Neuro-epidemiology; Neurorehabilitation

EP2247
Risk of cancer in relatives of patients with myotonic dystrophy: a population based cohort study

M. Lund1, L.J. Diaz1, S. Gørtz1, B. Feenstra1, M. Duno2, I. Juncker1, H. Eiberg4, J. Vissing5, J. Wohlfahrt1, M. Melbye1
1Department of Epidemiology Research, Statens Serum Institut, 2Department of Clinical Genetics, Copenhagen University Hospital Rigshospitalet, Copenhagen, 3Department of Clinical Genetics, Aarhus University Hospital Skejby, Aarhus, 4Department of Cellular and Molecular Medicine, University of Copenhagen, 5Neuromuscular Research Unit, Department of Neurology, Copenhagen University Hospital Rigshospitalet, Copenhagen, Denmark

Introduction: Myotonic Dystrophies (DM) are autosomal dominantly inherited neuromuscular disorders caused by unstable nucleotide repeat expansions. DM and cancer have been associated, but the pathogenesis behind the association remains unclear. It could relate to derived effects of the DM genotype or to a common underlying trans-acting genetic factor which might increase the risk of both cancer and enhanced mitotic repeat expansions. In the latter case, an increased risk of cancer would be expected also in non-DM relatives to DM patients. To elucidate this, we conducted a population based cohort study investigating risk of cancer in relatives to DM patients.

Methods: DM was identified using the National Danish Patient Registry and results of genetic testing. Information on cancer was obtained from the Danish Cancer Registry. We established a cohort of 5,757,565 individuals with at least one relative using the Danish Family Relations Database based on kinship-links in the Danish Civil Registration System. Familial aggregation of cancer was evaluated by (incidence) rate ratios (RRs) comparing the rate of cancer among relatives to patients with DM from 1977 to 2010 (exposed), with the rate of cancer among persons with a relative of the same type, but without DM (non-exposed).

Results: In first degree relatives to individuals with DM the adjusted RR of cancer overall was 0.89 (0.71-1.12) and 0.68 (0.37-1.12) before age 50 and 0.96 (0.74-1.23) at age 50 or older, respectively.

Conclusions: The present study does not support an increased risk of cancer in non-DM relatives to DM patients.

Disclosure: Nothing to disclose

EP2248
The prevalence of multiple sclerosis in Northern Portugal: results from a multisource population-based study

L. Ruano1, B. Gomes2, I. Alves1, C. Veira1
1Department of Neurology, Centro Hospitalar de Entre Douro e Vouga, 2Unidade de Saúde Pública Entre Douro e Vouga I, Santa Maria da Feira, Portugal

Introduction: The prevalence of Multiple Sclerosis (MS) has been increasing worldwide and the north-south gradient of prevalence is becoming less evident on the Northern hemisphere. A population-based study performed 15 years ago in Portugal reported a lower prevalence estimate than the average for Western Europe. The aim of this study is to estimate the prevalence of MS in a well-defined geographical region of Northern Portugal (Entre Douro-e-Vouga).

Methods: Multiple overlapping sources were used to ascertain all cases from the reference population: records from hospitals in the region and the neighbouring regions; diagnostic databases of primary care physicians; and applications for social security disability benefits. The prevalence date was 1st of January 2013 and the reference population 274,859 inhabitants. Patient’s neurologists were contacted to confirm a positive diagnosis based on McDonald criteria and to retrieve clinical information.

Results: A total of 161 patients were identified after eliminating duplicates. The female to male ratio was 1.8:1 and the median age at onset was 30.0 (IQR: 24.0; 39.0). Relapsing remitting forms accounted for 65% of patients, secondary progressive for 21% and primary progressive for 13%. The prevalence was estimated in 58.6 patients per 100,000 (95% CI, 49.9 - 68.4).

Conclusions: In this study we report a higher prevalence of MS than what had been previously described in Portugal, but still far from the values recently reported in other southern European countries.

Disclosure: Nothing to disclose
EP2249
The effectiveness of the vestibular rehabilitation on the posturographic platform with biofeedback training of patients with dizziness and imbalance
L. Antonenko, V. Parfenov, N. Bestuzheva, M. Zamergrad
The First Sechenov Moscow State Medical University, Moscow, Russian Federation

Introduction: The development of the rehabilitation methods of patients with vertigo and imbalance is one of the most pressing problems. The vestibular rehabilitation on the posturographic platform with biofeedback training can be an effective rehabilitation mean of the patients with dizziness and imbalance of various genesis.

