出國報告(出國類別：開會)

29 屆臨床神經生理國際會議

服務機關：三軍總醫院小兒部
姓名職稱：范洪春
派赴國家：日本
報告日期：99 年 11 月 9 日
出國時間：99 年 10 月 28 日至 11 月 2 日

壹、摘要

臨床神經生理國際會議(International Congress of Clinical Neurophysiology; ICCN)肇始於 1949 年，涵蓋 57 個國家及 61 個團體，日本在 2010 年 10 月 28 日至 11 月 1 日在神戶舉行 29 屆臨床神經生理國際會議，主席爲京都大學醫學院柴崎浩教授，研討會的議題包括神經電生理學的最新進展，神經生理相關的最熱門話題、最新的研究、治療方式及研究創作皆有相當廣泛而深入的討論。本次臨床神經生理國際會議除了專題演講、口頭論文報告及現場論文展示超過七百篇等，每個研究議題皆能讓參加活動的學者專家更進一步與各相關領域的教授、專家即時的討論交換意見。職等此次有幸受邀於大會中提出口頭與壁報論文報告，很感謝國防部經費補助參與此會議。藉由參加這次會議，了解他國專家學者的研究成果及趨勢，獲益匪淺。

貳、目次

頁 碼

參、本文

一、參加目的：

職等目前任職於三軍總醫院小兒部，承國防部之同意及補助出席 29th International Congress of Clinical Neurophysiology（第 29 屆臨床神經生理國際會議）於 10 月 28 日至 11 月 1 日在日本神戶舉行。此次會議延攬世界知名神經生理專家以及臨床醫師和有相關學術研究領域的學者專家，自有其重要性。此次會議有超過七百多篇的論文報告展出，在神經生理領域的國際會議而言有其份量與影響力。

職於 2008 年自英國劍橋大學神經藥理取得博士學位返國後，對於兒童神經電生理學相關議題有數個研究正持續在進行，也陸續於國內外包含中華民國小兒科醫學會年會、台灣小兒神經醫學會、及國際嬰幼兒癲癇症候群研討會等重要會議內發表口頭或壁報論文展示。今年職將神經電生理學上的新發現的瞬時接受器電位香草酸第四型的敏感作用是蛋白質激酶 C 依賴性的研究成果投稿於本次大會， 經由大會委員會遴選後，同意於會議中以口頭及壁報論文報告，此機會實屬不易。於開會期間，職可一方面學習與會的專家學者有關神經電生理學的研究最新進展及臨床經驗外，同時發表自己的研究成果與國際人士交流，對於職等在臨床、教學及研究工作的收獲甚豐。非常感謝國防部經費的補助讓職大開眼界。

二、會議過程：

在為期五天的議程 整個會議包含口頭及壁報論文報告二部分的模式在進行，依照每日的議程逐一進行，並記載詳細每日會議過程之重要議題如下：

第一日(十月二十八日)：職由於臨床工作繁忙，於當日才搭上飛機，於下午才抵達神戶會場。剛好趕上以衛星實況轉撥的大會演講，以數篇討論神經生理學之最新進展，包括有日本德島大學 Kaji教授介紹神經脫髓的病理生理的基因的機制(genetic mechanisms of brain demyelination)。比利時魯纹大學的Bergmans教授應是重頭戲，他用利用改良式單一細胞層級反轉錄多聚酶鏈鎖反應技術去探討肌肉痛覺神經元的分子特性，進而引入電離子通道的深入介紹。生理學來看，所有的細胞都是通過離子通道來控制穿越細胞膜的離子流的，這種通道是以一種內在膜蛋白，是由若干蛋白組裝而成的。這種多個蛋白質亞基結構通常由同一或者同源蛋白緊密結合併形成一個補水孔，並且穿透雙層脂膜。這種成孔亞基單元被稱為α單元，而其它輔助亞基單元則被標註為β、γ等。通常來說，這些通道最窄處的寬度大約為 1 到 2 個原子的直徑大小。一個通道通常僅負責一種離子，如鈉離子、鉀離子等。傳輸離子通過細胞膜的過程通常相當快，如同跟隨一個自由流體流過一般。某些離子通道擁有一個可以開關的「門」，各種門所受控制的來源是不一樣的，例如包括電信號、化學信號、溫度或者機械力。不同的通道，其允許通過的離子是不同的(例如鈉離子、鉀離子、氯離子等)，門控方式也不一樣，甚至組成亞基單元等結構也是有區別的。大部分的通道，包括和神經衝動有關的電壓門控通道，都是由四個亞基單元構成，每個亞基單元有六個螺旋形跨膜區組成。在激活的時候，這些螺旋體會移動並開啓中間的孔。其中兩個螺旋體被一個形成孔的環所分開，這個結構決定了選擇通過的離子類型及其傳導性。Roderick MacKinnon通過運用X射線晶體學來確定了這些通道的分子結構，並獲得 2003 年的諾貝爾化學獎。這段歷史雖為人所知，但在科學研究的細節上，透過Bergmans教授的生動介紹，讓大家更了解。

第二日議程(十月二十九日)：包括有來自法國里昂的 Mauguiere 教授演講神經系統的島腦(insula)的功能綜論，顛覆大家對島腦的先入為主的概念。來自美國極負盛名的凱斯醫學

中心的 Luders 教授深入探討癲癇與大腦皮質的對應與功能。來自意大利羅馬 Campus Bio-Medico 大學的神經內科的 Rossini 教授深入探討神經的再生，以功能造影(fMRI)追蹤中風後的病人活動之學習效應與大腦皮質塑性改變最教人吃驚，原來成人也有神經的再生，只是程度的問題。以藥理與分子生物的方法介入可加強神經的再生的程度。關於壁報展示以及口頭報告，職的壁報被要求必須在十月二十九日上午 0830 就要擺上，口頭報告被安排本日上午 1110，以英文報告，隨即接受學者專家的提問，過程討論熱烈，此外許多國際學者也給予相當多寶貴意見，職亦參觀其他人的壁報展示，也學到相當多的新知。中午提供免費的餐盒有三種選擇：壽司、三明治以及素菜。日本的壽司真的很精緻。中午完膳，還有 lunch talk 由德國 Lehmann 教授介紹肌肉肌肉失養症的新進展(muscular dystrophy)包括各種細胞外物質(extracellular matrix)蛋白質的基因，如 POMT1, POMT2, POMGNT1, fukutin, FKRP 與 LARGE 與相關離子通道的探討，學到相當多的新知。美國 MIT Graybiel 教授以 fMRI 研究人類與猩猩心靈活動與大腦基底核的關連，說明像巴金森這種大腦基底核的退化疾病，暗示他們有心靈活動的障礙。

第三日議程(十月三十日)：由瑞典的 Stalberg 教授演講肌病變的肌電圖。電生理的基本概念是，檢查神經傳導時，以電刺激一條神經時，可在其支配的肌肉或神經的另一端記錄到活動電位。記錄此活動電位的潛時 (即電刺激與活動電位起始的時間差) 與波幅，只要量出該神經不同刺激點的距離除以其潛時差，即可求得該神經的傳導速度。一般而言，波幅減低或消失表示神經軸索有病變；傳導速度減慢則表示神經有去髓鞘病灶。檢查運動神經的傳導時電極置於該神經所支配的肌肉上，再沿著神經的路徑以超極大量的電流刺激所獲得的活動電位，稱爲複合肌肉活動電位(compound muscle action potential, CMAP) 。檢查感覺神經時，有順流和逆流兩種方式。逆流刺激是與感覺神經的傳導方式相反，刺激點在近端，順流則反之。逆流所記錄到的感覺活動電位較順流大，臨床較爲常用。F 反應是以超極大量的電流刺激運動神經，該刺激之衝動，除隨運動神經順流而下，激發 CMAP 外，同時也逆流而上，刺激運動神經元細胞產生另一回流衝動，再激發小部分肌肉纖維收縮而產生 F 反應，其發生時間稱 F 潛時，可間接表示近端運動神經的傳導功能。Guillain-Barré 症候群早期，神經傳導速度正常，但 F 反應可能已有潛時延後或消失的情形，有助於此一可逆性神經病變的

早期診斷與治療。至於 H 反射，成人僅能在小腿腓腸肌和前臂肌肉記錄到，檢查時是以小量電流刺激神經的 Ia 傳入纖維，引發脊髓之單神經鍵肌肉伸張反射 (monosynaptic muscular stretch reflex) 。第一薦 (S1) 神經根病變時，脛骨神經的 H 反射波會消失或潛時延後。法國里昂的 Garcia 教授介紹疼痛的概念與大腦皮質的關係，以及治療頑固型疼痛的新進展 (treatment for intractable pain) ，英國倫敦的 Mills 教授演講肌肉病態收縮與萎縮症的關連的新進展，以及德國的 Baehr 教授演講視神經炎的致病機制的新面觀 (new insights into the optic neuritis)，此外還有幾個有趣且有意義的議題包括神經肌肉生理功能與病變(advanced in neuromuscular functions and myopathies) 與腦功能影像學新進展 (update in fMRI)。中午餐點只有一種選擇：三明治，但是在享用期間，有幸與來自紐約大學的一研究員談話，知道美國的研究環境正走下坡，研究人員隨時都有被解雇的風險。下午的課題爲周邊神經肌肉病變(advanced in peripheral neuropathies and myopathies)、Guillain-Barré 症候群、糖尿病性神經病變。其中台北長庚醫院神經科黃錦章教授的神經的毒性代謝真的很精彩。

第四日議程(十月三十一日)：主要爲教育演講有杏林大學 Koga 教授的腦波演講，介紹高解析度腦波。近幾年來腦機介面(Brain computerInterface, BCI)的技術逐漸受到重視。腦機介面是一種利用腦部訊號來讓使用者與外界溝通的技術。此種技術的目的在於幫助因神經肌肉損傷而行動受到阻礙的人(如肌肉萎縮、中樞神經系統損傷、重度中風的病人等)，使他們可以不需要依靠周邊神經和肌肉，能夠使用腦部的訊號，就可以達到與外界溝通、傳達訊息、自主行動，以及自我照顧等目的。近年來的神經科學的研究突破與腦波訊號擷取的科技進步，讓我們嘆爲觀止。意大利教授 Babilion 對腦波同向(Synchronization)的介紹相當新穎 。還有荷蘭 stam 教授的腦波自動分析介紹，他還介紹德國柏林神經科學院研發出一種讀腦機，透過高解析度掃描，可以深入了解腦部活動，清楚判讀受試者的思緒或意圖，甚至預測受試者的行爲。讓所有聽眾都直呼太危險。還引起大家的廣泛討論。

第五日議程(十一月一日)：重點在神經影像與電生理，有京都大學 Fukuyama 教授對神經影像與血流影像的重組，但我覺的沒有本院的陳震宇主任強。來自哥本哈根的 Lauritzen 教授對神經代謝有很精彩的介紹，像 Fahr syndrome，一些很少見只有歐洲才有的病，像腦

細胞元移行的分子調節機制 (regulatory mechanism of neuronal migration mediated by the microtubule-associated protein doublecortin and its partners)，他還指出一重點，若沒有丹麥衛生當局及歐盟的資助，這些研究跟本做不下去。這次開會，感到科學進步一日千里，精闢深入的演說對我很有幫助，神經生理的應用範圍很廣大，雖臨床工作繁忙，但願未來時間與經濟許可，要來多聽專題演講，關於兒童神經學之最新進展作。

三、會議心得：

本次醫學會討論除了專題演講、口頭論文報告及現場論文展示超過七百篇等多項活動，每個論文皆讓參加活動的學者能更進一步與各相關議題領域的教授、專家即時的討論交換意見。藉由參加這次會議，且對於一個日本當地的年會,如何能擴展成國際型的會議,有其值得學習之處，獲益良多。

