P443-e
Ischemic Stroke patients in rehabilitation center and cause investigation
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Keywords: Ischemic stroke; Rehabilitation; Causes
Introduction.– Ischemic Stroke patients are often treated in rehabilitation centers without being fully investigated from the reasoning and cause of stroke point of view during the earlier hospitalization period.

Material and methods.– Forty-five ischemic stroke patients were investigated during their stay in "Anagnostis Rehabilitation center" with hematologic and biochemical blood tests, ECG, Holter 24 hour ECG, echocardiogram and carotid & vertebral artery triplex ultrasound. Additional CT angiography or MRAniography were performed in a few cases. There was no prior investigation during early hospitalization. Two patients were additionally checked with coagulation factors investigation.

Results.– Sixteen patients were discovered with chronic atrial fibrillation, 8 with paroxysmal. In 4 patients atrial fibrillation coexisted with carotid artery occlusion. Vertebral artery stenosis was observed in one patient and thin basal artery in another one. Eight patients were diagnosed with serious carotid artery stenosis. Research results were not of diagnostic value in 6 patients and one was found with hypercoagulation syndrome.

Discussion.– Determining the cause of the ischemic stroke disease is of top priority for further treatment and prognosis even during the period of rehabilitation, therefore improving overall therapy and prevention of new incidents.

http://dx.doi.org/10.1016/j.rehab.2014.03.098

P444-e
Audit of investigation and management of stroke patients admitted to the stroke unit, Southampton University Hospital, UK
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Keywords: Stroke; Brain CT; Antiplatelet
Methods.– In this prospective audit we selected 50 patients who admitted in our stroke unit in April and May 2013 and we audited the following factors: time interval between admission and requesting Brain CT scan, time interval between Brain CT scan request and performing Brain CT scan, time interval between performing Brain CT scan and prescribing antiplatelet, time interval between prescribing and administrating antiplatelet. Exclusion criteria were: hemorrhagic stroke, patients who received thrombolysis and those whose diagnosis turned out to be non-stroke. Participants: 30 males and 20 females. Types of infarcts based on Oxford classification were: 29 PACS, 11 PACS, 6 LACS and 4 POCs. Standard: RCP stroke guideline 2012.

Results.– Seventy-six percent had brain CT request within 12 hours of admission and 54% had brain CT within the same period of admission. For 74% of patients antiplatelet prescribed within 6 hours of performing Brain CT. Seventy-eight percent of patients received antiplatelet up to 6 hours after prescription.

Conclusion.– Only around half of the patients had brain CT within 12 hours suggested by RCP guidelines. Most of the patients received antiplatelet in a timely period but there have been some delays up to 2 days in some cases. Suggestions made for improvement of practice.

http://dx.doi.org/10.1016/j.rehab.2014.03.099

P445-e
Can Ekso<sup>TM</sup> be a safe and feasible training device for walking training in patients with hemiplegia after stroke?
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Keywords: Stroke; Hemiplegia; Walking training; Exoskeleton
Introduction.– Ekso<sup>TM</sup> is a wearable, motorized exoskeleton that enables patients with hemiplegia after stroke to stand up and walk. Development of unilateral control makes it better suited for patients with walking difficulties, reduced postural control, weight bearing in stance and clearance in swing, thus it was of interest to explore whether the Ekso<sup>TM</sup> was safe and feasible for walking training.

Observations.– A project started in October 2013, and the 2 first cases of 5–6 are reported. Patients trained 9 sessions over 5 weeks (case 1) and 8 sessions over 3 weeks (case 2). Training time: 45–50 min, don and doff time: 10–15 min, walking time: from 7–8 to 13–14 min, number of steps from 290 to approximately 500. Personal assistance reduced from moderate to light. Both reported satisfactory to very satisfactory training sessions. No adverse events were registered and spasticity reduced during training. Case 1 used a cane in the beginning, and not at the end.

Discussion.– Walking time increased, and Ekso<sup>TM</sup> allows for training of postural control, weight shift and mobility. No adverse events like sores or falls, and high satisfaction were registered. Preliminary experiences of feasibility and safety of Ekso<sup>TM</sup> were mainly positive, but further research is required.

http://dx.doi.org/10.1016/j.rehab.2014.03.100

P446-e
The use of Mirror Therapy in stroke patients with hemiplegic upper limb: A randomized controlled trial
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Introduction.– Upper limb hemiplegia is a problem in stroke rehabilitation. Aim.– To evaluate Mirror Therapy (MT) as addition to conventional rehabilita-

Discussion.– MT is a promising method to improve motor recovery of the upper limb in stroke patients. Low cost and acceptability makes MT useful in stroke rehabilitation.

http://dx.doi.org/10.1016/j.rehab.2014.03.101

P447-e
Falls incidence and risk factors in stroke patients after discharge from PRM Unit
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Introduction.– Falls are one of the most important complications after stroke that has a negative impact on the patients' and caregivers' quality of life. The aim of this study was to determine the incidence of falls after discharge from the PRM Unit and to identify risk factors associated with falls.

Methods.– A prospective, single center, randomized controlled trial.

Results.– After 2 month treatment (20–24 sessions) both groups showed improvements in MI and FIM values compared to CT group. No adverse event was recorded.

Discussion.– MT is a promising method to improve motor recovery of the upper limb in stroke patients. Low cost and acceptability makes MT useful in stroke rehabilitation.

http://dx.doi.org/10.1016/j.rehab.2014.03.101
**Keywords:** Stroke; Falls; Risk factors

**Introduction.**—Falls among post-stroke survivals has been studied in the literature. We investigate the incidence and the risk factors for falls in stroke patients after discharge from PRM inpatients.