Methods: The investigated group included 60 patients with vertigo and imbalance, who participated in the programme of rehabilitation on the posturographic platform with biofeedback training consisting of 10 repetitions, was performed every day 5 days a week. The patients aged 25 to 75 years. 40% of patients were with unilateral vestibular loss, 28% of patients were with multifactorial disequilibrium of the elderly, 5% of patients were with transient ischemic attacks, 27% of patients were with of phobic postural vertigo.

Results: A statistically significant improvement of the balance according to computer stabilometry was observed after the rehabilitation programme on the posturographic platform.

Conclusions: The use of the rehabilitation programme on the posturographic platform with biofeedback training is an effective method of vestibular rehabilitation of patients with dizziness and imbalance.

Disclosure: Nothing to disclose

EP2250
Primary brain tumours incidence in Georgia - a three-year prospective population-based study
D. Gigineishvili¹, N. Shengelia¹, S. Kartsivadze¹, G. Shalashvili¹, T. Gigineishvili¹, S. Rohrmann², A. Tsiskaridze¹, R. Shakarishvili¹
¹Department of Neurology & Neurosurgery, Tbilisi State University, Tbilisi, Georgia, ²Division of Cancer Epidemiology and Prevention, Institute of Social and Preventive Medicine, University of Zurich, Zurich, Switzerland

Introduction: In March 2009 a prospective population-based study was started in Georgia to define the incidence and describe other epidemiological data of malignant and non-malignant primary brain tumours.

Methods: Information from treatment facilities and diagnostic neuroimaging services was regularly collected by our representatives and stored in a cancer reporting form. Further verification was performed to ensure the completeness of data and absence of duplication.

Results: 1476 incident cases were indentified during a period of three years with the overall incidence rate of 10.48 per 100,000 person-years, age-standardised (AS) to the year 2000 US population. Non-malignant tumours constituted 62% of all cases. There was a clear female preponderance in sex distribution (58%vs.42%, p<0.001). Among individual histology types AS incidence rates were highest for meningioma (2.58/100,000), pituitary adenoma (1.38/100,000) and glioblastoma (0.49/100,000). The AS incidence rates were higher among females than males for all primary brain tumours (10.62vs.9.06/100,000) as well as for individual histologies except for glioblastoma, several other neuroepithelial and germ cell tumours.

Conclusions: Differences in rate values compared with 2004-2005 Central Brain Tumor Registry of the United States data may be explained by a higher percentage of unclassified tumours (38.5%) in our study. Distribution of tumours by histology and sex was overall in line with published CBTRUS statistics.

Disclosure: Nothing to disclose
EP2251

Neurological emergencies in an interdisciplinary university-based emergency department

T. Horvath¹, A. Galimanis¹, R. Wiest², A. Exadaktylos³, C.L. Bassetti¹, U. Fischer¹
¹Department of Neurology, Inselspital, University Hospital, ²Department of Neuroradiology, Inselspital, University Hospital, ³Department of Emergency Medicine, Inselspital, University Hospital, Bern, Switzerland

Introduction: Neurological emergencies are associated with high morbidity and mortality. Given the rapid improvement in diagnostic and therapeutic options, especially in stroke patients, immediate and accurate diagnosis and initiation of treatment is crucial to improve patients’ outcome. We prospectively assessed the numbers and the spectrum of neurological diseases seen by neurologists in an interdisciplinary University based Emergency Department (iUED) in order to calculate the manpower necessary for a 24 hour neurological service. In previous studies cerebrovascular diseases, epilepsy and headache accounted for 50% of all emergencies, seen by neurologists.

Methods: The Bernese Department of Emergency Medicine is an iUED providing a 24-hour service with emergency physicians, neurologists and other specialists as needed. The University Hospital Bern (Inselspital) covers a catchment area of about 300,000 inhabitants. We prospectively analyzed all admissions to the iUED who required neurological assessment from January 2012 to December 2013. The 2 most challenging clinical cases are presented in the appendix.