此次會議最大出風頭的應屬功能性 MRI(fMRI)，京都大學研究團隊介紹讓一個人躺在功能性磁共振造影儀器中，用手比出剪刀、石頭、布。再讓超級電腦學習演算法會分析 fMRI 裡人類腦血液流量變化的資料，因爲血液流量和運動皮質的神經活動息息相關。解碼後的資料讓人興奮與震驚，這些數據可被京都大學研究團隊所設計的機器人使用，收到訊號數秒內，機器人手臂會重複實驗對象的選擇，準確率極高。研究驚人的費用，還好有國際電器通信基礎技術研究所和本田研究所的財力與物力合作。在本次會議感到科學進步驚人，更衝擊我們要更要向前發展，更有使命感。看見日本學者在基礎與臨床結合下，發表很多國際知名雜誌包括自然 (nature) 等高級的雜誌，值得借鏡。此外大會議程安排與會場便利與舒適，所耗的人力物力是相當龐大，感受到日本當局對於辦國際會議的用心與投入的心血，獲得的國際肯定與周邊效益是無法估計。我們也應學習去積極爭取各種國內外際學術會議的機會，讓三軍總醫院的知名度更向世界邁進。

四、回單位後報告情形：

本次會議職等的研究論文獲大會肯定，選爲 P10 議程的口頭報告討論題目，不但可與專家學者做直接討論外，更代表本部研究已受到國際的肯定，對個人而言更是難得的經驗。已將相關資訊(如付件一與二)帶回並於民國九十九年十一月九日星期二在所屬的單位報告，同仁皆感到興奮。

五、建議事項：

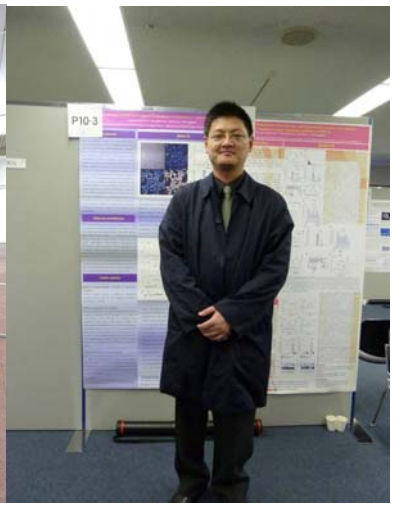
本次參與國際會議，有專題演講、專題研討會及論文海報展示等各方面議程，與來自全球各地的學者專家互相討論，吸取新知後，對於自己往後的研究工有相當大的助益。同時藉由會議發表自己的論文，認識結交國外一流學者前輩，促進國際交流，提昇本院、國軍與台灣的國際地位。

在此次大會中，也讓我們知道自己部份的優勢與缺陷不足之處，國內相同領域的學者應加強彼此合作與互動的關係，經由參加國際性學術會議可拓展視野並跟上國際最新進展，讓我們更具競爭力並提昇國內研究水準及國際學術地位，實爲值得鼓勵。由於補助有限，讓人對參加國際性學術會議意願減低，這是值得思考的事宜。

國際研討會議所提供的新知爲全面性、前瞻性及整合性的，且有機會與研究之學者專家當面交流對談，許多新的構想更容易被激發創造出來。也有助本院及臺灣提昇國際地位，這是長官以及全院同仁，甚至是全國人民可以思考與促進的事宜。

六、參加此會議對單位之貢獻：

職等對於兒童神經相關的研究已起步並已陸續發表，此會議除了聽取各國專家意見外，從壁報展示及部份口頭報告討論中，了解職的研究在國際的方向。職等於會議中獲得許多新的概念以及未來本部可持續進行之研究方向。例如神經代謝與電生理，可以與其他醫院的學者先進醫師做廣泛的合作與學習。對於本院研究的投入與整合，能有幫助。



肆、附錄

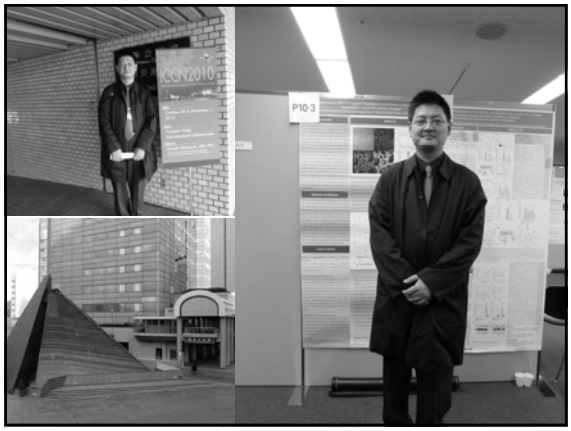
附件一：回單位後報告之內容

附件二：出國參加會議日程表及議程表

附件一：回單位後報告之內容

三軍總醫院小兒部

范洪春醫師



ICCN2010

29th International Congress of Clinical Neurophysiology

October 28 (Thu.) to November 1 (Mon.), 2010 Kobe, Japan

Convener : Hiroshi Shibasaki, MD, PhD

Venue : Portopia Hotel, Kobe International Conference Center

謹代表International Federation of Clinical Neurophysiology (IFCN) 以及 the Japanese Society of Clinical Neurophysiology，我很高興邀請您參加第29屆 國際臨床神經生理學大會(ICCN)，十月二十八日至 2010 11 月 1日在神戶舉辦。IFCN建立在1949年涵蓋57個國家以及61個團體，很榮幸的，日本內閣的國科會大力補助.

日本在主辦了兩次ICCN，第一次在 1981 年，然後于 1995 年，兩次都在京都，這次我們選擇了神戶。日本是一個非常安全的國家，神戶是該國最安全的城市之一。神戶是一個有趣的觀光勝地與充滿日本文化的地方。大會會場位於神戶國際會議中心，可以輕鬆地從附近的機場和火車站的訪問。高檔飯店位於大會場地內。京都和奈良等受歡迎的觀光地點可當日往返。

Gastric movement under mental calculation

H. Sadachi, Y. Nagashima, Y. Yada, T. Yamaguchi and I. Shimoyama
Chiba university 千葉大學 (298)

Introduction

Eletrogastrography (EGG) shows 3 cycles/per minute, but the relationship between gastric peristasis and EGG is not clear.

The relationship had been studied between EGG and gastric ultrasonography during hunger and filling hunger, and the correlation of postprandil EGG and gastric ultrasonography had increased. Fear stress had been reported as an inhibitory effect on the postprandil EGG and the effect involves on both vagal and sympathetic pathway

Evaluation of circadian rhythm of heart-rate variability and autonomic cardiovascular function in Parkinson's disease

T. Harada, F. Ishizaki, N. Horie, K. Nitta, H. Katsuoka, S. Nakamura*Department of Health Services Management, Hiroshima International University, Japan (*廣島大學 293)

Objective: Symptoms of Parkinson's disease (PD) are characterized by ANS dysfunction such as orthostatic hypotension, postprandial hypotension, constipation, pollakisuria, etc. Some of ANS symptoms are related to autonomic cardiovascular dysfunction. The degree of autonomic cardiovascular dysfunction has not been evaluated in PD. We examined the circadian rhythm of heart-rate variability (HRV) in order to evaluate autonomic cardiovascular function in normal subjects and patients with PD.

Methods: HRV was evaluated in 23 parkinsonian patients and 14 age matched healthy controls using spectral analysis and both low frequency (LF) and high frequency (HF) components were determined from Holter ECG recordings over 24 hours. A standing test and measurement of the coefficient of R-Rinterval variation (CVRR) were conducted in all subjects.

Results: The HRV parameters such as LF and HF powers and LF/HF power ratio (LF/HF) over 24 hours were reduced in the PD group compared with the control group. The HRV parameters at 1-hour intervals in the PD group were invariably lower than in the control group, and the circadian rhythm of parameters was disturbed in PD. The Hoehn & Yahr stage correlated significantly with LF and HF powers and the LF/HF.

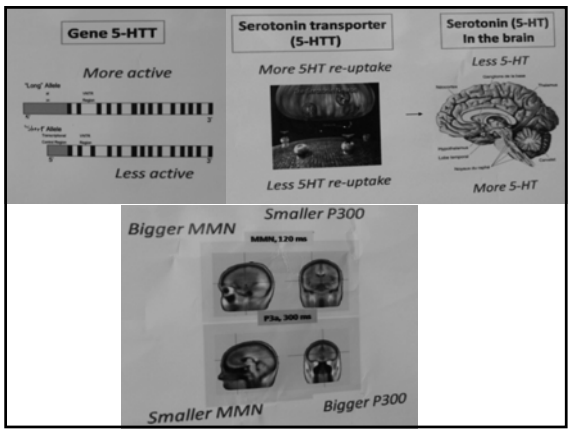
Conclusion: The results indicated that PD led to both sympathetic and parasympathetic cardiovascular dysfunctions, the parkinsonian patients had circadian rhythm impaired in autonomic cardiovascular function, and autonomic nervous dysfunction progressed in parallel with motor disturbance in PD. Calculating LF and HF powers and the LF/HF for 24 hours using spectral analysis proved useful in observing sympathetic and parasympathetic cardiovascular function in PD.

Molecular genetic and EEG correlates of aggressiveness

K. Smirnov, O. Sysoeva, A. Tonevitsky, A. Ivanitsky,
Russion Research Institute of Sport, Moskow, Russia,

Objective: We report the association between brain processes and polymorphisms of serotonin transporter (5HTT) genes, which presumably underlie aggression. Aggressiveness is known to be connected to serotonergic system. The mismatch negativity (MMN) and P300 components of event-related potential (ERPs) were used. MMN is now already used as a clinical tool, therefore, revealing its genetic underpinnings is very important.

Methods: 54 male participants took part in the research. EEG was recorded using 256-channel EGI system. Optimal oddball paradigm was used. Aggressiveness score was assessed by Buss-Durkee Hostility Inventory.



Results: The averaged Hostility scores were higher for the carriers of LLgenotype. The increased MMN component of ERP, which responsible for the automatic change detection, and decreased P3a component, related to involuntary attention and cognitive control were found in LL-carries.

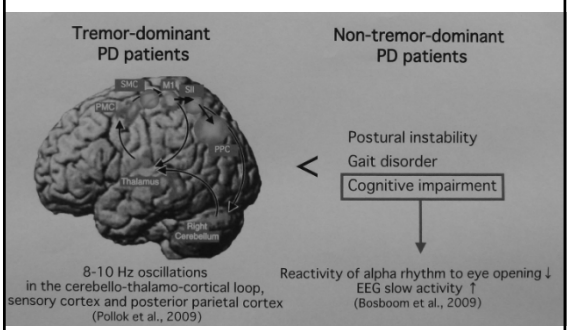
Conclusions: It might be considered as a sign that SS-carries process the information with more cognitive resources. Probably they perceive the stimulus as more complicated, which lead to activation the additional resources of frontal cortex. It might be also suggested that the carries of SS-genotype tend to deeper processing of the incoming information.

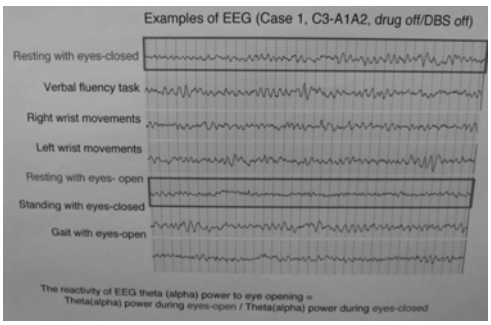
EEG reactivity to eye opening correlates with the clinical subtype of Parkinson's disease

M. Kitagawa, T. Nagamine, Y. Ugawa
Department of Neurology, Sapporo Azabu Neurosurgical Hospital, Japan 札幌麻布

Objective: A widespread increase in EEG theta activity has been observed in Parkinson's disease (PD). The EEG theta attenuation during eyes-open resting condition has been reported in the patients having thalamocortical dysrhythmia, while reduction in the EEG alpha reactivity to eye opening have been observed in the patients with dementia. Our study investigated whether the EEG reactivity to eye opening is different between clinical subtypes of PD.

