used to differentiate between spastic hypertonia and musculotendinous contracture to make precise clinical management decisions. **REPORT:** Subject A, 50 years old man, chronic stroke, Brunnstrom stage of the upper limb is 4, pattern IV of Hefter's upper limb classification, MAS 3 in elbow flexors and 2 in wrist flexors. He complained of upper limb stiffness, making it challenging to dress and groom, and pain in the Numeric Rating Scale (NRS) 2. Subject B: A 61-year-old woman, chronic stroke, Brunnstrom stage 4 of the upper limb, difficult to do upper dressing, pain (NRS 4), MAS 3 in elbow flexor and wrist flexor, pattern IV of Hefter's upper limb classification. An ultrasound-guided (1) musculocutaneous nerve block with 5ml of lidocaine was performed targeting the elbow flexor muscle group and (2) the median nerve for wrist-finger flexors. Elbow and wrist joint mobility increased in both patients, but finger flexor mobility was only achieved in subject A, pain decreased to NRS 1-2. DNB showed the mobility limitation caused by spasticity, and botulinum injection could be done to manage it. **CONCLUSION:** DNB can be used to differentiate between severe spasticity and contracture when the clinical examination is hard to differentiate. It helps the clinician to select the muscles more precisely for botulinum toxin injection in the upper limb of complex PSS.

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THE IMPACT OF STROKE REHABILITATION IN HOSPITAL TUANKU JA'AFAR SEREMBAN

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INTRODUCTION: To compare the impact of stroke rehabilitation program between medical ward and rehabilitation ward, HTJS. **METHODS:** Data was collected retrospectively from March 2019 until April 2022. Modified Barthel Index (MBI) was used as a functional measure. Absolute Functional Gain (AFG), Rehabilitation Efficiency Index (REI) and Relative Functional Efficiency (RFE) are Rehabilitation Impact Indices used to show the impact of stroke rehabilitation. **RESULTS:** Out of 608 cases referred to us, 432 cases were able to complete stroke rehabilitation. Reasons for incomplete rehabilitation include death (11), medically unstable (4), early discharge (51) and missing data (110). Both groups showed an increase of function (MBI) upon completion of stroke rehabilitation. However, rehabilitation ward showed higher frequency in clinically important difference (AFG ≥ 20); high rehabilitation efficiency level (REI > 1.0) and clinically effective rehabilitation (RFE ≥ 35%). This may be due to a better setup environment, more focused approach, and longer time of therapy per session. **CONCLUSION:** Stroke rehabilitation can be done early in acute hospital with positive outcome and more so if it is conducted in a specialized ward.

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KNOWLEDGE AND PERCEPTION OF MEDICAL STUDENTS & FRESH GRADUATES TOWARDS REHABILITATION MEDICINE: A SURVEY IN MALAYSIA

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INTRODUCTION: The objective of this study was to evaluate the knowledge and perception of medical students and fresh graduates towards rehabilitation medicine in public and private universities in Malaysia. **METHODS:** A cross-sectional study was conducted using a question-based survey administered through Google Form questionnaire. This questionnaire was distributed via social media platforms groups to all medical students and fresh graduates from a Malaysian medical school between August 2021 to February 2022. **RESULTS:** This study recruited 362 respondents of which 261 (72%) were from public universities and 101 (27.9%) from private universities. Majority (70.7%) of the respondents have heard of rehabilitation medicine as a specialty, whereas 16% respondents have not heard of it and 14.6% were not sure. 47.5% respondents claimed rehabilitation medicine was introduced in the medical curriculum, 29.3% were not sure while 23.2% claimed there were none. The respondents were exposed to rehabilitation medicine in year 4 (30.7%), year 3 (9.7%), year 2 (6.6%), Year 1 (5.2%) and year 5 (3.9%). Majority (59.9%) claimed they somewhat know of patient conditions best suited for rehabilitation medicine whereas 31.2% had no idea. **CONCLUSION:** There remains a large number of respondents who are unaware of rehabilitation medicine as a specialty. Currently, the undergraduate medical curriculum has not included rehabilitation medicine as one of its compulsory rotations in both public and private universities in Malaysia. Rehabilitation medicine reduces the impact of a broad range of health conditions and has many elements introduced in various clinical and pre-clinical rotations which shows it is an essential component of patient care.