**Material and methods.**—One hundred and thirty-four stroke patients took part in the study. After discharge from PRM department, mean 15.9 months, telephone interview was used to gather information about falls and functionality. One hundred and eleven patients were found and responded.

**Results.**—Sixteen patients out of 111 (13.5%) reported 57 falls. Seven fallers reported hip fractures (6.3%). Falls were not correlated with discharge FIM score ($P = 0.5$) with age ($P = 0.2$) and with the length of stay ($P = 0.9$), with the delay of initiation of the rehabilitative procedure ($P = 0.5$) and with the admission FIM scores ($0.6$). Falls were not correlated with the kind of the stroke (ischemic or hemorrhage) ($P = 0.1$), with the involved side ($P = 0.1$), with the sex ($P = 0.4$) and with neither with the presence of hypertension nor Diabetes mellitus or apusia.

**Discussion.**—This study reveals that fall risk factors of stroke patients after discharge from PRM unit, can be studied using a multiple environmental, functional and physical approach.

http://dx.doi.org/10.1016/j.rehab.2014.03.102

**P448-e**

**Neuromuscular electrical stimulation (NMES) in stroke patients with swallowing disorders: State of the art**

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**Keywords:** Stroke; Electrical stimulation; Vitalstim

**Introduction.**—Neuromuscular electrical stimulation (NMES) is an electrotherapy system designed for different conditions. Specifically, Vitalstim is a treatment for swallowing dysfunctions. The purpose of this article is to evaluate the outcome of Vitalstim stroke patients through an analysis of the literature.

**Observation.**—The literature reviewed was derived using the biomedical database Medline to identify all relevant articles published from the initiation of the different databases up to December 2013. We searched in the Pubmed, Cochrane Library, CINHAL and ACP Journal Club databases. The literature about this condition varies greatly regarding all kinds of dysphagia and is not uniform in conclusions and methods for stroke patients. The only review found regards NMES in general and does not address Vitalstim. The conclusion is univocal in conclusions and methods for stroke patients. The only review found explained.

**Discussion.**—The review not only elucidates the substantive potential benefit of this treatment, but also potential key concerns for patient safety and long-term outcome. Five out of 8 trials had effective results, 2 of them an uncertain result and in 1 it was an ineffective method. The discussion within the clinical and research communities, especially toward the Vitalstim stimulator, is objectively explained.

http://dx.doi.org/10.1016/j.rehab.2014.03.103

**P450-e**

**Complex physical therapy in hemiplegic shoulder rehabilitation**

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**Keywords:** Hemiplegia; Stroke; Dysfunction; Physical therapy

**Introduction.**—Hemiplegia compromises the shoulder complex due to spasticity, contractures, pain, abnormal movement patterns and soft tissue alterations. We are reporting clinical effectiveness of complex physical therapy (CPT) used in shoulder rehabilitation after stroke.

**Material and methods.**—Thirty hemiplegic patients with spasticity and upper limb dysfunction after ischemic stroke were divided into two groups. In the CPT group (15), each patient received stretching, myorrelaxation laser, ultrasound therapy and electrical stimulation to the deltoid and triceps brachialis muscles, 5 days/week, 4 weeks. The control group (15, CG) received oral medication and stretching. Patients were assessed before, at the end and 2 weeks after treatment using modified Ashworth scale, passive range of motion (ROM), and the Disabilities of the Arm, Shoulder and Hand (DASH) scale.

**Results.**—The DASH mean score significantly decreased after CPT (62.1) compared with CG (65.8, $P < 0.05$). The CPT group demonstrated significant improvement in shoulder abduction (mean difference 5.1 degrees) compared to the CG (2.6 degrees, $P < 0.01$). Pain, pectoralis major spasticity (CPT mean value initial 3.1 then 2.4, CG 3.1, then 3.1, $P < 0.05$). Conclusions.—There are different modalities of treatment operating concurrently, but CPT shows significantly better results in reducing dysfunction and motor function improvement.

http://dx.doi.org/10.1016/j.rehab.2014.03.105

**P449-e**

**Hemiplegia post-stroke consequences on bone microarchitecture: 3D micro-tomography and magnetic resonance spectroscopy evaluation. Pilot, prospective, single-center study**

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**Keywords:** Hemiplegia; Osteoporosis; Adipocity bone marrow percentage; MRS; Microarchitecture osseuse; Bone microarchitecture; 3D micro-tomography

**Background.**—Hemiplegia after stroke is a risk factor for osteoporotic fractures. Several factors are involved, which should be evaluated with other tests than bone densitometry (DXA).

**Method.**—We propose, in this comparative (each patient is his own control), prospective study, using Magnetic Resonance Spectroscopy (MRS) and 3D micro-tomography to answer the following questions: 6 months after hemiplegia, does bone marrow adipocity percentage increase and does trabecular volume (BV/TV) decrease in the tibia distal epiphysis, plegic side compared to healthy side?

**Results.**—Nine patients, 55 to 80 years old, were included and recovered a functional walking in less than 2 months. One patient presented with osteoporosis, evaluated with DXA in the femoral neck. Five patients presented with osteopenia, bilaterally. Bone adipocity percentage and BV/TV were stable within 6 months after stroke and there was no difference between plegic side and healthy side. It was not correlated with patient functional status and bone mineral density.

**Discussion.**—The lack of validation of the hypothesis reflects a sample bias. However, this study raises new pathophysiological hypotheses of bone remodeling after stroke, including the impact of bone vascularization.

http://dx.doi.org/10.1016/j.rehab.2014.03.104