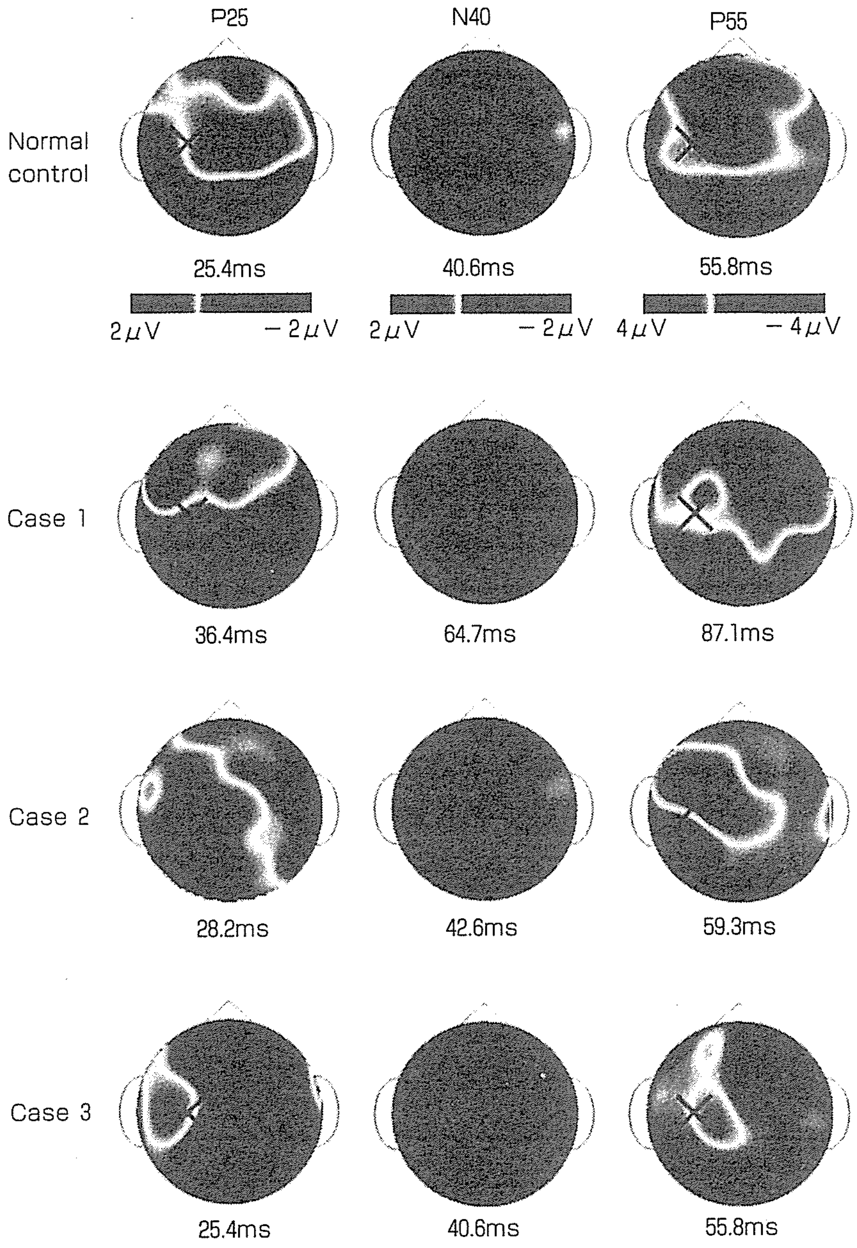

図14 高次脳機能障害者の P25，N40，P55の頭皮上電位分布

不明な点が多く，今後，さらなる基礎研究や症例の蓄積が必要である．また，臨床応用のためには，検査機器や検査手法などを標準化することも重要である．

謝 辞

本研究の一部は，厚生労働科学研究費補助金（身体機能解析・補助・代替機器開発研究事業：H15ーフィジー003）の助成を受けた．

文 献

1）Cracco RQ, Amissian VE, Maccabee PJ et al：Comparison of human transcallosal responses evoked by magnetic coil and electrical stimulation. Electroencephalogr. Clin. Neurophysiol 74：417−424, 1989.
2）Virtanen J, Ruohonen J, Näätänen R et al：Instrumentation for the measurement of electric brain responses to transcranial magnetic stimulation. Med Biol Eng Comp 37：322−326, 1999.
3）Ilmoniemi RJ, Virtanen J, Ruohonen J et al：Neuronal responses to magnetic stimulation reveal corti-

cal reactivity and connectivity. Neuroreport 8 : 3537 −3540, 1997.

4) Komssi S, Kähkönen S. The novelity of the combined use of electroencephalography and transcranial magnetic stimulation for neuroscience research : Brain Res Rev 52 : 183−192, 2006.

5) Ilmoniemi RJ, Ruohonen J, Karhu J. Transcranial magnetic stimulation - a new tool for functional imaging of the brain. Crit Rev Biomed Eng 27 : 241−284, 1999.

6) Nikouline V, Ruohonen J, Ilmoniemi RJ. The role of the coil click in TMS assessed with simultaneous EEG. Clin Neurophysiol 110 : 1325−1328, 1999.

7) Bennett MH, Jannetta PJ. Trigeminal evoked potentials in humans. Electroencephalogr Clin Neurophysiol 48 : 517−526, 1980.

8) Paus T, Sipila PK, Strafella AP : Synchronization of neuronal activity in the human primary motor cortex by transcranial maginetic stimulation : An EEG study. J Neurophysiol 86 : 1983−1990, 2001

9) Bonato C, Miniussi C, Rossini RM : Transcranial magnetic stimulation and cortical evoked potentials : a TMS/EEG co-registration study. Clin Neurophysiol 117 : 1699−1707, 2006.

10) Komssi S, Aronen HJ, Huttunen J et al : Ipsi- and contralateral EEG reactions to transcranial magnetic stimulation. Clin Neurophysiol 113 : 175−184, 2002.

11) Kohno Y, Nakajima Y, Sekiguchi H : A study of brain evoked potential in 100 ms after transcranial magnetic stimulation. International Congress Series 1278, Invited Papers of the 8th Evoked Potentials Symposium : 284−287, 2005.

12) 中島八十一，寺島彰（編集）：高次脳機能障害ハンドブック，診断・評価から自立支援まで．p15−19．医学書院．2006年．