Results: We assessed 9034 patients (female 47%, mean age 56.2±20.2). Cerebrovascular disease (CVD), including acute ischemic stroke and transient ischemic attacks, was the most common diagnosis (2,816/29%), followed by epilepsy/seizures (1,386/15%), headache (739/8%) and impaired consciousness (528/6%). Neurological emergencies increased from 2612 consultation in 2009 to 4871 in 2013.

Conclusions: Stroke is still the most important disease, seen by neurologists in a large iUED, followed by seizures and headache. As the number of neurological emergency consultations substantially increased in the past decade this study emphasizes the importance of a 24-hour-neurological service within an iUED.

Disclosure: Nothing to disclose

EP2252

The effect of functional electrical stimulation on gait parameters in stroke survivors

E.B. Ignat¹, D. Matei², D. Alexa¹, O. Bolbocean¹, C. Grosu¹, C.D. Popescu¹
¹Neurology, ²Biomedical Sciences, University of Medicine and Pharmacy ‘Grigore T. Popa’, Iasi, Romania

Introduction: Stroke frequently causes persistent disability. Functional electrical stimulation (FES) based neuroprostheses are used to improve gait in neurological patients, but it could also have a therapeutical effect.

Methods: 107 subjects with chronic hemiparesis were distributed in 3 groups: “active FES” (67 subjects), “passive FES” (20 subjects), classical treatment (20 patients). An ODFS III™ (Odstock Medical, UK) device was used. The rehabilitation programme consisted in 9 consecutive sessions (30 min daily), different for each group. The “active FES” group used the device during gait, to generate synchronized dorsiflexion of the foot during take off and flight phases of gait; “passive FES” patients used the device while resting to generate repeated dorsiflexion (but not in connection with gait); the “classical treatment” group has been performing gait training (with guidance but without any instrumental approach).

Speed, stride length and walking effort were measured on a 25 m course – for active FES patients both with the stimulator (assisted gait) and without it.

Results: Speed and stride length significantly increased in all FES groups, with better performance of active training (both assisted and nonassisted gait) versus passive FES patients (p<0.005). Energy consumption (reflected by the physiological cost index) decreased for active FES patients both during assisted (p<0.001) and unassisted gait (p=0.001) but not in the passive FES and “no FES” treatment groups.

Conclusions: FES gait training generated a significant supplementary improvement of gait parameters compared to classical gait rehabilitation, even in short term use, in both assisted/nonassisted gait.

Disclosure: Nothing to disclose
EP2253

Effects of action observation therapy on functional brain plasticity in healthy adult individuals

R. Messina¹ ², M.A. Rocca¹², R. Gatti², A. Meani¹, P. Preziosa¹², G. Salini³, S. Fumagalli³, A. Falini⁴, G. Comi², M. Filippi¹²
¹Neuroimaging Research Unit, Institute of Experimental Neurology, ²Department of Neurology, ³Laboratory of Movement Analysis, ⁴Department of Neuroradiology, San Raffaele Scientific Institute, Vita-Salute San Raffaele University, Milan, Italy

Introduction: To assess the effect of an action observation therapy (AOT) training in healthy subjects on functional plasticity of the motor network and the mirror neuron system.

Methods: 36, right-handed, healthy subjects without any particular manual ability were randomized in 2 groups: “AOT” group watched videos that represented daily-life actions, “environmental” group watched videos of different landscapes. fMRI was acquired at baseline (T0) and after 2 weeks of training (W2), while the subjects manipulated six complex objects alternated to a sphere, with both hands. At both timepoints, functional measures testing manual dexterity were assessed. fMRI analysis was performed with the SPM8 software.

Results: After treatment, during right-hand manipulation, the “AOT” group showed an increased activation of the left inferior parietal lobule and right postcentral gyrus, which correlated with a better motor performance at functional clinical scales of the right hand. Compared to the “environmental” group, the “AOT” group had an increased activation of several frontal regions, including the inferior frontal gyrus (IFG), and left cerebellum during right- and left-hand manipulation. They also showed an increased activation of the right thalamus during left-hand manipulation. A reduced activity of the right middle temporal gyrus was observed in the “AOT” group after treatment and compared to the “environmental” group. In the “AOT” group, the increased activity of the right IFG was significantly correlated with improvement in finger tapping after treatment.

