Mini-symposium of HFO and Oscillology on 11/9/2016

主催 : 新学術領域「非線形発振現象を基盤としたヒューマンネイチャーの理解」
日時：２０１６年１１月９日（水）16:00 – 18:00
場所：京大芝蘭会館別館（京大医学部基礎部門の北）
（「京大芝蘭会館別館」と「京大芝蘭会館」は公道を隔てて隣接し、前者は北側の建物です。以下の地図からご確認ください。
http://www.shirankai.or.jp/facilities/access/index.html
参加費：無料

新学術領域「非線形発振現象を基盤としたヒューマンネイチャーの理解」主催で以下のミニシンポジウムを開催致しますので、関心がお有りの方はご参加いただき、活発な議論をお願い致します。

本新学術領域の国際共同研究加速基金での共同研究での Dr. Michel Le Van Quyen の京大への来学（11/6/-11/11）に合わせて上記を開催します。
Dr. Michel Le Van Quyen は、電気通信工学を修め（Sup Telecom Bretagne, 1990）、2000 年より INSERM でヒト及び動物のてんかん病態、生理機能を精力的に研究しており、とりわけ電気生理学的データに基づいた新たな方法の開発を行っています（Scopus Author ID 7003323696, 文献数 79, 被引用数の合計 3510 回、h-index 31、研究室ホームページ http://charpierlab.fr/people/）。
てんかん病態における高周波律動を含めた広域周波数帯域脳波解析に関する方法論（Document Comparison of Hilbert transform and wavelet methods for the analysis of neuronal synchrony. 2001 Journal of Neuroscience Methods）、てんかん発作発現の予測（Document Epileptic seizures can be anticipated by non-linear analysis. 1998 Nature Medicine; Document Anticipation of epileptic seizures from standard EEG recordings. 2001 Lancet）、てんかん病態における高周波律動の意義（Mapping interictal oscillations greater than 200 Hz recorded with intracranial macroelectrodes in human epilepsy. 2010 Brain）などの代表論文がある。

尚、この mini-symposium に限らず、上記の京大に滞在中の共同研究をはじめとする議論などにご興味の先生は、ぜひ当方にご連絡ください。

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PROGRAM

1) 16:00-16:10
introduction of mini-symposium
Akio IKEDA, M.D., Ph.D.
Department of Epilepsy, Movement Disorders and Physiology
Kyoto University Graduate School of Medicine

2) 16:10-16:30
Masako Daifu, M.D.
How to delineate and analyze epileptic slow activity in human epilepsy
Department of Neurology, Kyoto University Graduate School of Medicine

3) 16:30-17:00
Non-stationary and endogenous dynamics of synchronous oscillatory spike activities in the Cat lateral geniculate nucleus
Hiroyuki Ito, Ph.D.
Department of Computer Science and Engineering, Kyoto Sangyo University

17:00-17:10 break

4) 17:10-18:00
High-Frequency Oscillations as a New Biomarker in Epilepsy
(abstract on the next page)
M. Le Van Quyen, Ph.D.
Institut du Cerveau et de la Moelle épinière (ICM) , INSERM UMRS 975 - CNRS UMR 7225- UPMC , Hôpital de la Pitié-Salpêtrière, Paris, FRANCE

High-Frequency Oscillations as a New Biomarker in Epilepsy

M. Le Van Quyen

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Abstract : **Network high-frequency oscillations (HFOs) are instrumental in a wide range of cognitive functions but are also an electrical signature of focal epilepsy. This raises the fundamental issue of the differences between the physiological and pathological HFOs. Are these different only in terms of their dominant frequency? The type of cellular substrate or network involved? The scale that they can be recorded? In this conference, I review our recent work on HFOs in epileptic patients at two different scales of the human nervous system: microwires and standard clinical intracranial EEG. I will report, on both micro and macro scales, that fast-ripples (FR, 250-500Hz) are an intrinsic property of epileptic networks in medial and polar temporal lobes, which have a common archaic phylogenetic origin. Specifically, FR can not be found in the epileptic or healthy basal, lateral temporal or extra temporal neocortex nor in the healthy amygdalo-hippocampal complex. In contrast, physiological gamma oscillations (40-120 Hz) are preferentially expressed in cortical networks, in particular during slow wave sleep. Epileptic gamma oscillations emerging in some neocortical seizures may represent an aberrant hypersynchronization of the same physiological mechanisms than sleep-related gamma. Taken together, we stress the importance to subclassify HFOs in different frequency bands and in region-specific patterns. Furthermore, the possibility to record HFOs >200 Hz with macroelectrodes has important clinical implications, notably in localizing epileptic foci and in identifying periods of increased predisposition to clinical seizures.**