

Special Issue on EEG/MEG-Based Biomarkers for Dementia and Related Disorders

CALL FOR PAPERS

The diagnosis and treatment of dementia has become a growing and worrying public health problem in both developed and developing countries. Research to identify reliable markers is very active and there is currently a consensus among scientists that a pre-symptomatic variable duration stage is characteristic of most dementias. Starting treatment only when the symptoms appear is probably too late to have full effectiveness of medications able to control disease progression. Consequently, there is a pressing need for low-cost, high-sensitive and high-specific biomarkers for early identification of individuals at risk of developing dementia within a few years. The analysis of electroencephalographic signals is potentially one of the best candidates because EEG/MEG equipment is cheap and safe. More importantly, EEG/MEG markers may probe the neurophysiological “reserve” in patients with dementing disorders. It was defined as the residual ability of the brain to ensure the synchronization of neural activity at different spatial scales and frequencies from small cellular populations to large regions and the coordination of that synchronization across subcortical and cortical neural networks. Unfortunately, the vast majority of the scientific community does not accept EEG/MEG signal analysis as a reliable topographic marker for dementia, although a growing number of published studies show the opposite. Such wary attitude could be due to the fact that even though there is a wide range of innovative approaches to signal analysis, so far there has been little effort to explore their complementarity and integrate them all in a stronger and more reliable biomarker.

To step up the discussion on EEG/MEG markers and dementia, the present Special Issue will solicit manuscripts reporting studies aimed at advancing the field of EEG/MEG-based biomarkers along different paths. Although the main focus of this Special Issue is the research on electrophysiological biomarkers for dementia, manuscripts on EEG/MEG markers for neurological disorders other than dementia are also welcome. Submissions related to the assessment of the neurophysiological “reserve” are especially welcome, mainly those markers derived from resting state EEG/MEG rhythms. It will be particularly appreciated the submission of studies aiming to probe the cortical neural synchronization/desynchronization at given frequency bands and reflecting neurophysiological mechanisms underpinning local cortical arousal in quiet wakefulness and vigilance. Likewise, manuscripts supporting the importance of dementia biomarkers based on task-related EEG/MEG are also welcome, as well as those exploring functional cortical connectivity both in resting-state and task-related EEG/MEG. Finally, submission of review articles describing the current state of the art is highly encouraged, and even judiciously designed studies showing negative results.

Potential topics include but are not limited to the following:

- ▶ New dementia EEG/MEG biomarkers
- ▶ EEG/MEG markers for Parkinson’s disease and Parkinson’s dementia
- ▶ Electrophysiological biomarkers for Schizophrenia, Epilepsy, and AD/HD
- ▶ Innovations in low-cost EEG/MEG measurement for dementia diagnostics
- ▶ Unsupervised or semisupervised extraction of EEG/MEG biomarkers
- ▶ Multimodal (EEG/MEG + other modalities) biomarkers
- ▶ Biomarkers of MCI progression to AD
- ▶ Confounding factors in EEG/MEG biomarker research
- ▶ Biomarker-based neurofeedback for mental training
- ▶ EEG/MEG -based correlates of treatment outcome/progress prediction
- ▶ Multimarker strategy (EEG/MEG, circulating biomarkers, and clinical variables) for dementia
- ▶ Diagnostic role and predictive value of EEG/MEG and other imaging modalities for dementia

Authors can submit their manuscripts through the Manuscript Tracking System at <https://mts.hindawi.com/submit/journals/dm/ebd/>.

Papers are published upon acceptance, regardless of the Special Issue publication date.

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