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A PILOT STUDY ON HOME-BASED TELEREHABILITATION IN DETERMINING RETURN-TO-WORK READINESS AND QUALITY OF LIFE AMONG STROKE PATIENTS

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INTRODUCTION: IntelliRehab®, a telerehabilitation set-up was designed to improve the delivery of physical therapy for upper and/or lower extremities from a gamification approach that can be tailored to the individual patient's rehabilitation goal, including readiness to return to work. This pilot study aimed to evaluate efficacy of telerehabilitation as an adjunct to the conventional rehabilitation programs for the improvements of the functional motor recovery of the upper limbs in determining the return-to-work (RTW) readiness and quality of life (QOL), as guided by the values of Fugl-Meyer Assessment Upper Extremities (FMA-UE), RTW readiness and QOL using Stroke Impact Scale (SIS) among stroke patients in Hospital USM. **REPORT:** A total of nineteen (n=19) ischemic stroke patients with hemiparesis (under 4 months since acute event) were randomised in the study into two groups: conventional rehabilitation (n=9) and IntelliRehab+conventional (n=10). All patients underwent FMA-UE assessment at baseline and after 6 months rehabilitation post-intervention. (Figure 1) Group I: Conventional Rehabilitation. This group received conventional rehabilitation with standard protocol by Malaysia Ministry of Health Clinical Practice guideline – Management of Stroke (2nd Edition). The sessions per week over a 3-month period and the rehabilitation focused on upper limb exercise. Group II: IntelliRehab + Conventional Rehabilitation This group received conventional rehabilitation and home-based telerehabilitation tools for them to perform IntelliRehab. The data analysis for this study used non-parametric statistical tests due to a relatively small sample size. A repeated measure ANOVA was used to compare differences between baseline and 6 months of FMA-UE scores, RTW readiness score and SIS scores. The Spearman Rho correlation test was performed to study the relations between FMA-UE score and RTW readiness score, FMA-UE score, and SIS score. $P<0.05$ was considered statistically significant. Outcome: All patients in both groups had marked significant improvements in motor recovery (FMA-UE) after 6 months' rehabilitation ($p<0.05$) (figure 2). In addition, there was a weak correlation between motor recovery (FMA-UE) and RTW readiness ($r=0.50$). The relationship between motor recovery (FMA_UE) and QOL showed weak correlation for both groups respectively ($r=0.49$). Overall, a greater score of the FMA-UE was not related to improvement in RTW readiness and QOL for both groups. Both the conventional rehabilitation and/or with

telerehabilitation appeared effective to enhance functional motor recovery in ischemic stroke rehabilitation, at least in the context of upper extremity rehabilitation in this study. **CONCLUSION:** The findings of this study suggest that motor recovery is important for stroke patients in improving their functional capacity. It is important for therapists to focus on motor recovery so that daily living is improved. After all, undergoing conventional rehabilitation and using telerehabilitation as home-based exercise seem effective and important as part of rehabilitation that benefits the stroke survivors. Our results also suggest that gamified rehabilitation might be used as home-based therapy for motor recovery and maximize their recovery potential in RTW readiness and QOL. A multi-centre collaborative study and wider advocacy for telerehabilitation for stroke survivors in Malaysia is warranted.

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THE EFFECTIVENESS OF HOME-BASED REHABILITATION (INTELLIREHAB) ON FUNCTIONAL MOTOR RECOVERY AMONG STROKE PATIENTS