Conclusions: AOT promotes increased activity of brain areas of the motor network and MNS, which facilitates functional motor improvement.

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EP2254

Patient reported outcome measures for spasticity – comparison of psychometric properties and correlation with clinician assessment

K. Milinis¹, C.A. Young¹², Trajectories of Outcome in Neurological Conditions (TONiC)
¹University of Liverpool. ²The Walton Centre NHS Foundation Trust, Liverpool, United Kingdom

Introduction: Spasticity can be assessed by clinicians, typically using the Ashworth Scale, or by a range of patient reported outcome measures (PROMS). The characteristics of these PROMS have not previously been compared, nor their correlations with clinician assessments analysed.

Methods: MEDLINE, Embase, and PsycINFO databases were searched using keywords ‘spasticity’, ‘self-reported’, ‘patient-based’, followed by individual searches using the names of identified scales. Data on the correlation, validity and reliability were extracted from the studies.

Results: 53/1010 studies met inclusion criteria. 7 self-reported scales for spasticity were identified: visual analogue scales(VAS)/numerical rating scale (NRS), Penn Spasm Frequency Scale (PSFS), Performance Scale Spasticity Subscale, Multiple Sclerosis Spasticity Scale-88, Patient Reported Impact of Spasticity Measure, Spinal Cord Injury - Spasticity Evaluation Tool, Self-Report Spasticity Scale. Overall, poor to moderate correlations were found between clinician assessment, mainly using the Ashworth Scale, and patient outcome measures for spasticity (r=0.24-0.7).

Conclusions: VAS and PSFS have high clinical utility, but content validity is low and the scales are ordinal. The remaining measures have higher content validity and can provide interval measures, however data on other psychometric properties is lacking. Clinician assessment may measure only a part of the patient’s spasticity experience, hence the use of PROMS in spasticity assessment is encouraged. Further research is needed on the comprehensive assessment of spasticity.

Disclosure: Nothing to disclose
EP2255

Morbidity and mortality of stroke in the teaching hospital of Tlemcen (Algeria) 12 years of registration (2001 to 2012)

D. Regagba1, D. Bouchnak1, K. Meguenni1, R. Manaa1
1Epidemiology and Prevention, Teaching Hospital of Tlemcen, Bel Air; 2Neurology, Teaching Hospital of Tlemcen, Tlemcen, 3Epidemiology and Prevention, Teaching Hospital of Tlemcen, Mohamed V Tlemcen, 4Epidemiology and Prevention, Teaching Hospital of Tlemcen, Tlemcen, Algeria

Introduction: The aim of this study is to examine morbidity and mortality of stroke in the department of neurology at teaching hospital of Tlemcen (west Algeria).

Methods: All patients admitted to hospital for stroke during 2001 to 2012 is included in descriptive study; the assessment is based on mortality during 28 days after the attack.

Results: A total of 5053 patients were included with an annual average of 421 patients, a sex ratio 0.7 and average of age 66.32 CI95%: 65.88-66.76 years, for women 66.12 CI95%: 65.5-66.7 years and men 67.9 CI95%; 66.2-69.5 years, the typology of stroke is ischemia (71.5%), hemorrhagic (26.3%) and mixed (2.2%), 15.4% (n=782) of patients had died, a sex ratio equal 0.78 and an average of age 69,87 CI95%: 68.92-70.82 years , for women 69.6 CI95%: 68.3-71.02 years, and men 70.16 CI95%: 68.89 -71.44 years, the typology of stroke is ischemia (40%), hemorrhagic (26.3%) and mixed (7.5%), a logistic regression showed the following risk factors, hemorrhagic (OR=2.1 CI95%:1.7-2.5), age≥65years (OR=1.87 CI95%;1.6-2.2) and mixed (OR = 1.86 CI95%;1.1-3.3). assessing trends in incidence and frequency of stroke mortality shows the stability of incidence and decreasing of mortality (r=-0.91, p<10-3, r2=0.84). The incidence of stroke in Tlemcen province was less than that of developed countries respected the gradient between two regions but was close than developing countries, stroke attacks affect the younger population

Conclusions: Stroke a problem of public health needed implantation of a strategy of control and patient management Based on etiologic studies.