Methods: 12 PD patients with severe tremor (T-PD), 11 PD patients without tremor (NT-PD) and 13 age-matched normal controls (NC) were studied. In PD patients, clinical evaluation using the Unified Parkinson's Disease Rating Scale (UPDRS) and EEG recordings were performed in the medication-off condition. EEG was recorded in both eyes-closed and eyes-open resting conditions. A 512-point FFT using a 20-sec epoch was performed for producing power spectrum with a resolution of 0.25 Hz to evaluate the absolute power of upper theta (6 8 Hz) and alpha (8 13 Hz) bands of the EEG from the central and occipital derivations.





Results: NT-PD showed higher postural instability and gait disorder score than T-PD. Both T-PD and NT-PD showed a slowing of the peak alpha frequency at the central and frontal regions, higher central/occipital alpha power ratio and greater theta attenuation during eyes-open resting condition at the central and occipital regions, in comparison with NC. NTPD showed a higher theta/alpha ratio at the central and occipital regions and a poor alpha attenuation at the occipital region during eyes-open resting condition, as compared with NC.

Conclusions: The EEG reactivity to eye opening may reflect pathophysiological differences between tremor-dominant and non-tremor-dominant subtypes of PD.

Ceftazidime induced non-convulsive status epilepticus in a uremic and stroke patient

Y.-J. Lin, Y.-T. Huang, C.-L. Chou, H.L. Po
Department of Neurology, Mackay Memorial Hospital, Taipei, Taiwan

Objective and Background: Non-convulsive status epilepticus (NCSE) is usually an under-diagnosed and potentially treatable neurologic disorder among patients with altered mental status. Clinical features and ictal electroencephalography (EEG) changes are the most important diagnostic criteria. Stroke, dementia, previous neurosurgery and following some types of antibiotics using had been thought to be remote risk factors.

Case presentation: A 58-y/o male patient has had history of DM with ESRD s/p HD for years. He also had cerebral infarctions and thalamic hemorrhage with fair recovery except pseudobulbar palsy. He just received amputation for severe gangrene over left big toe 2 months ago. He was admitted this time due to wound infection. He became mildly confused with irrelevant speech following intravenous Ceftazidime for 4 consecutive doses, and then abnormal right staring with nystagmoid like movement of eyes, shaking of head and filthy language developed 2 days later. A delirium state was also noted. Continuous EEG monitoring showed periodic generalized epileptic discharges which were partially suppressed by intravenous Lorazepam infusion. Antibiotics were changed to Piperacillin and anticonvulsant with Phenytoin and Topiramate were used. His consciousness regained in association with absence of abnormal discharging on EEG and he was discharged 3 weeks later.

Plastic electrodes: the new ‘gold’ for pediatric ECMO patients?

J.H. Matsumoto, C.R. Szeliga, L.M. Rao, R. Sankar, J.T. Lerner, J.Y. Wu

Objective: Extracorporeal membrane oxygenation (ECMO) induces a particularly hostile environment for EEG recording. This study examined whether clinical EEG studies of pediatric ECMO patients using plastic electrodes are subject to less electrical artifact than studies recorded using conventional gold electrodes.

Methods: Standard and long-term EEG recordings performed on 19 pediatric patients undergoing ECMO therapy were retrospectively compared, based on the use of gold or plastic electrodes. 60-cycle electrical artifact was quantified for individual electrodes through spectral power analysis of the 50 70 Hz frequency band of electrical artifact.

Results: Plastic electrodes were used in seven long-term and zero standard EEGs, with seizures detected in four studies. Fourteen standard EEGs and one long-term recording used gold electrodes, with seizures captured in three studies. Four patients had multiple EEG studies. Overall, 5 of 19 patients had subclinical seizures. Spectral analysis of the 50 70 Hz band demonstrated significantly lower electrical artifact during plastic electrode studies in comparison to gold ($p < 0.001$). *Four EEGs using gold electrodes were conducted on* members of this cohort outside of ECMO treatment; in these non-ECMO studies 50 70 Hz power was significantly lower than in gold electrode studies during ECMO ($p < 0.001$), *but similar to plastic electrode studies* ($p = 0.30$). Clinically, 8 of 15 gold electrode EEGs reported definite or possible artifact, in comparison to 0 of 7 plastic electrode studies ($p = 0.02$). Five studies were deemed unreadable or unreliable due to the severity

Conclusion: The use of plastic EEG electrodes significantly reduces the amount of electrical artifact seen in EEG recordings on pediatric ECMO patients, who are at significant risk for subclinical seizures. The improved ability to reliably perform high quality long-term EEG recordings provides an opportunity to better evaluate the neuromonitoring needs of ECMO patients.

Dense array EEG has become a powerful tool for long-term monitoring in patients with temporal lobe epilepsy

M. Yamazaki, A. Fujimoto, T. Yamamoto
Seirei Hamamatsu General Hospital, Japan 精霊守護濱松總院

Introduction: Dense array EEG (dEEG) is consisted with up to 256 channel electrodes which increases spatial resolution and recently has been used in epilepsy monitoring. This study is to evaluate the validity of EEG by comparison with the conventional 19ch EEG findings and intaracranial electrodes recording.

Methods: We conducted long term EEG video monitoring (LTM) with 128 or 256ch EEG for thirteen subjects (8 males, 5 females, age: 7 42 y-o) with medically refractory temporal lobe epilepsy following conventional 19ch EEG recording. Three patients were recorded with sphenoidal electrodes and 128 ch EEG and another 3 patients were recorded with intracranial electrodes simultaneously. We applied electrical source analysis for interictal epileptiform discharge and dipole location was visualized in a standard MRI using by the cortically constrained linear inverse method of local autoregressive average. We evaluated the electrical source analysis comparing with (1) sphenoidal electrodes and 128ch dEEG, (2) 128ch and 256ch and (3) mesial and lateral lesional cases with EEG and (4) 256ch EEG and intracranial electrodes.

Results: In all cases, electrical source analysis of interictal discharges with EEG was localized in temporal lobe. EEG detected sphenoidal discharges simultaneously and estimated mesial temporal sources in patients with mesial temporal lesion. Compared to the results from 128ch EEG, the interictal electrical source by 256ch EEG was estimated in more mesial location in patients with mesial temporal lesion. EEG interictal source analysis estimated lateral and mesial temporal separately.

Conclusions: Dense array EEG and its source analysis for interictal discharge can provide more reliable localization of the epileptiform discharge compared to conventional EEG recording. EEG also has a potential to avoid the evaluation by sphenoidal electrodes.

Results: Common presenting symptoms of SEs included headache (75%), visual symptoms (54%), altered levels of consciousness and/or seizure (46%), and psychiatric symptoms (21%). Seizure often developed during the course of SEs (68%), implying sustained neuronal hyperexcitability. SEs were accompanied by focal hyperperfusion (83%) within a month after the clinical onset, by focal epileptiform discharges (79%) within 3 weeks, and by cortical laminar necrosis (50%). Focal lactate accumulation with leptomeningeal vasodilatation was also seen during the early stage. Most of the symptoms were reversible (93%), however cognitive function gradually deteriorated. Two patients died of SEs and one died of unrelated event.

Conclusions: SEs are episodic neurovascular events characterized by neuronal hyperexcitability, increased anaerobic glycolysis, vasogenic edema and vasodilatation, but are not explained by focal ischemia. Based on current understanding of the mechanism of neuronastrocyte communications, we speculate that (1) sustained astrocyte activation following synaptic activation triggered by increased membrane excitability contributes to focal periodic epileptiform discharges, (2) astrocyte activation-dependent arteriolar dilatation causes focal hyperemia, and (3) sustained release of lactate through astrocyte-neuron lactate shuttle augments focal lactate accumulation. Neuron-astrocyte uncoupling characterized by increased glucose metabolism in astrocytes and decreased oxygen metabolism in neurons is a new target for research of MELAS.

Results: We identified significant reductions in the pluripotent markers Oct-4 and Nanog, and in the trophic factors ANG, FGF-2, HGF, IGF-1, PIGF, SDF-1a, TGF-b, and VEGF, but not in BDNF or ECGF. Migration of ALS-MSCs was reduced, although their mesenchymal phenotypes were identical to normal-MSCs.

Conclusion: These data suggest that ALS-MSCs have diminished capacity as stem cells and may have limited beneficial effects in cell therapy.

The effect of chronic intermittent hypoxia in ALS mice model

S.Y. Park, S.M. Kim, K.M. Lee, J.H. Oh, K.B. Kim, D.P. Jang, K.S. Park, J.J., Y.B. Kim, J.H. Cho, K.W. Lee
Department of Neurology, Seoul National University, College of Medicine, Seoul, Korea,

Objective: Patients with ALS suffer from chronic hypoxia, which might be associated with disease progression, sleep disordered breathing, and cognitive function in this disease. ALS might be vulnerable to chronic intermittent hypoxia (CIH) due their deregulated vascular growth factor (VEGF) response to hypoxia. The object of this study is to investigate the effect of mild chronic intermittent hypoxia (CIH) in amyotrophic lateral sclerosis (ALS) mouse model.

Methods: Sixteen G93A SOD1 transgenic mice and sixteen wild type (Wt) mice were divided as 4 group; ALS-CIH, ALS-NOR (normoxia), Wt-CIH, and Wt-NOR. Mice in CIH groups were kept in customized hypoxic chamber with repetitive cycle of hypoxia and normoxia 12 hour/day for two weeks. Mice in NOR groups were also kept in the same chamber with only normoxic conditions for the same period. Rotarod test, wire hanging test, and Y-maze test were performed.
.

Results: ALS-CIH mice with intermittent hypoxia showed poorer motor learning performance in rotarod ($p = 0.046$). In addition ALS-CIH mice had poorer spatial memory function in Y-maze test than ALS-NOR ($p = 0.021$) and Wt-CIH ($p = 0.026$).

Conclusions: Chronic intermittent hypoxia can affect cognitive function in ALS mouse model more than it does in wild type mice. The functional imaging study using micro-PET and histopathologic study is in progress which will reveal more detailed mechanism for our results

NIRS (near infrared spectroscopy): evaluation of oxygen consumption in neuropathic and myopathic patients

G. Squintani, C. Orizio, M. Gobbo, D. De Grandis
UO Neurologia, Azienda Ospedaliera Universitaria Integrata, Verona, Italy

Objective: NIRS (near infrared spectroscopy) allows a non-invasive measurement of local oxygen consumption and blood flow in different tissues, with a significant role in understanding healthy and pathological muscle oxidative metabolism. We studied the local muscle O2 consumption during contraction and the flow recovery rate after the maximal effort in subjects with different kinds of myopathy and neuropathy; we also studied if there was any correlation between O2 consumption, fatigability and clinical muscular deficit.

Subjects & Methods: We studied 9 control subjects, 9 patients with neuropathy, 6 patients with limb girdle dystrophy, 6 patients with nondystrophic myopathy and 9 patients with myotonic dystrophy. All patients underwent 30 seconds of biceps muscle isometric maximal contraction of the dominant limb and 30 seconds of ankle isometric maximal dorsal flexion. For each group, dHHb, dcHb, and dTHI were calculated, together with muscle group fatigability (1/time to exhaustion) and force measure (MRC). Rest skin reflex amplitude and beat-to-beat variability during effort were also evaluated.

