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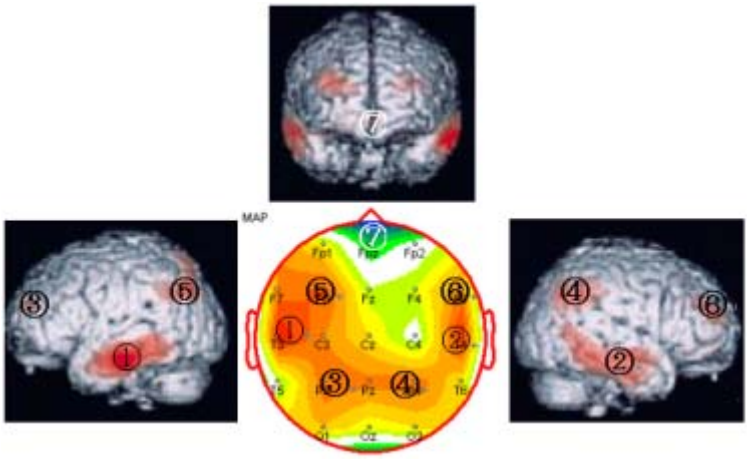
DYNAMIC ON-THE-BRAIN MAPPING OF NEURONAL IMPAIRMENT

T. Musha [1], H. Matsuzaki [1], M. Tsuboi [2]

[1] Brain Functions Lab., Inc., Kawasaki-Ku, Kawasaki,

[2] Department of Computational Intelligence And Systems Science,

Tokyo Inst. Tech., Yokohama, Japan

Purpose: Since impaired neuronal activities become unstable as found by Musha et al. (T. Musha et al., Clin. Neurophys., 113 (2002) 1052-1058), the normalized power variance (NPV) of the 21-channel spontaneous EEG in frequency range 13~80 Hz is used as a measure of neuronal activities related to that local potential. We aim at establishing an inexpensive, non-invasive (without exposure to radiation), sensitive, and easy-to-operate differential diagnosis tool of brain disorders. Method: A difference NPV map of an individual AD patient from the mean NPV map averaged over 56 age-matched normal controls was made and it was averaged over 33 moderately sever AD patients. The resulting difference NPV map is shown below together with the corresponding SPECT maps. Results: Similarity between these maps is seen. An individual difference NPV map can be calculated in every second, and we trace a dynamic change of the impairment pattern caused by unstable activities of impaired neurons. The difference NPV map visualizes the efficacy of medication and rehabilitation. The movie of the dynamic change will be presented.