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INTRODUCTION: Timely and effective hospital-based physiotherapy can capitalize on spontaneous recovery with 80% of recovery happened within the first 6 weeks of the injury. However, it is costly and focuses more on increasing lower limb movement. Conventional rehabilitation that is composed of 4 hours of training per week and just 30 repetitions of a single movement might not always be practical to promote the functional outcome. Tele rehabilitation is defined as “the delivery of rehabilitation services via information and communication technologies”. IntelliRehab tool permits the patients to perform their rehab at home and featured an intelligent virtual assistant, wireless interaction sensors to capture body motions, and a tool for custom exercises. Its utility in acute stroke treatment has been evidently supported but in chronic stroke is still less clear. Objective: To compare the efficacy of tele rehabilitation and conventional rehabilitation programs for functional motor recovery among stroke patients in Hospital USM (HUSM). **METHODS:** This was a randomised controlled trial with nineteen (n=19) stroke patients with hemiparesis (under 4 months since acute event) grouped into two: conventional rehabilitation (n=9) and Intellirehab + conventional (n=10). They underwent Fugl-Meyer Assessment Upper Extremities (FMA-UE), Barthel Index and Arm Motor Ability Test (AMAT) at baseline and after 6 months rehabilitation post-intervention. a) Group I: Conventional rehabilitation This group received conventional rehabilitation with standard protocol by Malaysia Ministry of Health Clinical Practice guidelines -Management of Stroke (2TM Edition). The sessions consisted of 2 sessions per week over a 6-months period and the rehabilitation focused on upper limb exercise. Duration for each session was from 45 minutes to 1 hour. b) Group II: IntelliRehab + Conventional Rehabilitation This group received conventional rehabilitation and also the telerehab tools for them to perform IntelliRehab. **RESULTS:** There is significant different between conventional rehabilitation and Intellirehab ($p = 0.157$, $p > 0.05$) in terms of functional motor recovery (FMA-UE). Meanwhile, the relationship between motor recovery (FMA-UE) and patient’s functional daily living skills (BI) shows that there is significant correlation ($p = 0.020$, $p < 0.05$) between motor recovery and their functional daily living skills. The strength of the relationship is moderate to good correlation ($r = 0.53$). Hence, the relationship between motor recovery (FMA-UE) and patient’s functional capacity (AMAT) also shows that there is significant correlation ($p = 0.004$, $p < 0.05$) between motor recovery and their functional capacity. The strength of the relationship is

moderate to good correlation (r = 0.62). **CONCLUSION:** Conventional rehabilitation and telerehabilitation are both effective in ischemic stroke rehabilitation. Functional daily living and functional capacity of stroke patients are associated with their motor recovery. Telerehabilitation is not significantly different from conventional rehabilitation, but telerehabilitation can be an alternative way in providing rehabilitation towards stroke survivors, particularly with the home-based approach in promoting therapy compliance.

ORAL PRESENTATION

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FACTORS ASSOCIATED WITH URINARY TRACT ABNORMALITIES (UTAs) IN PERSON WITH SPINAL CORD INJURY (SCI)

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INTRODUCTION: Medical advances in the rehabilitation field have greatly enhanced the long-term survival of individuals with SCI. However, UTAs secondary to neurogenic bladder are still a major problem in the long-term management of these patients and remain challenging. Understanding of its frequency and associated factors will help in better planning of future protocol for screening and preventive measures can be tailored accordingly. **METHODS:** Medical reports of all patients with SCI were screened. Variables in patients with SCI, including age at the time of injury, duration of injury, gender, employment status, etiology, level and severity of SCI, bladder management methods, use of anticholinergic agents, and history of positive urine culture with ultrasound/computed tomography findings of the urinary tract were reviewed and analyzed. **RESULTS:** Data was obtained from 372 patients. The mean age of SCI was 41.13±19.29 years old, while the male to female ratio was 3:1. UTAs were found in 61.8% of patients in this study. The most common UTAs were renal cysts (44%), followed by hydronephrosis (19%) and renal calculi (13%). Females (OR:0.415, $p<0.05$) were associated with a lower risk of UTAs. On the other hand, the risk of UTAs was higher in people with SCI more than 20 years (OR: 3.884, $p<0.05$), atraumatic SCI (OR: 2.064, $p<0.05$) and the presence of positive urine culture (OR: 0.523, $p<0.05$). **CONCLUSION:** A large number of patients with SCI had UTAs. Hence, there is a need for a proper screening protocol to prevent and detect early changes to prevent deterioration of the function of the urinary tract.