附件二：出國參加會議日程表及議程表

P10 Pharmacophysiology, Bioelectric activity generators, Neuromonitoring

Kinoshita T (Osaka)

Free Discussion KICC Room 503-505

Talking Poster Oct. 29, Fri Venue J Htl : Ikuta

P10-1	Yamamoto, T	Department of Psychology, Tezukayama University, Nara, Japan	Japan
	MHPG measurement in saliva as an indicator of CNS activity		
P10-2	Kikuchi, K	Yame Public General Hospital, Japan	Japan
	Edaravone attenuates the cerebral ischemic injury by inhibiting aquaporine-4		
P10-3	Fan, H	Department of Pediatrics, Tri-Service General Hospital and National Defense Medical Center, Taiwan	Taiwan
	THE sensitisation of TRPV4 in mechanical hyperalgesia is PKC pathways dependent		
P10-4	Fan, H	Department of Pediatrics, Tri-Service General Hospital and National Defense Medical Center, Taiwan	Taiwan
	Activation of the TRPV4 ion channel is enhanced by phosphorylation		
P10-5	Shields, K	Neural Plasticity Unit, UCL Institute of Child Health, London, United Kingdom	UK
	Nerve excitability parameters are biomarkers that can differentiate between voltage-gated sodium (VGSC) blockers and may aid in drug development		
P10-6	Koltzenburg, M	UCL Institute of Neurology, UK	UK
	Use of changes in specific nerve excitability parameters as a biomarker for the blockade of HCN/Ih by Org 34167		
P10-7	Kim, J	Department of Psychiatry, Gil Medical Center, Gachon University of Medicine and Science, Korea	Korea
	Diminished heart rate variability associated with the severity of psychotic symptoms in schizophrenia		
P10-8	Kim, J	Department of Psychiatry, Gil Medical Center, Gachon University of Medicine and Science, Incheon, South Korea	Korea
	Reduced heart rate dynamics associated with antipsychotic-induced subjective inner restlessness in schizophrenia		
P10-9	Berkeley, R	UCL Institute of Child Health, UK	UK
	Co-application of the membrane impermeable local anaesthetic QX-314 with lidocaine produces a selective and prolonged block of unmyelinated fibres		
P10-10	Tanaka, K	Kyushu Institute of Technology, Japan	Japan
	A new single-trial-EEG-based BCI – Validation of quantification method of type II modeling		
P10-11	Kornhuber, C	Klinik fuer Strahlentherapie, Universitaetsklinikum Halle (Saale), Germany	Germany
	Action potential generation in neurons: A simple computerized model		
P10-12	Vaisanen, O	Department of Biomedical Engineering, Tampere University of Technology, Tampere, Finland	Finland
	Comparison between weighted multielectrode leads and beamformers in improving the SNR of EEG generated by deep EEG sources		
P10-13	Astolfi, L	Department of Computer Science and Systems, University of Rome "Sapienza", Italy	Italy
	Study of the cortical activity from simultaneous multi-subject EEG recordings		

ICCN2010 SCIENTIFIC PROGRAM

Named Lectures

NL1 Adrian lecture
Mauguiére F (Lyon)
The functions of the human insula
Chairperson : Tanaka T (Kagoshima)
October 29 (Friday) 14:00–14:50
Venue A (Portopia Hall)

NL2 Berger lecture
Lüders HO (Cleveland)
Epilepsy and cortical function
Chairperson : Kato M (Fukuoka)
October 30 (Saturday) 14:00–14:50
Venue A (Portopia Hall)

NL3 Kugelberg lecture
Rossini PM (Rome)
Neuronal plasticity in human
Chairperson : Hashimoto I (Tokyo)
October 31 (Sunday)14:00–14:50
Venue A (Portopia Hall)

ICCN2010 Named Lectures

October 29 (Friday) 13:00–13:50

ICCN2010–NL1 Buchthal Lecture
Lehmann–Horn F (Ulm)
Myotonias as channelopathies
Chairperson : Arimura K (Kagoshima)
Venue B

ICCN2010–NL2 Halliday Lecture
Näätänen R (Helsinki)
Clinical use of mismatch negativity
Chairperson : Koga Y (Mitaka)
Venue C

ICCN2010–NL3 Narabayashi Lecture
Graybiel A (Cambridge, Mass.)
The basal ganglia and mind
Chairperson : Kaji R (Tokushima)
Venue D

Special Lecture for Opening Ceremony

Lücking CH (Freiburg) and Nuwer MR (Los Angeles)
History of IFCN
Chairperson : Shibasaki H (Kyoto)
around 15:45–16:15

Memorial Lectures (Joint Session of ICCN2010 and the 40th Annual Meeting of Japanese Society of Clinical Neurophysiology (JSCN40))

November 1 (Monday) 17: 45–18: 55
(Before Closing Ceremony)
Venue A
Chair : Yanagisawa N (Tokyo)

Shimazono Lecture
Hashimoto I (Tokyo)
Cortical representation of attention focus : short–term plasticity in the human somatosensory and auditory cortices

Tokizane Lecture
Shibasaki H (Kyoto)
Cortical potentials associated with voluntary and involuntary movements

Special Lectures

October 29 (Friday) 8:00–8:50

SL1 Ziemann U (Frankfurt)
Neuropharmacology of intracortical inhibition
Chairperson : Hanajima R (Tokyo)
Venue B

SL2 Guerit JM (Brussels)
Use of evoked potentials for intraoperative monitoring
Chairperson : Cibils D (Montevideo)
Venue C

SL3 Valeriani M (Rome)
Somatosensory evoked potentials
Chairperson : Ozaki I (Aomori)
Venue D

SL4 Stam CJ (Amsterdam)
Cortico–cortical functional coupling : what can we learn from graph theory?
Chairperson : Hallett M (Bethesda)
Venue E

SL5 Valls-Sole J (Barcelona)
Electrophysiological studies of cranial nerve functions
Chairperson : Kimura J (Iowa City)
Venue F

SL6 Lauritzen M (Copenhagen)
Hemodynamic vs. electrophysiologic activities of brain
Chairperson : Fukuyama H (Kyoto)
Venue G

October 30 (Saturday) 8:00-8:50

SL7 Rothwell JC (London, UK)
The future of TMS
Chairperson : Ugawa Y (Fukushima)
Venue B

SL8 Stålberg EV (Uppsala)
EMG study of myopathy
Chairperson : Sonoo M (Tokyo)
Venue C

SL9 Garcia-Larrea L (Lyon)
Cortical pain processing : Learning from healthy subjects and from patients in pain
Chairperson : Kakigi R (Okazaki)
Venue D

SL10 Hallett M (Bethesda)
Physiology of psychogenic movement disorders
Chairperson : Shibasaki H (Kyoto)
Venue E

SL11 Mills KR (London, UK)
Generation of abnormal spontaneous activity in muscle
Chairperson : Komori T (Saitama)
Venue F

SL12 Burke D (Sydney)
Action potential and impulse conduction in sensory and motor axons
Chairperson : Kuwabara S (Chiba)
Venue G

SL13 Baehr M (Göttingen)
Physiological studies of experimental optic neuritis
Chairperson : Tobimatsu S (Fukuoka)
Venue H

October 31 (Sunday) 8:00-8:50

SL14 Deuschl G (Kiel)
The clinical physiology of tremor
Chairperson : Elble RJ (Springfield, Ill)
Venue A

SL15 Sanders DB (Durham, N. C.)
The physiology of neuromuscular transmission
Chairperson : Oh SJ (Birmingham)
Venue B

SL16 Bostock H (London, UK)
(Tasaki Memorial Lecture)
Threshold electrotonus and related techniques
Chairperson : Burke D (Sydney)
Venue C

SL17 Kimura J (Iowa City)
Recent advances in F-wave studies
Chairperson : Yanagisawa N (Tokyo)
Venue E

SL18 Tobimatsu S (Fukuoka)
Physiology of visual cortex
Chairperson : Kuroiwa Y (Yokohama)
Venue G

SL19 Daube JR (Rochester, Minn.)
Pitfalls in needle electromyography : A case based review
Chairperson : Kohara N (Kobe)
Venue H

November 1 (Monday) 8:00-8:50

SL20 Stegeman DF (Nijmegen)
New insights from high density surface EMG
Chairperson : Kimura A (Izu)
Venue A

SL21 Hari R (Espoo)
Brains in social interaction
Chairperson : Nagamine T (Sapporo)
Venue C

SL22 Brown P (London, UK)
Significance of pathological oscillations in

the basal ganglia circuit
Chairperson : Hashimoto T (Matsumoto)
Venue D

SL23 Eisen A (Vancouver)
Electrophysiological diagnosis of ALS
Chairperson : Dengler R (Hannover)
Venue E

SL24 Lesser RP (Baltimore)
Cortical recording and stimulation using subdural electrodes
Chairperson : Ikeda A (Kyoto)
Venue G

Award Lectures

November 1 (Monday) 15:50–16:30
Venue G

M. A. B. Brazier Young Investigator Award Lecture
Vucic S (Sydney)
Corticomotoneuronal function in asymptomatic SOD-1 mutation carriers

W. A. Cobb Young Investigator Award Lecture
Jacobs J (Freiburg)
High frequency oscillations during epileptic spikes : automatic and visual analysis

Symposium

S1 Sleep monitoring
October 29 (Friday) 9:00–11:00
Venue A
Chairpersons : Chokroverty S (Edison, N. J.), Kohyama J (Tokyo)

1. Tachibana N (Osaka)
   Historical overview of sleep scoring–how and why it has been modified
2. Miyamoto T, Miyamoto M (Utsunomiya)
   The clinical and polysomnographic features relevance of idiopathic REM sleep behavior disorders
3. Nakajima T (Mitaka)
   The reproducibility of actigraph
4. Chokroverty S (Edison, N. J.)
   The rhythms of the sleeping brain
5. Svanborg E (Stockholm)
   Neurophysiological testing in obstructive sleep apnea syndrome. Evidence for nervous lesions in the upper airway
6. Kohyama J (Tokyo)
   Sleep disorders in children

S2 Working memory and social brain
October 29 (Friday) 9:00–11:00
Venue B
Chairpersons : Stephane M (Minneapolis), Osaka M (Osaka)

1. Osaka M (Osaka)
   Neural bases of focusing attention in working memory : an fMRI study based on individual differences
2. Clark CR (Adelaide)
   Working memory in post-traumatic stress disorder
3. Stephane M (Minneapolis)
   Online information maintenance and impaired primacy effect in schizophrenia
4. Osaka N (Kyoto)
   Cognitive aspects of social brain –Neural representation of the self : An fMRI study–
5. Sadato N (Okazaki)
   The neural basis of social reward and decision-making

S3 Excitability studies and threshold tracking
October 29 (Friday) 9:00–11:00
Venue C
Chairpersons : Burke D (Sydney), Kuwabara S (Chiba)

1. Bostock H (London, UK)
   Muscle fiber excitability studies and their clinical application
2. Krarup C (Copenhagen)
   Axonal conduction in degenerating and regenerating nerve fibers
3. Kuwabara S (Chiba)
   Axonal excitability in diabetic neuropathy
4. Kiernan MC (Sydney)
   Toxic and metabolic neuropathy
5. Nodera H (Tokushima)
   Hypothesis of conduction block in ALS

S4 Intracortical inhibition
October 29 (Friday) 9:00–11:00
Venue D
Chairpersons : Di Lazzaro V (Rome), Hanajima R (Tokyo)

1. Sohn YH (Seoul)
   Surround inhibition in the human motor

system
2. Hanajima R (Tokyo)
Mechanism of intracortical inhibition
3. Chen R (Toronto)
Intracortical inhibition in movement disorders
4. Di Lazzaro V (Rome)
Transcranial brain stimulation and cortical plasticity

S5 High frequency oscillations (HFOs)
October 29 (Friday) 9:00–11:00
Venue E
Chairpersons : Restuccia D (Rome), Hashimoto I (Tokyo)
1. Hashimoto I (Tokyo)
Exploring the physiology and function of high-frequency oscillations (HFOs) from the somatosensory cortex
2. Restuccia D (Rome)
Pharmacological modulation of HFOs
3. Hamada M (Tokyo)
HFOs in amyotrophic lateral sclerosis (ALS)
4. Alegre M (Pamplona)
High-frequency oscillations in cortical myoclonus

S6 Small fiber physiology
October 29 (Friday) 9:00–11:00
Venue F
Chairpersons : Cole J (Poole), Iwase S (Nagoya)
1. Cole J (Poole, UK)
Physiology of low threshold unmyelinated sensory fibres
2. Inui K (Okazaki)
Selective stimulation of cutaneous nociceptors by intra-epidermal electrical stimulation
3. Schmelz M (Heidelberg)
Small fiber neuropathy and pain
4. Iwase S (Nagoya)
Conduction velocity of C-fibers in humans