Disclosure: Nothing to disclose

EP2256

The effect of single session bi-cephalic transcranial direct current stimulation on gait performance in sub-acute stroke

D.M. Kaski, V.M. Tahtis, B.M. Seemungal
Imperial College London, London, United Kingdom

Introduction: Non-invasive brain stimulation with transcranial direct current stimulation (tDCS) modulates cortical excitability and improves upper limb motor performance when applied to chronic stroke patients. Whether tDCS can influence gait function in sub-acute stroke patients is unknown.

Methods: We evaluated the effect of single session, bi-cephalic tDCS on gait performance in 14 subacute patients with stroke involving the cerebral hemisphere (2-8 weeks post-stroke) in a double-blinded, sham-controlled study. Patients were randomly allocated to receive either active (n=7) or sham (n=7) tDCS. The anodal electrode was placed on the scalp over the ipsilesional lower limb primary motor cortex and the cathode was placed over the contralesional leg motor cortex. Gait performance was measured using the Timed Up and Go test and the Tinetti Balance and Gait index before and after active or sham tDCS.

Results: The tDCS group were significantly quicker in the Timed Up and Go test in the tDCS group, compared to the sham group (p=0.018). The Tinetti Balance and Gait index was not different between groups (p=0.897).

Conclusions: This is the first study to examine the effects of tDCS on gait in stroke patients in the sub-acute stage. Active tDCS improved gait performance (Timed Up and Go) in stroke patients, despite no changes to limb biomechanics of the hemiparetic side (Tinetti balance and Gait index), as compared to sham stimulation. These results suggest that tDCS could be used as a therapeutic adjunct for gait rehabilitation following stroke.

Disclosure: Nothing to disclose
EP2257

Mortality by stroke subtype illustrates improvement in stroke care in Poland from 1999 to 2010

M. Swiat¹, G. Opala²
¹Neurology, Wojewódzki Szpital Specjalistyczny nr 3, Rybnik,
²Neurology, Medical University of Silesia, Katowice, Poland

Introduction: Substantial transformation occurred in Poland over the last two decades. Both socioeconomic and demographic makeover impacted health care system. Cardiovascular diseases mortality started declining in Poland from early 1990s but cerebrovascular diseases (CVD) mortality ten years later. Stroke care has been rapidly developing from about 2000. According to diverse CVD etiology we investigated patterns in mortality by stroke subtype from 1999 to 2010.

Methods: We estimated age adjusted mortality rates for men and women based on death certificate data. The mortality curves were plotted for cerebrovascular diseases (CVD), cerebral infarction (CI), intracerebral hemorrhage (IH), subarachnoid hemorrhage (SAH) and not specified stroke as haemorrhage or infarction (NSS).

Results: Overall CVD mortality rates declined by 33% in men and 40% in women. CI mortality remained almost unchanged but IH mortality declined by 20% in men and 38% in women. Mortality from SAH declined accordingly by 19% and 12%. The most significant decline was seen in NSS mortality, 63% in men and 66% in women. NSS was recognized as a cause of death in 18,280 cases in 1999 (43% of all CVD deaths) but in 8,897 cases in 2010 (25% of all CVD deaths).

Conclusions: Substantial decline in CVD mortality in Poland from 1999 to 2010 was found. The number of death cases related to NSS decreased by 50% almost certainly due to improved diagnostic standard resulting in better identification of stroke subtypes.

Disclosure: Nothing to disclose

EP2258

Stroke mortality has ultimately declined in Poland

M. Swiat¹, G. Opala²
¹Neurology, Wojewódzki Szpital Specjalistyczny Nr 3, Rybnik,
²Neurology, Medical University of Silesia, Katowice, Poland

Introduction: Stroke mortality was declining in most of Western Europe whereas in Poland was continuously increasing in the second half of 20 century. Moreover Polish population was continuously aging from mid 1980s what may surge both stroke incidence and mortality. The aim of the study was to explore trends in mortality from stroke and cardiovascular diseases in Poland from 1976 until 2010.

Methods: Statistical data based on death certificates were gathered from Central Statistical Office. Annual age standardized (world standard) mortality rates for cerebrovascular diseases (CVD), cardiovascular diseases (CD), ischemic heart disease (IHD) and atherosclerotic disease (ASD) from 1976 to 2010 were calculated. Men and female trends were plotted separately.

