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Joint 7th Annual Scientific Session of the Stroke Prevention and Control Society and Chinese Preventive Medicine Association (SPCS, CPMA) and 6th International Conference on Neurology and Epidemiology (ICNE)

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A Selection of Abstracts

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Oral Presentations

Saturday 2 December 2017

O1

Epidemiology of FrontoTemporal Dementia: A Model for the Study of Rare Dementias

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The epidemiology of rare dementias is still a relatively new field, in contrast with common dementias such as Alzheimer's disease and Vascular dementias that have been studied quite extensively in several regions of the world, in high quality population-based studies. In this paper we are going to discuss results of epidemiologic studies on FTD as a possible model to build up studies on rare NDG dementias. Frontotemporal Dementia (FTD) is a disorder with clear heterogeneity with phenotypes associated with language problems (semantic and primary progressive aphasia and semantic dementia) and one with behavioral problems (Behavioral FTD). However in these ranges of disorders executive disorders and motor disorders both of extrapyramidal and motor neuron type are also present.

The FTD clinical syndrome has a neuropathological pattern with primary involvement of the frontal lobe.

Population-based estimates for the epidemiology of FTD and rare NDG dementias show wide variation in the published studies. The primary challenges for epidemiologic studies are the following:

- 1) Challenge of valid diagnosis outside tertiary centers specialized in cognitive problems;
- 2) The change of classification systems in the last twenty years;
- 3) The clinical phenotypes that are not clear or that can change over time (PSP progressive supranuclear palsy (PSP)).

The most relevant studies show prevalence between 10 and 20 per 100000 while incidence (only two valid studies) is between 1 and 3/100000. The lifetime risk should be between 700 and 1000 for the whole syndrome.

Improvement in the clinical diagnosis, with use of new biomarkers after appropriate validation and extension of studies in population-based settings, are needed to enhance the quality of

the estimates of the prevalence and incidence of FTD. The prevalence of frontal syndrome and the fraction of frontal syndrome due to FTD among the elderly in population-based study is still controversial. New results in this area from the Great Age study, a population-based study on aging in Southern Italy, will be provided.

O2

Recent Trends in Epidemiology of Stroke in Young Adults. A Burning Issue

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Introduction: Stroke is usually considered to affect elderly people since its incidence rises by a factor of approximately 100 between the ages of forty and eighty. However, about 10 to 15% of stroke patients are less than 55 years of age. We aimed to review recent trends in the epidemiology of stroke in young adults.

Methods: Trends in the incidence of stroke (ischaemic stroke, intracerebral haemorrhage, and undetermined stroke) by age groups were retrieved from the population-based stroke registry of Dijon, France, from 1985 to 2011. In addition, nationwide data about rates of hospitalizations for stroke in France, and their trends from 2008 to 2014, were obtained from the French national hospital discharge database. A literature search was performed so as to identify other studies that assessed trends in incidence of stroke in young adults worldwide.

Results: From the Dijon Stroke Registry we observed a significant increase in the incidence of ischemic stroke only in both women and men aged <55 years between 1985 and 2011. Similarly, the age-standardized rates of patients hospitalized for ischemic stroke increased in patients aged <65 years in both sexes in France. Our literature search indicated that similar trends were noticed in several population-based registries or administrative databases worldwide.

Conclusion: The incidence of ischemic stroke in young adults is on the rise. Several factors may account for this result and will be discussed during this lecture.

O3

Chronic Migraine, the Myth, Disability and Hope for the Future

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Migraine is one of the most neglected, mismanaged, misdiagnosed, disabling, complex neurological disorders affecting nearly two billion individuals worldwide. The author will show case a series of real life video examples to drive this message home from his active clinical practice in Melbourne, Australia.

The new clinical trials with CGRP molecule could spell hope for nearly two billion sufferers worldwide. In 2018, it is expected that at least four of these new medications that are specifically designed against migraine will be released.

This paper summarizes the data on latest CGRP trials and makes a strong argument for the need for ongoing education, clinical research and service building to combat the burden.