S7 Evaluation of radiculopathy and myelopathy
October 29 (Friday) 9:00–11:00
Venue G
Chairpersons : Nobrega JA (Sao Paulo), Tani T (Kochi)
1. Kuruoglu R (Ankara)
Electrodiagnostic evaluation of radiculupathies
2. Lo YL (Singapore)
Electrophysiological evaluation of cervical spondylotic radiculopathy and myelopathy
3. Tani T (Kochi)
Spinal cord evoked potentials in cervical compression myelopathies with conduction block
4. Nobrega JA (Sao Paulo)
Evaluation of radiculoppathy and meelopathy : F wave

S8 Brain computer interface
October 29 (Friday) 9:00–11:00
Venue H
Chairpersons : Hallett M (Bethesda), Babiloni F (Rome)
1. Hallett M (Bethesda), Matsuhashi M (Kyoto)
Intention to move
2. Cichocki A (Wako)
Current trends in noninvasive EEG brain computer interfaces
3. Ushiba J (Tokyo)
Instrumentation
4. Yoshimine T (Osaka)
Real-time decoding of ECoG for human motor BMI
5. Babiloni F (Rome)
Brain computer interfaces for communication and control of robotic devices and domotic applications : possible role for clinical applications

S9 Physiological studies of cognitive functions
October 29 (Friday) 15:00–17:30
Venue A
Chairpersons : Polich J (San Diego), Farina J (Porto Alegre)
1. Polich J (San Diego)
Cognitive neuroelectric measures in the clinic
2. Tomberg C (Brussels)
Factors influencing ERPs
3. Kuroiwa Y (Yokohama)
Cognitive VEPs
4. Olichney JM (Davis, Calif.)
Cognitive ERPs in Fragile X-associated Tremor Ataxia Syndrome (FXTAS) and early Alzheimer's Disease
5. Yamaguchi S (Izumo)
Reward and motivation systems and their

breakdown in neurological disorders
6. Tachibana H (Nishinomiya)
Physiological studies of cognitive functions : Movement disorders
7. Tucker DM (Eugene, Oregon)
Dense array EEG in studies of epilepsy

S10 Clinical application of MEG : Epilepsy and brain mapping
(Sponsored by Yokogawa Electric Co.)
October 29 (Friday) 15:00–17:30
Venue B
Chairpersons : Papanicolaou A (Houston), Nakasato N (Sendai)
1. Nakasato N (Sendai)
Practical reasons for applying MEG clinically
2. Bast T (Kehl–Kork)
Combined EEG and MEG analysis for epilepsy
3. Papanicolaou A (Houston)
Simultaneous recordings of interictal discharges through MEG and subdural electrodes (iEEG)
4. Kamada K (Asahikawa)
Spatial and temporal dynamics of language–related and face recognition brain functions by electrocorticogram and MEG
5. Roberts TP (Philadelphia)
Electrophysiological signatures of language impairment in autism spectrum disorders: Developmental trajectory and correlation with clinical indices
6. Otsubo H (Toronto)
MEG and intracranial video EEG in pediatric neocortical epilepsy

S11 Clinical application of rTMS
October 29 (Friday) 15:00–17:30
Venue C
Chairpersons : Rossi S (Siena), Wang Y (Beijing)
1. Rossi S (Siena)
Safety of TMS
2. Bestmann S (London, UK)
Combined TMS and fMRI for studying network effects of TMS
3. Saitoh Y (Osaka)
Repetitive transcranial magnetic stimulation (rTMS) for neuropathic pain
4. Kito S (Mitaka)
Neuroanatomical correlates of therapeutic efficacy of transcranial magnetic stimulation in the treatment of depression
5. Wang Y (Beijing)
rTMS application in epilepsy
6. Enomoto H (Fukushima)
Potentiation and depotentiation of the motor cortex induced by quadripulse stimulation

S12 Physiological abnormalities in psychiatric diseases
October 29 (Friday) 15:00–17:30
Venue D
Chairpersons : Salisbury DF (Boston), Niwa S (Fukushima)
1. Matsuura M (Tokyo)
Introduction
2. Salisbury DF (Boston)
ERP/ERO indices of static and progressive brain abnormalities in schizophrenia
3. Niwa S (Fukushima)
ERP in schizophrenia and developing disorders
4. Stephane M (Minneapolis)
Oscillatory activity associated with information encoding and maintenance in schizophrenia
5. Michie PT (Callaghan)
Mismatch negativity : a physiological index of functional and structural brain abnormalities in schizophrenia
6. Takizawa R (Tokyo)
Near–infrared spectroscopy (NIRS) in psychiatric disorders
7. Araki T, Kasai K (Tokyo)
Mismatch negativity in patients with an at risk mental state

S13 Deep brain recording and stimulation
October 29 (Friday) 15:00–17:30
Venue E
Chairpersons : Katayama Y (Tokyo), Rektor I (Brno)
1. Hashimoto T (Matsumoto)
Physiological findings
2. Rektor I (Brno)
Basal ganglia (BG) recording in epilepsy
3. Fraix V (Grenoble)
Deep brain recordings and stimulation : findings in Parkinson disease

4. Zhuang P (Beijing)
   Dystonia
5. Katayama Y (Tokyo)
   Thalamic microrecording and stimulation in patients with phantom limb pain
6. Cancelled

S14 Development and brain functions

October 29 (Friday) 15:00–17:30
Venue F
Chairpersons : Vanhatalo S (Helsinki), Ozaki H (Mito)

1. Vanhatalo S (Helsinki)
   Neonatal EEG beyond the graphoelements
2. Pihko E (Helsinki)
   Neonatal MEG
3. Martinovic Z (Belgrade)
   EEG evolution in children with epilepsy
4. Inagaki M (Kodaira)
   Magnocellular VEP in dyslexics
5. Chan AS (Hong Kong)
   Disordered connectivity associated with memory deficits in children with autism spectrum disorders
6. Ozaki H (Mito)
   Neurophysiological contribution to cvidence based education

S15 Auditory system

October 30 (Saturday) 9:00–11:00
Venue A
Chairpersons : Fischer C (Lyon), Ozaki I (Aomori)

1. Cancelled
2. Okamoto H (Münster)
   Basic and clinical studies by using magnetoencephalography (MEG)
3. Ozaki I (Aomori)
   Human tonotopic maps studied by magnetoencephalography
4. Fischer C (Lyon)
   Auditory event-related potentials (ERPs) in uncommunicative patients
5. Satoh M (Sendai)
   Music and the brain : cognition and emotion

S16 Event-related desynchronization/synchronization (ERD/ERS)

October 30 (Saturday) 9:00–11:00
Venue B
Chairpersons : Derambure P (Lille), Hirata M (Osaka)

1. Neuper C (Graz)
   New concepts of ERD/ERS for the study of mental processes
2. Hirata M (Osaka)
   Neurophysiological approach to language function based on event-related oscillatory changes : from functional mapping to brain-machine interface
3. Wheaton L (Atlanta)
   Praxis Movements : the role of the beta band in higher-order motor control
4. Derambure P (Lille)
   Clinical application of ERD/ERS

S17 Sensorimotor integration

October 30 (Saturday) 9:00–11:00
Venue C
Chairpersons : Tecchio F (Rome), Mima T (Kyoto)

1. Ohki Y (Mitaka)
   Basic Physiology
2. Tecchio F (Rome)
   Sufferance relieve approached by individualized interventions
3. Kida T (Okazaki)
   Movement-induced and attentional modulation in the somatosensory system
4. Mima T (Kyoto)
   Afferent inhibition of the motor evoked potentials (combined study)

S18 Visual system

October 30 (Saturday) 9:00–11:00
Venue D
Chairpersons : Holder GE (London, UK), Tobimatsu S (Fukuoka)

1. Holder GE (London, UK)
   Clinical application of electroretinography (ERG)
2. Miyake Y (Nagoya)
   Electrodiagnosis in differantiating retina and optic nerve disease
3. Tobimatsu S (Fukuoka)
   Modality specific VEPs
4. Hirai M (Kingston, Ontario)
   Neural dynamics of biological motion perception

5. Puce A (Bloomington, Ind.,)
   Neural measures of non-verbal communication

S19 Use of TMS for treatment (Sponsored by Magstim)
October 30 (Saturday) 9:00–11:00
Venue E
Chairpersons : Mills KR (London, UK), Tsuji S (Kitakyushu)

1. Mills KR (London, UK)
   The basic mechanisms of TMS and some application to ALS patients
2. Terao Y (Tokyo)
   Implications of hemispheric lateralization in motor recovery
3. Ugawa Y (Fukushima)
   Use of TMS for treatment : Parkinson disease
4. Cancelled
5. Paulus W (Göttingen)
   Transcranial electric stimulation techniques

S20 Pathophysiology of essential tremor
October 30 (Saturday) 9:00–11:00
Venue F
Chairpersons : Vaillancourt DE (Chicago), Katayama Y (Tokyo)

1. Volkmann J (Kiel)
   Lessons deep brain stimulation told us about the pathophysiology of essential tremor
2. Katayama Y (Tokyo)
   Thalamic neurons with tremor-frequency activity in patients with essential tremor
3. Louis ED (New York)
   Pathology of essential tremor
4. van Rootselaar AF (Amsterdam)
   Cortical tremor
5. Vaillancourt DE (Chicago)
   Movement and brain function in essential tremor and Parkinson's disease

S21 Infraslow cortical activities
October 30 (Saturday) 9:00–11:00
Venue G
Chairpersons : Fabricius M (Copenhagen), Ikeda A (Kyoto)

1. Fabricius M (Copenhagen)
   Cortical spreading depolarizations
2. Rodin E (Salt Lake City)
   Periictal intracranial EEG infraslow activity
3. Ikeda A (Kyoto)
   Clinical application of infraslow cortical activities in epilepsy
4. Vanhatalo S (Helsinki)
   Infraslow events in child brain

S22 EEG/MEG and epilepsy in children
October 30 (Saturday) 9:00–11:00
Venue H
Chairpersons : Pihko E (Helsinki), Kaga M (Kodaira)

1. Negoro T (Okazaki)
   Development of electroencephalography (EEG) and age dependent epilepsies
2. Kubota M (Tokyo)
   An MEG analysis of rolandic discharges in benign rolandic epilepsy and related syndromes. – Pathophysiology and developmental aspects –
3. Pihko E (Helsinki)
   Neonatal MEG
4. Ochi A, Otsubo H (Toronto)
   EEG/MEG and epilepsy in children
5. Kaga M (Kodaira)
   Auditory perception in Landau-Kleffner syndrome

S23 Intraoperative and ICU monitoring
(Sponsored by CareFusion Japan)
October 30 (Saturday) 15:00–17:30
Venue A
Chairpersons : Nuwer MR (Los Angeles), Cibils D (Montevideo)

1. Cibils D (Montevideo)
   Overview of intraoperative and ICU monitoring
2. Guerit JM (Brussels)
   ICU monitoring of cortical vs brainstem function
3. Fabricius M (Copenhagen)
   Long term electrocorticography in acute brain injury
4. Fischer C (Lyon)
   Auditory event-related potentials (ERPs) in comatose patients
5. Machado C (Havana)
   Diagnosis of brain death and other disorders of consciousness
6. Yamamoto T (Tokyo)
   Neurosurgical monitoring

7. Cancelled

S24 Use of near-infrared spectroscopy (NIRS)
October 30 (Saturday) 15:00-17:30
Venue B
Chairpersons : Mackert BM (Berlin), Koizumi H (Saitama)

