Title: Spatiotemporal Activities in Brain on Recognizing Ambiguous Figures

Authors: Takahiro YAMNOI, Tomoko YONEMURA, Hisashi TOYOSHIMA, Mika OTSUKI, Yahachiro TSUKAMOTO, and Michio SUGENO

Abstract: To treat higher order brain dysfunction, it is necessary to identify the location of each function. In Japan, a super-aging society is progressing, and many dysfunctions such as cerebral infarction have occurred. The fMRI analysis is not enough to identify the position of dysfunction in detail. The authors had tried to elucidate higher order brain functions. In the paper, the authors have measured electroencephalograms(EEGs) from subjects (MK and RE) who were observing four images of ambiguous monochrome line pictures. The equivalent current dipole source localization (ECDL) method has been applied to those Event Related Potentials (ERPs): averaged EEGs by each figures and trials.

The paper reports the comparison results of “Saxophone player and Girl’s face.” In the case of the Saxophone player, the process was done over a latency from 400ms to 1000ms, however for the Girl’s face image, the corresponding process was completed relatively quickly and ended the latency around 800ms. Especially in the case of Girl’s face, ECDs were localized to the right and the left angular gyrus (AnG) around 370ms and to the right post central gyrus (PstCG) around 415ms, then by way of language areas, ECDs were localized again to the right and the left AnG around 520ms. It has been clarified in our previous study that activities on the angular gyrus (AnG) are important to discriminate the unusual shape of presented images. This fact is confirmed also in this work.