Combined intracranial EEG multicontact electrode and extraventricular drain

Technology #2395

This technology is a silicone extraventricular drain (EVD) containing multiple platinum contacts that are wired to an external electroencephalography (EEG) apparatus. These contacts are positioned within the brain’s gray matter to obtain EEG recordings while the EVD concurrently enables clinical management of excess intracranial fluid accumulation.

Combining a multicontact electrode with an extraventricular drain concurrently improves EEG quality and eliminates the need for implantation of multiple intracranial devices in patients

Patients afflicted with acute neurological disease or injury frequently require bedside insertion of an EVD for management of intracranial pressure and drainage of excess cerebrospinal fluid. A large portion of these patients are also in various unresponsive or neurologically impaired states that necessitate accurate monitoring of the effects of disease or injury on brain activity.

Traditional extracranial EEG is limited by poor spatial resolution and susceptibility to recording artifacts. While intracranial electrodes can afford increased recording quality, the insertion of such devices, in addition to an EVD, expose patients to increased procedural risks. Combining trans cortical mini-depth multicontact electrodes (TCMEs) with an EVD enables concurrent acquisition of accurate brain activity recordings and clinical management of intracranial pressure with reduced patient risk.

Lead Inventor:

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Applications:

- Monitoring of patients afflicted with neurological disease or injury such as stroke, seizure, or intracranial hemorrhage
- Direct intracranial EEG for clinical applications in human patients and research applications involving mammalian subjects

Advantages:

- Reduction in procedural risks due to implantation of single combined device rather than multiple independent devices
- Higher signal amplitude and increased specificity/sensitivity compared to extracranial EEG

Patent information:

Patent Pending (US 20100168532)

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Related Publications:


Inventors

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