O4

Predicting the Diagnosis of Psychogenic Non-Epileptic Seizures (PNES) versus Epileptic Seizures (ES)

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Background: Psychogenic non-epileptic seizures (PNES) are paroxysmal changes in behavior that resemble epileptic seizures but are without organic cause and are not accompanied by ictal, peri-ictal and interictal EEG changes. The gold standard for the diagnosis of PNES is the documentation of a normal EEG during events with semiology and a patient's history consistent with the diagnosis of PNES. The prevalence of PNES in the general population is 2–33 per 100,000 and increases to 25–30% in specific outpatient or inpatient cohorts. The annual incidence of PNES is 1.4 per 100,000, with higher rates in women and in the age class 15–24 years. Different types of abuse and trauma are the most common antecedent factors. As the diagnosis of PNES still relies on the video-EEG recording, alternative diagnostic instruments are needed to identify this clinical condition when video-EEG is not available or does not capture a seizure. To define diagnostic predictors, we conducted a prospective study to investigate the validity of structured questionnaires designed to collect information on personal history, symptoms and signs directly from patients and witnesses, to verify if they could represent a useful addition to the investigations routinely performed by care providers in specialized centers or be a viable surrogate of video-EEG.

Methods: Consecutive patients (age >18 years) with PNES or epileptic seizures (ES) at their first admission to a long-term mon-

itoring unit for clarification of seizure type were eligible for the study. Two ad hoc questionnaires were used, one for patients and one for witnesses. The information obtained from each single question was used to create a list of variables representing specific signs, symptoms and risk factors. Specificity (SP) and sensitivity (SE) of each variable were then calculated analyzing the direct responses of patients and witnesses against the final diagnosis (PNES vs. ES). Statistical significance was assessed using the Fisher's exact test.

Results: Twenty-eight patients' questionnaires (17 PNES and 11 ES) were available for analysis. Among variables with high SE and SP, 7 were statistically significant predictors of PNES: headache as seizure trigger, heart racing, tingling and numbness, head injury with loss of consciousness longer than 5 minutes, physical pain after the seizure, history of chronic fatigue and physical abuse. Sixteen witness questionnaires (6 PNES, 10 ES) were available for SE and SP calculation. Side-to-side head movements and eyes closed in at least one of the witnessed seizures were the statistically significant variables.

Conclusions: These data indicate that structured questionnaires for patients and witnesses may be a useful clinical tool applicable in settings not offering the facilities required for a correct diagnosis, and in cases where the diagnosis remains uncertain because no typical events have been captured on video-EEG monitoring.

O5

Acupuncture for Treatment of Post-Stroke Anxiety Clinical Report

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Objective: Psychiatric disorders are some of the most common and difficult illnesses to treat in medicine. Anxiety often includes feelings of fear, apprehension, and excessive anxiety energy. Approximately 35% of patients with stroke suffer symptoms of anxiety, and about 17–18% severe enough to have a DSM-V diagnosis of an anxiety disorder. In addition, anxiety conditions are difficult to treat and have high relapse rates and western medication side-effects. There is evidence to suggest that acupuncture may be an effective treatment anxiety, also observe the therapeutic effect of acupuncture on post-stroke anxiety.

Methods: 20 patients in the acupuncture group received acupuncture treatment. Used acupoints are Baihui (GV20), Shenting (GV24), Hegu (Li4), Neiguan (PC6), Sanyinjiao (SP6), Zusanli (ST36) and Taichong (LR3) was punctured. After the arrival of *De Qi*, the needles were retained for 30 minutes. The acupuncture treatment was given two times per week during 6 months. 15 patients in the herbal medication group received Wen Dan Doctrine (Sun Ten Pharmaceutical Co. Ltd. Taiwan. Reg No.: 045566) 7 gram, b.i.d, during 6 months. Hamilton Anxiety Scale (HAMA), and Zung Self-Rating Anxiety Scale (SAS) was used to evaluate the severity and relief of anxiety.

Results: Anxiety symptoms of the patients in both groups, but acupuncture group were obviously reduced HAMA and SAS score

($P < 0.05$), and remarkable difference was found compared with that of the herbal group ($P < 0.05$).

Conclusion and Discussion: Post-stroke anxiety is a severe post-stroke emotional disorder. The patients of stroke are often anxious about their future life and work. Both groups had reduced patient HAMA and SAS scores. The author found acupuncture to be safe and tolerable with improvement, effective, and an important method for treating post-stroke anxiety, and can be used as a post-stroke anxiety prevention program.

O6

Incidence and Mortality of Stroke during and after Acute Care According to Neighborhood Deprivation: An Ecological Analysis of Dijon Stroke Registry

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Background and Purpose: Studies have shown higher stroke incidence and mortality in areas with higher levels of deprivation. We aimed to determine the pattern of association between various area socioeconomic status (SES) indicators and stroke incidence and mortality, during and after acute care when patients were discharged to home or other care settings, in specific sex and age groups.