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SUBCUTANEOUS PERINEURAL INJECTION THERAPY (PIT) FOR CLUNEAL NEURALGIA (CN): A CASE SERIES ON LOW BACK PAIN (LBP) INTERVENTION

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INTRODUCTION: LBP is the leading cause of Years Lived with Disability (YLD) worldwide. LBP secondary to CN is common (incidence up to 14%) but often overlooked diagnosis. Treatment approach of using subcutaneous PIT with buffered Dextrose 5% in Water (D5W) for treatment of CN remains largely unfamiliar. It works by downregulating Transient Receptor Potential Vanilloid Receptor-1 causing decrease in release of Substance P and Calcitonin gene-related peptides. This reduces neurogenic inflammation and neuropathic pain by restoring normal nerve function. In this study, we evaluate the effectiveness of subcutaneous PIT with buffered D5W for treatment of CN. **REPORT:** Three patients with complaints of severe low back pain attended our musculoskeletal rehabilitation clinic for further evaluation. Diagnosis of CN has been made based on clinical assessment. These patients have been given four to six series of PIT using a 30G hypodermic needle, 1 to 2 mL of buffered D5W administered subcutaneously at the tender chronic constrictive injury (CCI) points of Cluneal nerve (superior, medial, or inferior) and other CCI points if indicated. Numeric rating scale (NRS) of pain intensity was recorded at first review, before and after each PIT as well as at follow up. Oral analgesia and standard rehabilitation care prior to PIT was continued. Treatment outcome demonstrated significant immediate pain reduction post-PIT up to 100% as measured by NRS. Pain reduced from severe to mild or moderate pain during follow up. No adverse events were encountered. **CONCLUSION:** CN should be considered as a differential diagnosis of LBP. Subcutaneous PIT with buffered D5W is simple, safe, and effective interventional pain management for CN. It has a diagnostic value as well as therapeutic effect providing significant reduction of pain.

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INVOLUNTARY KNEE EXTENSION WITH TRANSCRANIAL MAGNETIC STIMULATION: A REHABILITATION FUTURE IN LOWER LIMBS

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INTRODUCTION: Knee extension deficit after acute trauma is a painful and exhaustive orthopedic condition. Transcranial Magnetic stimulation (TMS) that targets the primary motor control can be used as a future rehabilitative tool. Objective: To investigate the relationship between the stimulus intensity of the TMS with the voluntary knee extension. **METHODS**: Magstim Double Cone Coil 460-00, The Magstim® BiStim, Nicolet EDX® EMG / NCS / EP / IOM System, Mechanomyography BIOPAC. **RESULTS:** Results showed significant output values starting from 70% of stimulus intensity. Specifically, subjects categorized in active category showed more significant amplitude value of Rectus Femoris (RF). Bigger knee angle observed with the increasing TMS stimulus intensity. Significant results at 70% would indicate that this level of stimulus intensity can be used as the baseline to provide useful impacts during rehabilitation. Motor evoked potentials produced by TMS had been further manifested by the vibration in the muscles which had proved that knee extension can be produced. Activity level had been shown as one of the contributing factors that needs to be considered to choose the TMS stimulus intensity to stimulate voluntary knee extension. **CONCLUSION:** Higher TMS stimulus intensity can produce more significant muscle output and knee extension especially in active adults.

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MAJOR LIMB AMPUTATION FROM ACUTE LIMB ISCHEMIA IN MILD AND ASYMPTOMATIC COVID-19 CASES: CASE SERIES