1. Koizumi H (Saitama)
   Principle of NIRS imaging
2. Hoshi Y (Tokyo)
   Basic studies on NIRS : toward further development of functional optical brain imaging
3. Watanabe E (Shimotsuke)
   Clinical application of NIRS
4. Fukuda M (Maebashi)
   Near-infrared spectroscopy in psychiatry
5. Fallgatter AJ (Würzburg)
   NIRS in attention deficit / hyperactivity disorder
6. Yamaguchi M (Tokyo)
   NIRS study in infants
7. Mackert BM (Berlin)
   Combined dc-magnetoencephalography and near-infrared spectroscopy to study simultaneously neuronal and vascular brain functions

S25 Use of botulinum toxin for neurological disorders
(Sponsored by GlaxoSmithKline)
October 30 (Saturday) 15:00-17:30
Venue C
Chairpersons : Rogers JD (Singapore), Kaji R (Tokushima)

1. Rogers JD (Singapore)
   Beyond the neuromuscular junction and implication for clinical application
2. Mezaki T (Tsu)
   Dystonia
3. Cancelled
4. Kaji R (Tokushima)
   Spasticity
5. Rosales RL (Manila)
   Spasticity and botulinum toxin therapy : Whom and when to inject?
6. Nezu A (Yokohama)
   Botulinum toxin in the palliative care management for severe cerebral palsy
7. Bouhassira D (Boulogne-Billancourt)
   Use of botulinum toxin for the treatment of pain

S26 Sleep disorders
October 30 (Saturday) 15:00-17:30
Venue D
Chairpersons : Montplaisir J (Montreal), Hirata K (Mibu)

1. Hirata K (Mibu)
   Overview
2. Dyken ME, Yamada T (Iowa City)
   The clinical diagnostic pitfalls of polysomnography
3. Inoue Y (Tokyo)
   Clinical application of PSG to REM sleep behavior disorder and periodic leg movements during sleep
4. Montplaisir J (Montreal)
   REM sleep behavior disorder : a royal path to study neurodegeneration
5. de Weerd AW (Hague)
   Periodic limb movements during sleep : Actor or bystander?
6. Ozone M (Tokyo)
   CAP (cyclic alternating pattern) in psychiatric disorder

S27 Physiology of polyneuropathies
October 30 (Saturday) 15:00-17:30
Venue E
Chairpersons : Reisin RC (Buenos Aires), de Carvalho MA (Lisbon)

1. Reisin RC (Buenos Aires)
   Peripheral neuropathy : Introduction
2. Goh K-J (Kuala Lumpur)
   Guillain-Barré syndrome : Clinical and electrophysiological spectrum
3. Franssen H (Utrecht)
   Demyelinating neuropathies
4. Misawa S (Chiba)
   Ionic pathophysiology of human diabetic neuropathy : Investigation of axonal excitability can provide new insights into therapeutic strategies
5. Huang CC (Taipei)
   Toxic neuropathy
6. de Carvalho MA (Lisbon)
   Familial amyloid polyneuropathy

7. Lin CS (Sydney)
   Porphyric neuropathy : Insane in the membrane

S28 Mapping and monitoring for eloquent area during neurosurgery
October 30 (Saturday) 15:00–17:30
Venue F
Chairpersons : Sala F (Verona), Tamaki T (Wakayama)

1. Tamaki T (Wakayama)
   The history of the intra-operative spinal cord monitoring
2. Sala F (Verona)
   Motor evoked potential monitoring and subcortical mapping in brain tumor surgery
3. Fukaya C (Tokyo)
   D-wave monitoring in brain tumor surgery
4. Szelenyi A (Frankfurt)
   MEP monitoring in vascular neurosurgery
5. Shinomiya K, Kawabata S (Tokyo)
   Multimodal intraoperative spinal cord monitoring during cervical spine surgery
6. Mikuni N (Kyoto)
   Integrated functional neuronavigation during neurosurgery

S29 Mismatch negativity (MMN)
October 31 (Sunday) 9:00–11:00
Venue A
Chairpersons : Naatanen R (Helsinki), Yabe H (Fukushima)

1. Naatanen R (Helsinki)
   The mismatch negativity (MMN) – The principle
2. Yabe H (Fukushima)
   The concept of temporal integration window and its clinical applications
3. Escera C (Barcelona)
   Ultrafast mechanisms of auditory novelty detection in the human brain
4. Kirino E (Shizuoka)
   Simultaneous EEG-fMRI recording of MMN in schizophrenia
5. Michie PT (Callaghan)
   MMN in schizophrenia : relationship to functional status, generator sources and grey matter loss

S30 High resolution EEG analysis
October 31(Sunday) 9:00–11:00
Venue B
Chairpersons : Stam CJ (Amsterdam), Koga Y (Mitaka)

1. Koga Y (Mitaka)
   Overview : Further growth and development of electroencephalography
2. Pascual-Marqui RD (Zurich)
   Functional localization and cortical connectivity : discovering the parts and their interactions using exact LORETA
3. Stam CJ (Amsterdam)
   Analysis methods : new approaches to the characterization of functional brain networks
4. Babiloni C (Rome)
   Mechanisms of cortical neural synchronization in humans as revealed by advanced EEG techniques
5. Harmony T (Mexico City)
   Norms for frequency EEG source analysis in the first year of life

S31 Somatosensory system
October 31 (Sunday) 9:00–11:00
Venue C
Chairpersons : Yamada T (Iowa City), Tinazzi M (Verona)

1. Sonoo M (Tokyo)
   Generator mechanism of somtosensory evoked potentials (SEPs)
2. Yamada T (Iowa City)
   The relationship between SEP and sleep
3. Hoshiyama M (Nagoya)
   Two-point discrimination : evaluation using neurophysiological methods
4. Valeriani M (Rome)
   Clinical use of SEP
5. Tinazzi M (Verona)
   Sensory functions in movement disorders

S32 Functional recovery of stroke patients
October 31 (Sunday) 8:00–10:00
Venue F
Chairpersons : Hummel FC (Hamburg), Miyai I (Osaka)

1. Liu M (Tokyo)
   Brain Machine Interface (BMI) neurofeedback training for hemiparetic stroke
2. Miyai I (Osaka)
   Neural mechanisms underlying functional recovery after stroke

3. Hummel FC (Hamburg)
   Mechanisms of stroke recovery : Non-Invasive brain stimulation to enhance neuronal plasticity and functional recovery
4. Fujiwara T (Tokyo)
   Effect of hybrid assistive neuromuscular dynamic stimulation (HANDS) therapy for functional recovery after stroke

S33 Psychophysiology of attention-deficit/hyperactivity disorders (AD/HD)
October 31 (Sunday) 9:00-11:00
Venue G
Chairpersons : Fallgatter AJ (Würzburg), Yasuhara A (Hirakata)

1. Yasuhara A (Hirakata)
   Continuous performance test "Mograz" using personal computer in children with attention deficit/hyperactivity disorders (ADHD)
2. Yamashiro D, Goto Y, Kaga Y, Aihara M (Kofu)
   Psychophysiological evidences of poor inhibition in AD/HD
3. Tripp EG (Okinawa)
   ADHD and reward
4. Fallgatter AJ (Würzburg)
   Neurophysiolgy of AD/HD

S34 Neurophysiology of rehabilitation
October 31 (Sunday) 9:00-11:00
Venue H
Chairpersons : Robinson LR (Seattle), Kimura A (Izu)

1. Li LSW (Hong Kong)
   Current status of neurorehabilitation
2. Kimura A (Izu)
   Motor recovery from hemiplegia after stroke
3. Ikoma K (Sapporo)
   Use of TMS for rehabilitation
4. Takahashi H (Mitaka)
   Spasticity reduction by inhibitive orthosis
5. Robinson LR (Seattle)
   Electrodiagnosis of carpal tunnel syndrome

S35 Fasciculation and motor neuron disease
October 31 (Sunday) 15:00-17:30
Venue A
Chairpersons : Fuglsang-Frederiksen A (Aarhus), Sonoo M (Tokyo)

1. Eisen A (Vancouver)
   Amyotrophic lateral sclerosis (ALS/MND) clinical aspects
2. de Carvalho MA (Lisbon)
   Physiology of ALS
3. Dengler R (Hannover)
   Detection of upper motor neuron involvement in amyotrophic lateral sclerosis (ALS)
4. Sonoo M (Tokyo)
   EMGs in ALS
5. Kleine BU, Stegeman DF (Nijmegen)
   Mechanisms of fasciculation
6. Fawcett PRW (Newcastle upon Tyne)
   Macro EMG
7. Fuglsang-Frederiksen A (Aarhus)
   Sensory nerve in ALS

S36 Recent advance in magnetoencephalography (MEG)
(Sponsored by Elekta Neuromag Oy)
October 31 (Sunday) 15:00-17:30
Venue B
Chairpersons : Hari R (Espoo), Nagamine T (Sapporo)

1. Ahonen A (Helsinki)
   Recent advances in MEG - techniques and analysis methods
2. Hashimoto I (Tokyo)
   Magnetic signals from deep sources in the human brain
3. Nagamine T (Sapporo)
   Features of MEG signals compared with EEG
4. Kaneoke Y (Okazaki)
   Studies on visual motion detection process in humans
5. Hirata M (Osaka)
   Event-related oscillatory changes : a key to elucidating neural processes
6. Okada Y (Boston)
   Electrophysiological signatures of early human brain development

S37 Update of TMS
October 31 (Sunday) 15:00-17:30
Venue C
Chairpersons : Ziemann U (Frankfurt), Nakashima K (Yonago)

1. Nakashima K (Yonago)
   Update of TMS : Introduction
2. Ziemann U (Frankfurt)
   Pharmacology and TMS

3. Huang Y-Z (Taipei)
   Theta burst stimulation
4. Magistris MR (Geneva)
   The triple stimulation technique
5. Ugawa Y (Fukushima)
   Update of TMS, quadripulse stimulation
6. Cincotta M (Florence)
   Mirror movements
7. Murase N (Tokushima)
   Long-term effect of repetitive transcranial magnetic stimulation over the premotor cortex for upper limb dystonia

S38 Face perception
October 31 (Sunday) 15:00-17:30
Venue E
Chairpersons : Puce A (Bloomington, Ind.,), Kakigi R (Okazaki)

1. Puce A (Bloomington, Ind.,)
   Face perception : Overview
2. Kakigi R (Okazaki)
   EEG/MEG
3. Iidaka T (Nagoya)
   A role of face angle in neural activity in the inferior temporal cortex – A 3T fMRI study in human –
4. Gunji A (Kodaira)
   Facial cognition in autistic children
5. Nakato E (Tokyo)
   Familiar vs. unfamiliar faces to infants studied by NIRS
6. Eifuku S (Toyama)
   Neural basis for associative face memory in the anterior inferior temporal cortex of monkeys
7. Rossion B (Louvain)
   The neurophysiology of acquired prosopagnosia

S39 Physiological studies of language
October 31 (Sunday) 15:00-17:30
Venue F
Chairpersons : Salmelin R (Espoo), Sakai K (Tokyo)

1. Salmelin R (Espoo)
   Neurophysiology of language : the MEG approach
2. Sakai K (Tokyo)
   Broca's area revisited
3. Fujimaki N (Akashi)
   Linguistic brain functions and context effects measured by MEG
4. Papanicolaou A (Houston)
   Presurgical language lateralization
5. Kamada K (Asahikawa)
   Visualization of the subcortical language fibers on tractography by co-utilizing functional MRI and MEG
6. Usui K (Shizuoka)
   Basal temporal language area

S40 Rapid eye movements (REM) and sleep : EEG and fMRI study
November 1 (Monday) 9:00-11:00
Venue A
Chairpersons : Bodizs R (Budapest), Miyauchi S (Kobe)

1. Bodizs R (Budapest)
   Emergence of REM sleep features during wakefulness-sleep transition
2. Abe T (Tokyo)
   Gamma band EEG activities before and after REM
3. Ogawa K (Saitama)
   Event-related potential accompanying REM
4. Miyauchi S (Kobe)
   fMRI activation time-locked to rapid eye movements during REM sleep
5. Bodis-Wollner I (New York)
   Perisaccadic modulation of brain activity : EEG and fMRI