Methods: A first study on incidence trends was performed from the population-based stroke registry of Dijon (France) for the period 1995 to 2003 [1]. The analyses included 1255 cases aged older than 40. Poisson regression was used to model stroke incidence according to the SES level of 61 small areas. The second study on mortality trends included 1760 incident strokes (mean age 75, 48% men, 86% ischaemic) identified between 1998 and 2010 in the same stroke registry [2]. We used Cox regression to study all-cause mortality up to 90 days after stroke occurrence.

Results: Stroke incidence [1] was higher in women in neighborhoods with large income inequality (incidence rate ratio, 1.34; $P = 0.003$), higher proportions of unemployed (1.24; $P = 0.02$), of non-French nationals (1.21, $P = 0.02$), and of rented housing (1.31; $P = 0.03$). Areas with a higher proportion of people aged over 60 were associated with lower stroke incidence (incidence rate ratio, 0.72; $P = 0.01$). Analysis by specific age-groups showed stronger effects among the 60 to 74-year-olds. Among men, no associations between SES and stroke incidence were identified overall but analysis by age groups showed significant effect among the 40 to 59-year-olds. In this age group, incidence rate ratios were 1.47 for unemployment ($P = 0.01$), 1.86 for no car ownership ($P = 0.02$), and 1.56 for income inequality ($P = 0.01$). Among stroke cases, no trend in vascular risk factors prevalence according to area SES was identified.

For the study on mortality [2], 284 (16.1%) patients died during the 90 days following stroke. Prior to stroke, risk factors preva-

lence (high blood pressure and diabetes) and acute care management did not vary across deprivation levels. There was no association between deprivation and mortality while patients were in acute care (HR comparing the highest to the lowest tertiles of deprivation: 1.01, 95% CI 0.71 to 1.43). After discharge, however, age and gender adjusted mortality gradually increased with deprivation (HR 2.08, 95% CI 1.07 to 4.02). This association was not modified when stroke type and severity were accounted for.

Conclusions: Variations of stroke incidence were more marked for the SES indicators of wealth and income inequality. They were apparent at an earlier age in men and showed a stronger gradient among women. The gradient of higher post-stroke mortality with increasing neighborhood deprivation was noticeable only after acute hospital discharge. Neighborhood deprivation impacts on incidence and late mortality of stroke. Further works are necessary to evaluate the potential determinants of these variations.

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O7

Primary Stroke Prevention Strategies Are Falling Short

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Background: Stroke and cardiovascular disease (CVD) are the leading causes of global death and disability. Population-wide and high-risk strategies are mainstream for stroke and CVD prevention but the ways of enhancing their effectiveness in reducing stroke and CVD burden have not been fully appraised.

Methods: Review of Global Burden of Disease (GBD) data on stroke and CVD burden and other epidemiological studies on primary stroke and CVD prevention.

Results: Data from the GBD 2015 study show that although stroke incidence and mortality rates have been decreasing from 1990 to 2015, the absolute number of incident and fatal strokes, and people left with disability from stroke, increased by 20–50% over that period. About of the global stroke burden is due to behavioral risk factors and about 1/3 is due to air pollution. The increase in stroke (and CVD) burden across the globe suggests that current primary stroke and CVD prevention strategies fall short and need to be enhanced.

Conclusions: Several innovative approaches to enhance current primary stroke/CVD high-risk and population-wide prevention strategies are suggested, including: shifting the emphasis from high-risk prevention to prevention at any level of CVD risk, with the focus on behavioral risk factors; partnering across the

health sector, non-government organizations (NGOs) and government bodies; stronger advocacy from NGOs for healthier lifestyles with early life preventative interventions; integrated approach to prevention of disorders that share common risk factors; using relative or lifetime risk for better communicating of personal risk, especially for people with low absolute risk of CVD; developing and implementing population-specific stroke/CVD prediction algorithms; using far-reaching mobile technologies; imposing a concerted package of taxes on tobacco, sugar, and alcohol (the resultant revenue could aid the development and implementation of culturally appropriate population-wide primary prevention measures). Other population-wide prevention measures should also include reduction in air pollution and task-shifting strategies, especially in developing countries where appropriately skilled health workers are often critically deficient.