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INTRODUCTION: A majority of incidences of acute limb ischemia have been reported attributing to the pathophysiology of Covid-19 infection. These occurrences have been documented in numerous studies that required vascular surgery and orthopaedic consultations. Similar cases were noticed within our setting and referred to rehabilitation medicine team as these two cases in our report resulted in major limb amputation. **REPORT:** CASE 1: 51-year-old active female with background of well controlled diabetes mellitus was diagnosed with Category 1 Covid-19 infection and was subjected to home quarantine. She presented to the hospital with sudden onset of leg pain on day 11 of illness. CT Angiography revealed total occlusion of right common iliac artery, right external iliac artery, proximal right internal iliac artery with multiple segmental and partial occlusion over right infra-renal aorta, right popliteal and peroneal artery. She initially underwent arterial bypass with left lower limb embolectomy and right trans-metatarsal amputation (TMA). However, she experienced complication of poor wound healing and was subsequently subjected to right transtibial amputation. She was prosthetically restored 5 months post operatively. CASE 2: 46-year-old Malay lady with background of well controlled diabetes mellitus and hypertension was diagnosed with Category 1 Covid-19 infection and was subjected to home quarantine. She presented with complaint of pain and numbness over her left hand on day 6 of illness. She initially underwent left brachial embolectomy upon admission. CT Angiography revealed total thrombosis over distal brachial artery with minimal reconstitution at mid radial artery. She subsequently underwent left transtibial amputation of left upper limb and was prosthetically restored 5 months later. **CONCLUSION:** We made a comparison of our cases with several other case reports. The cases reported in our series showed poorer outcomes of limb salvage despite the patient being almost asymptomatic or mild symptoms and undergoing extensive anticoagulation therapy. In keeping with the fact that the risk of coagulopathy and thrombosis does not directly commensurate to the severity of symptoms experienced, perhaps one needs to be vigilant in early detection and monitoring of patient with Covid-19 infection for Acute Limb Ischemia.

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THE IMPACT OF ADJUNCT ROBOTIC THERAPY ON MID-THIGH AND CALF CIRCUMFERENCES AND FUNCTIONAL OUTCOMES OF STROKE PATIENTS

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INTRODUCTION: The exponential increments of stroke survivors with diverse levels of impairments lead to an increase in global burden, affecting economic and social well-being. Stroke robotic treatment provides repetition, and consistency in the frequency, which is difficult to attain from conventional physiotherapy (CP) alone. This paper aims to explore the impact of adjunct robotic therapy (ART) and the benefits of combining robotic therapy with conventional physiotherapy in the neurorehabilitation of stroke patients. **METHODS:** This study adopts the prospective cohort study. Incorporating the purposive sampling method from the pre-planned CP (conventional physiotherapy alone) and ART (addition of robotic therapy), a total of 20 patients were analyzed. Three continuous measurements (baseline, week2 and week4) of the same patients were taken, which were the mid-thigh and calf circumferences, Functional Ambulation Categories (FAC), 6-minute walk distance (6MWD) and World Health Organization Quality of Life, Brief Version (WHOQOL-BREF) questionnaire in Malay Version. **RESULTS:** ART groups showed significant between groups interaction in the mid-thigh circumferences of paretic limbs ($F_{1,18} = 12.42$, $p = 0.002$) and significant time interaction of 6MWD ($F_{2,36} = 34.83$, $p < 0.000$). The mean difference from baseline and after week 4 of therapy of the distance walked by ART groups was longer than CP group. Quasi-similar effects after four weeks of therapy were seen in the calf circumferences, FAC, and WHOQOL- BREF scores. Non-significant findings in the calf circumferences postulated due to increment of muscular fat and reduction of muscle mass, and increment of both paretic, and non-paretic muscle circumferences after therapy. Other factors influenced the quality of life, including financial status, education, underlying diseases, dependency on medications and the age of those affected with stroke. **CONCLUSION:** The impact of ART on the mid-thigh circumference will give off the clue of the importance and benefit of combining robotic therapy with the traditional therapy practiced in neurorehabilitation for stroke patients. It is anticipated that ART can provide a bridge in healthcare disparities, despite the physical, financial and personal limitations.

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RETURN TO WORK AFTER COVID-19 INFECTION