S41 Gait disturbance
November 1(Monday) 9:00-11:00
Venue C
Chairpersons : Lamontagne A (Montreal), Takakusaki K (Asahikawa)

1. Takakusaki K (Asahikawa)
   Basic physiology of locomotion
2. Hanakawa T (Kodaira)
   Neural control of bipedal gait
3. Miyai I (Osaka)
   Functional NIRS study for gait disturbance
4. Lamontagne A (Montreal)
   Post-stroke gait disturbances : innovative rehabilitation approaches

S42 Digital EEG and EEG standards
November 1 (Monday) 9:00-11:00
Venue D
Chairpersons : Nuwer MR (Los Angeles),

Guerit JM (Brussels)

1. Nuwer MR (Los Angeles)
   Digital EEG and EEG standards
2. Nakamura M (Saga)
   Automatic EEG interpretation
3. Kobayashi K, Yoshinaga H (Okayama)
   Utility of digital EEG analysis in childhood epilepsy
4. Guerit JM (Brussels)
   EEG standards for ICU monitoring

S43 Vestibular physiology and postural control

November 1(Monday) 9:00–11:00
Venue E
Chairpersons : Colebatch JG (Sydney), Murofushi T (Tokyo)

1. Murofushi T (Tokyo)
   Neurophysiology of vestibular function
2. Colebatch JG (Sydney)
   Ocular vestibular evoked myogenic potentials (OVEMPs)
3. Kim JS (Seoul)
   Central mechanisms of vestibular function : Saccular responses
4. Fujiwara K (Kanazawa)
   Postural control and EEG during platform perturbation

S44 Channel disorders

November 1 (Monday) 9:00–11:00
Venue F
Chairpersons : Lehmann-Horn F (Ulm), Arimura K (Kagoshima)

1. Kiernan MC (Sydney)
   Physiological studies in channel disorders
2. Kuwabara S (Chiba)
   Axonal ion channel dysfunction and the split hand syndrome in ALS
3. Maselli RA (Davis, Calif.)
   Neuromuscular junction muscle physiology genetics
4. Arimura K (Kagoshima)
   Periodic paralyses
5. Lehmann-Horn F (Ulm)
   Chloride and sodium channel myotonias

S45 Physiological evaluation of myopathies

November 1 (Monday) 9:00–11:00
Venue G
Chairpersons : Zalewska E (Warsaw), Imai T (Sapporo)

1. Zalewska E (Warsaw)
   The diagnostic yield of atypical motor unit potentials
2. Imai T (Sapporo)
   Measurement of excitation-contraction coupling time of masseter in mandibular movement
3. Zierz S (Halle/Saale)
   Diagnostic value of muscle biopsy versus molecular genetics in myopathies.
4. Jurkat-Rott K (Ulm)
   Periodic paralysis

S46 Neuroimaging and electrophysiology

November 1 (Monday) 14:00–16:30
Venue A
Chairpersons : Lauritzen M (Copenhagen), Fukuyama H (Kyoto)

1. Fukuyama H (Kyoto)
   Neurovascular coupling
2. Lauritzen M (Copenhagen)
   Neurometabolic coupling
3. Magistretti PJ (Lausanne)
   Neuron-glia metabolic coupling and plasticity
4. Le Bihan D (Paris)
   Membranes, water and diffusion : Potential for brain imaging
5. Nagata K (Akita)
   Functional neuroimaging in stroke and dementia
6. Ushida T (Nagakute)
   Neuroimaging for pain

S47 Epilepsy

(Sponsored by Otsuka Pharmaceutical / UCB Japan)
November 1(Monday) 14:00–16:30
Venue B
Chairpersons : Ebersole JS (Chicago), Chauvel P (Marseille)

1. Sakamoto AC (Ribeirao Preto)
   Electrophysiological diagnosis of epilepsy
2. Lee BI (Seoul)
   Neuroimaging of epilepsy
3. Kwan P (Hong Kong)
   Drug treatment of epilepsy
4. Ebersole JS (Chicago)
   Source analysis of scalp EEG
5. Chauvel P (Marseille)
   Intracerebral EEG

6. Ikeda A (Kyoto)
   Wideband intracranial EEG
7. Inoue Y (Shizuoka)
   Lateralizing and prognostic seizure symptoms in medial temporal lobe epilepsy

S48 **Functional and effective connectivity**
November 1 (Monday) 14:00–16:30
Venue C
Chairpersons : Stam CJ (Amsterdam), Honda M (Kodaira)

1. Honda M (Kodaira)
   Differential function of fronto-parietal network in mental operation
2. Matsumoto R (Kyoto)
   In vivo exploration of brain network by means of cortico-cortical evoked potentials
3. Stam CJ (Amsterdam)
   The breakdown of functional connectivity in neuropsychiatric disease
4. Ilmoniemi RJ (Helsinki)
   TMS and EEG
5. Mochizuki H (Fukushima)
   Transcranial magnetic stimulation and near infrared spectroscopy
6. Mima T (Kyoto)
   Transcranial magnetic stimulation (TMS) and functional MRI

S49 **Entrapment neuropathies**
November 1 (Monday) 14:00–16:30
Venue D
Chairpersons : Us O (Istanbul), Tani T (Kochi)

1. Cancelled
2. Tani T (Kochi)
   Experimental focal compression of the median nerve at the wrist
3. Wilder-Smith EP (Singapore)
   Carpal tunnel syndrome (CTS), diagnostic and pathophysiologic considerations
4. Veerendrakumar M (Bangalore)
   Ulnar nerve palsy
5. Campero M (Santiago)
   Entrapment neuropathies : sensory nerve conduction
6. Us O (Istanbul)
   Plantar and sural nerve conduction studies

S50 **Physiology of pain and itch**
November 1 (Monday) 14:00–16:30
Venue E
Chairpersons : Treede R-D (Mainz), Garcia-Larrea L (Lyon)

1. Treede R-D (Mainz)
   Physiological study of pain
2. Tamura Y (Tokyo)
   Motor cortex stimulation and pain perception
3. Garcia-Larrea L (Lyon)
   Cortical mechanism of pain perception
4. Valeriani M (Rome)
   Generators of laser evoked potentials
5. Schnitzler A (Düsseldorf)
   Pain processing and cortical oscillations
6. Mochizuki H (Mannheim)
   Itch perception

S51 **Basal ganglia circuitry**
November 1 (Monday) 14:00–16:30
Venue F
Chairpersons : Vaillancourt DE (Chicago), Brown P (London, UK)

1. Hashimoto T (Matsumoto)
   Deep brain recording from the basal ganglia
2. Nambu A (Okazaki)
   Cortical inputs to the subthalamic nucleus
3. Fraix V (Grenoble)
   Basal ganglia circuitry : findings in Parkinson disease
4. Brown P (London, UK)
   Physiological significance of oscillations in the basal ganglia
5. Vaillancourt DE (Chicago)
   Long-term effects for deep brain stimulation for Parkinson disease
6. Sawamoto N (Kyoto)
   Basal ganglia circuitry : Cognitive functions

S52 **NIRS application in clinical psychiatry**
(Sponsored by HITACHI Medico)
November 1 (Monday) 14:00–15:50
Venue G
Chairpersons : Fukuda M (Maebashi), Fallgatter AJ (Würzburg)

1. Fukuda M (Maebashi)
   Approval of NIRS as the advanced medical technology in psychiatry
2. Fallgatter AJ (Würzburg)
   Optical topography in attention deficit/

hyperactivity disorder
3. Takizawa R (Tokyo)
NIRS application to psychiatric diagnosis and clinical evaluation
4. Shinohara K (Nagasaki)
Neural correlates of maternal love, paternal love and children's love for their parents

Workshop

WS1 Clinical use of motion logger
October 29 (Friday) 15:00–16:15
Venue G
Chairpersons : Meadows R (Surrey, UK), Nakajima T (Mitaka)
1. Meadows R (Surrey, UK)
Actigraphic analysis techniques
2. Enomoto M (Kodaira)
Clinical application of newly developed waist-worn actigraphy to advance effective sleep medicine for hospitalized patients
3. Nakajima T (Mitaka)
Abnormal awaking state detected by activity monitoring
4. de Weerd AW (Hague)
How to use actigraphy : limitations and value in sleep medicine

WS2 Spinal reflex
October 29 (Friday) 16:15–17:30
Venue G
Chairpersons : Nielsen JB (Copenhagen), Masakado Y (Isehara)
1. Nielsen JB (Copenhagen)
Overview : Mind the spinal cord ; it plays a role in motor disorders
2. Katz R (Paris)
Spinal interneurones
3. Masakado Y (Isehara)
Disynaptic Ia reciprocal inhibition in stroke patients before and after therapeutic electrical stimulation
4. Morita H (Matsumoto)
Inappropriate modulation of antagonistic inhibition at onset of voluntary contraction in Parkinson's disease

WS3 Neurophysiology of urination and pelvic floor muscles
October 29 (Friday) 15:00–16:15
Venue H
Chairpersons : Vodusek DB (Ljubljana), Hattori T (Chiba)
1. Sakakibara R (Chiba)
Sphincter physiology : with reference to neurologic / autonomic disorders
2. Tello A (Mexico City)
Neurophysiology of pelvic floor
3. Vodusek DB (Ljubljana)
Clinical study – Neurophysiological tests in uroneurology
4. Cancelled

WS4 Restoration of injured peripheral nerve function
October 29 (Friday) 16:15–17:30
Venue H
Chairpersons : Xavier de Castro JH (Porto Alegre), Chu N-S (Taipei)
1. Zhu Y (Shanghai)
Neurophysiological measures following total C7 nerve transection
2. Kwon HK (Seoul)
Electrodiagnosis as a prognostic factor
3. Valls-Sole J, Montero J (Barcelona)
Reinnervation in facial palsy
4. Chu N-S (Taipei)
Outcome of toe-to-finger graft

WS5 Drug effect on EEG
October 30 (Saturday) 15:00–16:15
Venue G
Chairpersons : Saletu B (Vienna), Kinoshita T (Osaka)
1. Saletu B, Anderer P, Saletu-Zyhlarz G (Vienna)
Drug effects on EEG topography and tomography
2. Kinoshita T (Osaka)
Pharmaco-EEG application for the evaluation of drug effects on mental disorders.
3. Strik W (Bern)
Pathophysiology of thought disorders and hallucinations
4. Tanaka H (Mibu)
Clinical application in Neurology

WS6 Physiology of neuromuscular junction
October 30 (Saturday) 16:15–17:30
Venue G
Chairpersons : Sanders DB (Durham), Witoonpanich R (Bangkok)

1. Sanders DB (Durham)
   Neuromuscular transmission – Overview
2. Witoonpanich R (Bangkok)
   Physiology of myasthenia gravis : Effect of temperature on neuromuscular transmission
3. Oh SJ (Birmingham, Ala.)
   Lambert–Eaton myasthenic syndrome
4. Maselli RA (Davis, Calif.)
   Clinical electrodiagnostic studies of congenital myasthenic syndromes

WS7 Ocular movement
October 30 (Saturday) 15:00–16:15
Venue H
Chairpersons : Bodis-Wollner I (New York), Terao Y (Tokyo)

1. Bodis-Wollner I (New York)
   Saccade-related cortical activity
2. Terao Y (Tokyo)
   Saccades in neurological disorders
3. Yugeta A (Tokyo)
   DBS and saccade performance

WS8 Respiratory physiology
October 30 (Saturday) 16:15–17:30
Venue H
Chairpersons : Podnar S (Ljubljana), Homma I (Tokyo)

1. Homma I (Tokyo)
   Emotion and breathing
2. Podnar S (Ljubljana)
   Quantitative EMG of the diaphragm and genioglossus muscles
3. Chokroverty S (Edison, N. J.)
   Physiology of breathing during sleep

WS9 Neurophysiology of hyperkinetic movement disorders
October 31 (Sunday) 15:00–16:15
Venue G
Chairpersons : Deuschl G (Kiel), Shibasaki H (Kyoto)