Results: Stroke mortality in Poland was increasing from 1976 until 1999 reaching 91/100,000 in men and 71/100,000 in women. Continuous decline was observed thereafter down to 60/100,000 in men and 43/100,000 in women in 2010. Similar pattern was seen for IHD but CD and ASD mortality started declining about a decade earlier. After switching ICD-9 to ICD-10 classification in 1997 CVD and IHD mortality rates suddenly increased but ASD mortality rate significantly dropped while gradual declining trend in CV mortality was sustained.

Conclusions: Despite aging of the population stroke mortality started declining in Poland at last almost a decade after cardiovascular disease but similar to ischemic heart disease mortality. Stroke mortality in Poland is still considerably higher then in Western European countries. Death certificate data before 1997 may be biased by misclassifications of vascular death causes.

Disclosure: Nothing to disclose
A meta-analysis of incidence and standardized mortality rates in multiple sclerosis

R. Tanasescu1,2, C.S. Constantinescu1, C.R. Tench1, J. Britton1, A. Manouchehrinia1
1Division of Clinical Neuroscience, University of Nottingham, Nottingham, United Kingdom, 2Department of Neurology, Neurosurgery and Psychiatry, University of Medicine and Pharmacy ‘Carol Davila’, Bucharest, Romania, 3University of Nottingham, Nottingham, United Kingdom

Introduction: Patients with MS have an increased mortality in comparison to the general population. Available data on excess mortality are conflicting, and MS mortality has not been addressed in relation to changes in survival in the general population. We studied changes in survival of MS patients over the last decades by the means of a meta-analysis of longitudinal mortality studies on cohorts of MS patients using Standardized Mortality Rates (SMR).

Methods: Medline, Embase and the Cochrane Library up to December 2013 were searched using the keywords “Multiple Sclerosis” and “standardised mortality” or “standardized mortality”. Inclusion criteria were: availability of data on the number of deaths; mean/median patient follow-up; SMRs. Incidence mortality rate (IMR) was calculated. Natural logarithm of the IMRs and SMRs were pooled by inverse-variance weighting. Available SMRs for causes of death were processed.

Results: 10 studies and 1 unpublished data from our centre were included (24,213 patients with 6,669 deaths). Pooled overall SMR was 2.5 (95%CI: 2.3-2.8). SMR was 2.27 (95%CI: 2.03-2.55) for males and 2.85 (95%CI: 2.57-3.16) for females. When compared to general population, there was no decrease over time in the overall SMRs in any of the genders. Mortality due to cardio-vascular diseases and suicide, but not cancer, were significantly increased in MS patients (24% and 98% respectively).

Conclusions: The excess MS mortality has not changed over the past decades. Female patients with MS have survival disadvantage compared to the males. Cardio-vascular conditions and suicide appear as principal causes of death in MS patients.

Disclosure: Nothing to disclose
Link between helicobacter pylori infection and idiopathic Parkinson’s disease

M. Calik, A. Yılmaz, E.O. Şahin, H. Akar, S. Görgün
Neurology, Samsun Training and Research Hospital, Samsun, Turkey

Objectives: It has been postulated gastrointestinal infection with helicobacter pylori play a role in developing Parkinson’s disease and both diseases share certain characteristics, such as familial aggregation and association with water sources. The purpose of this study was to investigate the relationship between Helicobacter pylori infection and idiopathic Parkinson’s disease (IPD) by using Helicobacter pylori serological test.

Methods: Eighty four patients with IPD and 81 healthy controls were included in this study. Immunoglobulin (Ig) G concentrations were determined by enzyme-linked immunoadsorbent assay (ELISA) in patients with IPD and controls. Chi-square and Mann-Whitney U tests were used for statistical analysis.

Results: Positive serum H. pylori IgG antibody was detected in 88% (74 of 84) of the patients vs. 77% (57 of 81) of the controls (p<0.005). Age, sex, habitat and drinking water supply were similar in both groups.

Conclusions: There is a significant association between Helicobacter pylori IgG seropositivity and IPD. Although H. pylori infection may be an important factor in initiating or exacerbating IPD, it may not represent the sole cause of the disease.

Disclosure: Nothing to disclose