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INTRODUCTION: COVID-19 is a global threat to both public health and the economy. Long-term consequences of Covid-19 may affect functional recovery and community participation. Return to work (RTW) signifies the capacity to resume a societal role. The aim of this study is to determine RTW status after six months Covid-19 infection and its associated factors. **METHODS:** This is a retrospective study done at Rehabilitation Medicine Department, HPUPM between January and December 2021. Individuals with Covid-19 infection categories 4 and 5 who are currently employed will be included in this study. The outcome of RTW six months after infection will be measured, together with sociodemographic data and clinical assessments. **RESULTS:** A total of 20 patients were analyzed, 15 of whom were successful RTW. Among those who RTW; all female patients successfully RTW ($p < 0.05$), age group < 50 years (77.8%), category 4 (80%), all completed vaccination patients successfully RTW and from white collar group ($p < 0.05$). Fatigue (85%) is the most common among long covid-19 symptoms. The RTW group scored better on Fatigue Severity Scale and Mini-Mental State Examination than the Not RTW group. Females and white-collar workers were linked to successful RTW outcomes. Males have more severe Covid-19 infection, mortality, and prognosis.1 White-collar worker requires less physical activity demand compared to a blue-collar worker. Post Covid-19 fatigue syndrome affects roughly 85% and can persist up to 5-6 months, which is similar to our finding. Fatigue and cognitive issues may affect the ability to return to the previous level of function and potentially return to work. **CONCLUSION:** In this study, female and white-collar workers were associated with good RTW outcomes. The most persistent symptom is fatigue, which, together with cognitive problems, affects the outcome of RTW.

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THE IMPACT OF DIGITAL EDUCATION MATERIAL IN IMPROVING CARDIOVASCULAR KNOWLEDGE AND EXERCISE COMPLIANCE AMONG HOME-BASED CARDIAC REHABILITATION PARTICIPANTS: A PILOT STUDY

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INTRODUCTION: Home-based cardiac rehabilitation (HBCR) program is a potential solution to overcome CR barriers. The recently passed COVID-19 pandemic was a major CR barrier, where frequency of face-to-face meetings with CR providers needed to be reduced, hence making home-based program the sole option. However, reduced physical interaction with CR providers among HBCR participants may also mean reduced cardiovascular knowledge-sharing opportunities. This study aims to assess the impact of providing a WhatsApp-delivered digital education material in maintaining cardiovascular knowledge and exercise compliance among HBCR participants. **METHODS:** A prospective, multiple assessment study was conducted involving HBCR participants at a single centre. Participants were given a digital education material via "Whatsapp" at the beginning of CRP2 and followed up for 12 weeks. Cardiovascular knowledge was assessed using the The Attitudes and Beliefs about Cardiovascular Disease (ABCD) Risk Questionnaire. Compliance to exercise was measured using an electronic fitness tracker. **RESULTS:** 16 participants participated in this study. A pre/post comparison revealed mean score improvement in the ABCD-Risk Questionnaire by 4.3 (±4.7). All participants recorded an improvement in hours of exercise per week, and 57% (n=8) achieved the recommended exercise duration of a minimum 150 minutes per week. With regards to CR compliance, 92.9% (n=13) participants that completed the intervention completed CRP2, whereas none of the non-SPEM users completed CRP2. Although this study takes place during a period of Movement Restriction Order (MCO), it is shown that disease awareness and exercise compliance can be maintained by providing education material that is shared using a commonly utilized communication mobile application. **CONCLUSION:** A WhatsApp-delivered digital education material is a feasible intervention to HBCR participants and has a positive impact on maintaining cardiovascular knowledge and compliance to weekly exercise.

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PROXIMAL MEDIAN NERVE ENTRAPMENT IN MANUAL WHEELCHAIR USERS: CASE SERIES

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INTRODUCTION: Boninger et al (1999) found the association between the biomechanics of wheelchair propulsion and median nerve function. They concluded that increased body mass to be associated with increased propulsive and braking work during a wheeling task, thus higher risk for strain injury. Repetitive elbow flexion/ extension and pronation/supination movement during wheelchair propulsion may predispose patients to proximal median nerve injuries. **REPORT:** We report 2 cases of patients aged 34 with spinal cord injury, and 35 years old with adult spastic diplegic cerebral palsy. Both of them are chronic wheelchair users and have prominent elbow flexor muscles bulk. They presented with recurrent bilateral forearm and hand pain and numbness, aggravated by elbow flexion. Clinically both patients have tenderness over the lacertus fibrosus area, however provocative tests for median nerve entrapment were negative. Peripheral nerve examination revealed median and ulnar nerve neuropathy. Bedside ultrasound was done for both patients and revealed median nerve compression at the elbow level, but no compression at the carpal tunnel area. Thus, they were diagnosed with proximal median nerve entrapment namely Pronator Syndrome. Both patients received multiple episodes of minimally invasive pain intervention procedures (perineural injection therapy and hydrodissection) of the median nerve, coupled with multidisciplinary therapy. **CONCLUSION:** Pronator syndrome is a clinical diagnosis. Understanding the anatomy of median nerve, potential sites of compression, and the hallmark signs and symptoms of pain and paraesthesia will aid in the diagnosis. The definitive diagnostic studies such as electromyography and nerve conduction study might be helpful but are usually inconclusive in pronator syndrome. Exploring wheelchair biomechanics is an important perspective for us to focus on ergonomics and injury mechanisms, thus providing the ideal preventive measures to the patients.