1. Elble RJ (Springfield, Ill.)
   Neurophysiology of tremor
2. De Koning-Tijssen MA (Amsterdam)
   Myoclonus, a clinical and neurophysiological approach
3. Hallett M (Bethesda)
   Dystonia

WS10 Studies of cranial nerve functions
October 31 (Sunday) 16:15–17:30
Venue G
Chairpersons : Valls-Sole J (Barcelona), Misawa S (Chiba)

1. Misawa S (Chiba)
   Electrophysiology in hemifacial spasm
2. Nobrega JA (Sao Paulo)
   Studies of cranial nerve functions : trigeminal nerve
3. Valls-Sole J (Barcelona)
   Blink reflex and startle response
4. Cancelled

WS11 Motor unit number estimation
October 31 (Sunday) 15:00–16:15
Venue H
Chairpersons : Bromberg MB (Salt Lake City), Komori T (Saitama)

1. Bromberg MB (Salt Lake City)
   MUNE : Clinical application
2. Lee K-W (Seoul)
   Statistical motor unit number estimation (MUNE) in ALS
3. Komori T (Saitama)
   Single motor unit analysis in neuropathies

Proposed Workshop

PW1 The cellular mechanisms of EEG rhythms
October 28 (Thursday) 12:30–14:15
Venue B
Chairpersons : Amzica F (Montreal), Lopes da Silva FH (Amsterdam)

1. Amzica F (Montreal)
   Contributions of neurons, glia and blood-brain barrier to slow (delta) and DC EEG potentials
2. Nunez A (Madrid)
   Network mechanisms underlying hippocampus theta oscillations
3. Lopes da Silva FH (Amsterdam)
   Brain rhythms in the 7–14 Hz frequency range : generation, dynamics and functional significance
4. Whittington M (Newcastle upon Tyne)
   Diversity in gamma and beta rhythm-generating local circuits in neocortex

PW2 Neuromuscular ultrasound
October 28 (Thursday) 14:15–15:30

Venue B
Chairperson : Hobson-Webb LD (Durham, N. C.)

1. Hobson-Webb LD (Durham, N. C.)
   Peripheral nerve ultrasonography in the EMG Laboratory
2. Yoon JS (Seoul)
   Ultrasonography in the diagnosis of upper extremity nerve entrapment syndromes
3. Padua L (Rome)
   Moving toward morphofunctional measures of the peripheral nerve
4. van Alfen N (Nijmegen)
   Ultrasound of the brachial plexus
5. Pillen S (Nijmegen)
   Advances in skeletal muscle ultrasound

PW3 Contact heat-evoked potentials (CHEP) (Sponsored by MEDOC)
October 28 (Thursday) 12:30-14:15
Venue C
Chairpersons : Hsieh S-T (Taipei)

1. Chao CC (Taipei)
   CEHP : field mapping and source imaging
2. Smith B (Scottsdale, Ariz.)
   Upper and lower limb Ad fiber conduction velocities by contact heat evoked potential stimulation (CHEPS)
3. Hsieh S-T (Taipei)
   Overview of pain-related evoked potentials on neuropathic pain
4. Anand P (London, UK)
   Heat evoked potentials for the diagnosis of neuropathic pain and hypersensitivity disorders

PW4 The role of the medial frontal cortex in valuation and social interaction
October 28 (Thursday) 14:15-15:30
Venue C
Chairpersons : Kawashima R (Sendai), Seitz RJ (Düsseldorf)

1. Kennerley S (Berkeley)
   Medial frontal cortex and decision-making : evidence from primate neuropsychology and neurophysiology
2. Seitz RJ (Düsseldorf)
   Human medial frontal cortex and value judgment
3. Kawashima R (Sendai)
   Role of the medial frontal cortex in communication

PW5 Neuronal oscillations in multi-scale brain networks
October 28 (Thursday) 13:00-14:15
Venue D
Chairpersons : Tsuru N (Miyazaki), Canolty RT (Berkeley)

1. Canolty RT (Berkeley)
   The role of neuronal oscillations in local computation and long-range communication
2. Voytek B (Berkeley)
   Shifts in gamma phase-amplitude coupling frequency from theta to alpha over posterior cortex during visual tasks
3. Kramer M (Boston)
   The evolution of multiscale interactions during seizure
4. Tsuru N (Miyazaki)
   Theta oscillation under working memory task on MEG

PW6 Intraoperative neurophysiologic monitoring (IONM) of spinal column surgical procedures
October 28 (Thursday) 14:15-15:30
Venue D
Chairperson : Lopez JR (Palo Alto)

1. Nuwer MR (Los Angeles)
   IONM techniques useful in assessing spinal cord function in scoliosis surgery
2. Lopez JR (Palo Alto)
   Review of spinal column surgical procedures and the possible pathophysiologic mechanisms of neural injury during spinal surgery
3. Regidor I (Madrid)
   IONM techniques useful in assessing pedicle screw placement
4. Ferreira R (Sao Paulo)
   IONM of spinal roots and cauda equina

PW7 Neonatal seizures : changing vistas in EEG vs. treatment
October 31 (Sunday) 16:15-17:30
Venue H
Chairpersons : Pressler R (London, UK), Vanhatalo S (Helsinki)

1. Vanhatalo S (Helsinki)
   Neonatal brain monitoring with EEG - solutions and challenges

2. Pressler R (London, UK)
   Neurophysiologist's role in diagnosis and treatment of neonatal seizures
3. De Vos M (Leuven)
   Automated neonatal seizure detectors 1 : heuristic approach and experience
4. Stevenson N (Cork)
   Automated neonatal seizure detectors 2 : systematic approach and clinical application

Satellite Symposium

Sat–S1 Nerve excitability testing : translation of basic science
October 28 (Thursday) 12:30–15:30
Venue E
Chairpersons : Burke D (Sydney), Kaji R (Tokushima)

1. Kaji R (Tokushima)
   Introduction to conduction block and related physiological background
2. Bergmans J (Brussels)
   Modern excitability testing as a window to nerve ion channels : an historical perspective
3. Koltzenburg M (London, UK)
   Studying mechanisms of nerve excitability control in vitro
4. Tomlinson S (Sydney)
   Nerve excitability studies in genetic neuronal ion channel disorders
5. Krarup C (Copenhagen)
   Use of animal models for exploring nerve excitability in peripheral nerves

Luncheon Seminar

LS1 (Sponsored by MSD)
October 30 (Saturday) 13:00–13:50
Venue B
Nakagome K (Yonago)
Cognitive impairment in mood disorders
Chairperson : Koga Y (Mitaka)

LS2 (Sponsored by GlaxoSmithKline)
October 30 (Saturday) 13:00–13:50
Venue C
Mochizuki H (Tokyo)
Gene and cell therapy for neurodegenerative disorders
Chairperson : Mizuno Y (Tokyo)

LS3 (Sponsored by Boehringer Ingelheim)
October 30 (Saturday) 13:00–13:50
Venue D
Trenkwalder C (Kassel)
Restless legs syndrome
Chairperson : Ugawa Y (Fukushima)

LS4 (Sponsored by Meiji-Seika)
October 31 (Sunday) 13:00–13:50
Venue B
Kinoshita T (Osaka)
Definition and treatment of depression
Chairperson : Matsunaga H (Nishinomiya)

LE1 (Sponsored by GlaxoSmithKline)
October 31 (Sunday) 13:30–13:50
Venue C
Kaji R (Tokushima)
Physiology and current therapy of dystonia and spasticity
Chairperson : Kimura A (Shizuoka)

LE2 (Sponsored by Eisai)
November 1 (Monday) 13:00–13:50
Venue B
Ueki Y (Nagoya), Enomoto S (Fukushima)
Symposium on magnetic stimulation
Chairperson : Ugawa Y (Fukushima)

LE3 (Sponsored by Otsuka Pharmaceutical)
November 1 (Monday) 13:00–13:50
Venue C
Inoue Y (Tokyo)
Diagnosis, pathogenesis and treatment of restless legs syndrome
Chairperson : Hirata K (Tochigi)

LE4 (Sponsored by Novartis Pharma)
November 1 (Monday) 13:00–13:50
Venue D
Naitoh H (Mie)
EMG analysis of parkinsonian gait
Chairperson : Nakanishi R (Kumamoto)

L1 (Sponsored by Pfizer)
October 31 (Sunday) 13:30–13:50
Venue G
Sumitani M (Tokyo)
Clinic for neuropathic pain (presented in Japanese)
Chairperson : Katayama Y (Tokyo)

L2 (Sponseored by Astellas Pharma/Sanofi-Aventis)
October 31 (Sunday) 13:30-13:50
Venue H
Inoue Y (Tokyo)
Mechanism and management of insomnia (presented in Japanese)
Chairperson : Hirata K (Tochigi)

L3 (Sponsored by Nihon Pharmaceutical)
November 1 (Monday) 13:00-13:50
JSCN Venue B
Conjugate anti-ganglioside antibodies in GBS and CIDP (presented in Japanese)
Kusunoki S (Osaka)
Chairperson : Arimura K (Kagoshima)

Hands-on-workshop

1. EEG
October 31 (Sunday) 9:00-11:00 Venue E
Organizer : Ikeda A (Kyoto)

HOW1-1 How do we read routine EEG in the modern imaging era?
Ikeda A (Kyoto), Lee BJ (Seoul)

HOW1-2 Initial remark : How do we read routine EEG in the modern imaging era?
Lüders HO (USA)

HOW1-3 Case presentation : EEG in epilepsy
K. Terada (Shizuoka)

HOW1-4 Case presentation
Sakamoto AC (Ribeirao Preto)

HOW1-5 Case presentation : EEG in adults
Akamatsu N (Kitakyushu)

HOW1-6 Case presentation : EEG in children
Oguni H (Tokyo)

2. TMS
November 1 (Monday) 9:00-11:00 Venue B
Organizer : Ugawa Y (Fukushima)

HOW2-1 The basic mechanisms of TMS and some application to ALS patients
Mills KR (London, UK)

HOW2-2 TBS
Rothwell1 JC (London, UK)

HOW2-3 The triple stimulation technique
Magistris MR (Geneva)

HOW2-4 A few stimulation methods and their clinical application
Ugawa Y (Fukushima)

3. EMG and nerve conduction study (NCS)
November 1 (Monday) 14:00-16:30
Organizers : Baba M (Hirosaki), Kuwabara S (Chiba)

3a. NCS-1 (Venue H)
Kaji R (Tokushima), Kimura J (Iowa City)

3b. NCS-2 (Venue J)
Baba M (Hirosaki), Komori T (Saitama)

3c. EMG (Venue K)
Kohara N (Kobe), Fawcett P (Newcastle upon Tyne)

3d. Nerve excitability (Venue L)
Bostock H (London, UK), Lin CS (Sydney), Kuwabara S (Chiba)

Joint Seminar with SFEMG/QEMG Group : Single fiber EMG and quantitative EMG

(Sponsored by Natus Medical)
October 28 (Thursday) Venue F
Chairpersons : Stålberg EV (Uppsala), Arimura K (Kagoshima)

Part I 10:00-12:00

1. Stålberg EV (Uppsala)
Jitter with concentric electrode : pitfalls and results
2. Pitt M (London, UK)
Jitter analysis in children
3. Cui LY (Beijing)
Single fiber EMG in diagnosis of myasthenia gravis
4. Sanders DB (Durham, N. C.)
Single fiber EMG in MuSK antibody positive MG
5. Oh SJ (Birmingham, Ala.)
FEMG in Lambert-Eaton syndrome

Part II 13:00-15:00

6. Zalewska E (Warsaw)
Using motor unit potentials analysis to get an insight into the motor unit

7. Sonoo M (Tokyo)
   Quantitative surface EMG
8. Bromberg MB (Salt Lake City)
   Motor unit number estimation
9. Lee K–W (Seoul)
   Quantitative EMG for motor neuron disease
10. Komori T (Saitama)
   Spinal motor neuron activity in ALS