O8

Employment and Work Productivity in Multiple Sclerosis: Patterns, Predictors and Implications for Symptom Management

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Background and Rationale: People with Multiple Sclerosis (MS) often leave their employment earlier, reduce working hours, and change job roles. In a large Australian MS sample, we examined changes in employment status, quantified MS-related work productivity loss, examined factors associated with work productivity loss and examined whether disease modifying therapy use influenced changes in work attendance, amount worked and work productivity.

Methods: Around 1,500 people with MS participated in surveys of the Australian MS Longitudinal Study. Total work productivity loss due to MS in the past 4 weeks was defined as absenteeism (time missed from work) plus presenteeism (reduced productivity while working).

Results: Employment increased from 48.8% in 2010 to 57.8% in 2013, and the gap with the general population fell from 14.3% to 3.5%. Among working people, 56% had any work productivity loss due to MS, and the mean total work productivity loss was 14.2% (absenteeism 3.4%; presenteeism 10.8%). The total estimated cost was AUD\$7,331 per person annually. Work productivity loss was determined most strongly by “fatigue and cognitive symptoms”, “pain and sensory symptoms”, “difficulties with walking, balance and spasticity”. We found dose-response relationships between the efficacy category of DMTs and improvements in employment outcomes (tests for trend $p < 0.001$).

Conclusions: Employment rates for people with MS are increasing and this may be partly due to disease modifying therapies. Estimates of MS-related presenteeism productivity loss were three times higher than absenteeism. The dominance of symptom severity as predictors of both work productivity loss emphasises the need for improved management of symptoms.

O9

Organising Data and Research for Effective Tracking of Rehabilitation Needs, Gaps and Outcomes

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Over the last few decades, advanced technologies have greatly improved the diagnosis and management of health conditions in a variety of ways. One important consequence of improved technology has been that the collection and analysis of a large amount of diverse health related information has become possible. Much of this data would otherwise have remained unused, despite the extensive cost associated with its collection. If organised and analysed appropriately, could assist in monitoring the use of, and need for, health services. By integrating multiple types of data, technology can facilitate the production of meaningful outcomes for policy-makers and service designers. We have developed a spatial data repository that allows the organised and meaningful collation of information from multiple data sources. It allows the simultaneous analysis of multiple datasets to examine service usage, demand, gaps and needs. The data framework is presented as a matrix defined by horizontal columns, each representing a different element of the continuum of care following injury. The vertical layers represent different levels of data, from population level descriptive data to specific community service information. The cells of the matrix are populated information gathered from open data sources, protected administrative information sought from data custodians, new survey data gathered from service users and unstructured public and personal datasets (e.g. social media, mobile apps and wearable sensors). All the data is cleaned, de-identified and stored in a centralized server, spatially geocoded, linked with other datasets where possible and aggregated at multiple levels to ensure privacy. This matrix will allow the integration of multiple datasets, all linked to a common spatial reference point. Additional datasets can be added as they become available and the data repository can be securely shared with the wider research and service planning community for data mining. A range of tools are made available to those who wish to use the dataset, including geographical information systems tools, process mining and modelling programs. We have applied this repository to traumatic injury to demonstrate how diverse datasets can be meaningfully combined to inform system design and service delivery. Our aim is to ensure that this data and the findings from various analyses can be used to inform system changes and can become embedded into the existing system as a core ongoing dataset that can track trajectories over time.

O10

Atrial Fibrillation and Embolic Stroke: Treatment Options

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Introduction: Atrial fibrillation (AF) related ischemic stroke causes twice as many deaths and twice as much disability causing significant negative impact worldwide. Oral anticoagulation with warfarin (VKA, Vitamin K antagonists) was the key treatment of stroke prevention in AF. This paper addresses the current evidence for new treatment options in AF developed over the last decade, the new oral anticoagulants (NOAC).

Methods: A search in PubMed for relevant studies has been performed. The author assembled available evidence for the best treatment options of ischemic stroke related to AF.

Results: NOACs provide consistent anti-coagulation with fixed dose regimes. Dabigatran and apixaban were superior to warfarin to reduce AF related ischemic strokes; Edoxaban, rivaroxaban and dabigatran were non-inferior to warfarin in prevention of AF related strokes. NOACs are now the first choice of treatment in the setting of prevention of AF related ischemic strokes. NOACs are non-inferior to warfarin in prevention of ischemic strokes in non-valvular AF.

Conclusion: This paper summarizes the current evidence and author's practical approach to management of AF and embolic stroke in the setting of real world clinical practice.