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THE USE OF 3-DIMENSIONAL VIRTUAL REALITY FOR ACQUIRED BRAIN INJURY REHABILITATION: A CLINICAL STUDY PROTOCOL

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INTRODUCTION: Stroke and traumatic brain injury are the two most common acquired brain injury (ABI) requiring rehabilitation. With conventional rehabilitation programme, there is often limited scope of how much can be delivered either through hospital, community, or home-based programme. The use of Virtual Reality (VR) technology in rehabilitation has been emerging in the past few years. However, the use of VR technology involving 3-dimensional (3-D) VR is limited. Our team proposes the use of 3-D VR, and the following is the clinical study protocol, with the aim of applying the technology to extend rehabilitation in hospitals, community, and home-based setting. **METHODS:** This is a case-control randomized trial, with the intervention group (3-D VR and conventional rehabilitation) and control group (conventional rehabilitation only). A special team of 3-D VR and rehabilitation application experts designed modules to mimic conventional therapy with the addition of virtual immersion into activities of daily living, goal-oriented activities, and recreational activities. Both groups will undergo one rehabilitation session a week, for 8 weeks. A sample of 44 participants will provide 95% power with a risk of type 1 error of 0.05. A minimum of 22 participants per group is expected after considering 30% attrition rate. Demographic data and clinical information are collected from direct interviews and medical records of the participants. Inclusion Criteria: Children above 6 years old with consent from parents/legal guardian or adult above the age of 18 years old with self-consent or by legal guardian, history of acquired brain injury, ready for “active rehabilitation” and able to tolerate the 3-D VR head mounted device. Exclusion Criteria: Diagnosed with epilepsy and have uncorrected visual deficits. Pre-intervention assessments, 4-week assessments and 8-week assessments are designed to study changes within the subjects, and between intervention and control group. **CONCLUSION:** The study is currently underway, and receptiveness of subjects toward 3-D VR have been encouraging. Age does not appear to be a limiting factor in the use of 3-D VR.

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DRIVING RISK CHARACTERISTICS IN POST STROKE PATIENTS USING 'SCREENING FITNESS TO DRIVE' TOOL: A SINGLE CENTRE EXPERIENCE

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INTRODUCTION: Return to drive (RTD) being an important aspect of community reintegration, serves as an indicator of patient recovery and independence. 'Screening Fitness to Drive' tool has been adopted by the Occupational Therapy Unit (OCT) to improve delivery of services across Johor. This article aims to describe the risk of driving in stroke patients using this screening tool. **METHODS:** Retrospective cross-sectional study of stroke patients referred for driving assessment to OCT over a 6-month period. Measures include demographics, medical history, physical, visual, and cognitive/perceptual abilities. Data analyzed using descriptive statistics for sample characteristics. **RESULTS:** Total of 15 subjects with a mean age of 49.5 years. 80% of them suffered ischemic stroke and 20% had hemorrhagic stroke. 33% had low driving risk while 67% had moderate driving risk. 33% of the total subjects RTD with 80% of them imposing moderate driving risk. Impairments hindering ability to RTD were physical (40%) and cognitive/perceptual (60%). Half reported anxiety about RTD with 71% having very severe anxiety levels. **CONCLUSION:** Findings suggested stroke patients require driving risk assessment before RTD. Identification of impairments limiting ability for RTD will lead to a tailored approach to treatment and improved outcomes. Other treatment centers can employ this tool to screen stroke patients as it is made of simple tests.