O11

The Chinese Medicine NeuroAiD Efficacy on Stroke Recovery Study: Improving the Evidence Base for Traditional Chinese Medicine in Post-Stroke Recovery

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Background and Rationale: Enhancing endogenous neuro-restorative processes is a rational strategy to improve recovery after stroke or brain injury. NeuroAiD (MLC601, MLC901) is a combination of extracts from nine herbal components. Pre-clinical data demonstrated its ability to enhance endogenous neuro-restorative processes.

Methods: Results of the CHinese Medicine Neuroaid Efficacy on Stroke recovery (CHIMES) study, a randomized, placebo-controlled, double-blind trial that compared MLC601 to placebo in 1099 patients with acute ischemic stroke of intermediate severity, its extension study (CHIMES-E, n = 880) which followed up patients up to 2 years, and sub-analyses of the studies will be presented.

Results: The primary CHIMES results showed a treatment effect in favor of MLC601, which did not reach statistical significance. Post-hoc analysis showed a significant reduction in vascular events among patients treated with MLC601 in the three months after a stroke. Patients from the Philippines (n = 504, 46%) in the CHIMES study showed statistically significant benefit of MLC601 in improving functional and neurological outcomes at 3 months due to inclusion of patients with poorer prognosis.

CHIMES-E, one of the very few acute stroke trials with long-term data, showed the benefit of MLC601 in improving functional outcome at 6 to 18 months after a stroke. Sub-analyses further demonstrated higher treatment effects among patients with poorer prognosis. A synergistic effect of MLC601 with rehabilitation was recently demonstrated.

Conclusions: The CHIMES and CHIMES-E studies demonstrated the short and long-term effects of MLC601 after stroke. Conducted to GCP standards, they have added to the evidence-base for the role of TCM in stroke recovery.

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O12

Global Burden of Neurological Disorders

Feigin, V.L. on behalf of the GBD 2015 Neurological Collaboration

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Background: Although evidence-based health care planning and resource allocation for neurological disorders requires accurate epidemiological estimates, there is a lack of global, regional and country-specific data on burden from neurological disorders and their trends.

Methods: This study utilized Global Burden of Disease (GBD) methodology and database to estimate prevalence, mortality and disability-adjusted life-years lost (DALYs) of major neurological disorders separately and combined, such as stroke, Alzheimer disease and other dementias, Parkinson's disease, epilepsy, multiple sclerosis, migraine and tension-type headache, medication over-use headache, meningitis, tetanus, encephalitis, brain and nervous system cancers, motor neuron disease, and other neurological disorders in 1990 and 2015.

Results: Neurological disorders accounted for almost 10% of global DALYs and 17% of all deaths in 2015. Despite an overall decrease in the age-standardized rates of prevalence, DALY, death and YLD of all neurological disorders combined between 1990 and 2015, the number of people dying and affected by these disorders has increased substantially, contributing to higher health loss across the lifespan. In 2015, among all causes of DALYs, stroke contributed 4.8%, headaches – 1.8%, dementias – 1.0%, meningitis – 1.0%, epilepsy – 0.5%, Parkinson's dis-

ease – 0.1%, brain and nervous system cancer – 0.3%, and each other analyzed neurological disorder – 0.1% or less of total burden.

Conclusions: Neurological disorders are currently the leading cause of disability and the second leading cause of death among all other groups of diseases. Over the last two and half decades, the burden of neurological disorders has increased substantially. Assuming no overlap between the neurological disorders analyzed, one third of the world population suffers from various neurological disorders. In terms of mortality, stroke remains the major contributor to the burden of neurological disorders worldwide. These findings can guide health systems and research activities to reduce the burden of neurological disorders.

O13

Atrial Fibrillation and Stroke: Evidence from Dijon Stroke Registry and Literature Review

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Atrial fibrillation (AF) is the leading cause of cardioembolic ischemic stroke, and its frequency is strongly associated with age. Based on data from the Dijon Stroke Registry, together with a literature search, the aim of this presentation is to explore the following issues: What is the risk of stroke in patients with AF and how can we estimate it accurately? What are the characteristics of patients suffering a stroke related to AF in terms of vascular risk factor profile, premorbid treatments, and clinical features? How can AF influence post-stroke prognosis and risk of recurrence? What is the proportion of patients with cryptogenic ischemic stroke who have paroxysmal AF and what is the best strategy to detect it?

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