

Technology Offer

e-PIC: EEG-mediated ICP monitoring method

BRIEF SUMMARY: Nowadays, intracranial pressure (ICP) monitoring is performed through invasive mechanism which require a surgical procedure. These methods entail several complications among which infection is the most common and life threatened. In order to abolish the above mentioned complications and to save on the sanitary cost, here we present a non-invasive method based on electroencephalographic (EEG) recordings. Our results from simultaneously recording of EEG and ICP on intensive care unit patients have demonstrated a relationship between both types of biological data.

MAIN FEATURES: The present proposal aimed at the development of a method for measuring in a non-invasively fashion the ICP through the EEG activity. Our work on the analysis of simultaneous recordings of EEG and ICP from patients suffering traumatic brain injury (TBI) and subarachnoid hemorrhage (SAH), hospitalized in the ICU at the Hospital de la Princesa has allowed us to demonstrate the existence of a direct, although non-linear, relationship between the dynamics of the ICP and certain variables calculated directly from the EEG recordings. This particular measure along with other variables also obtained from the set of channels, have shown us that it is possible to infer the ICP dynamics without the need to insert a sensor into the brain tissue.

CURRENT STATUS: At the moment, we have developed several algorithms to calculate both univariate and multivariate measures over the EEG from patients suffering from TBI and SAH, at the ICU of the Hospital de la Princesa. We already have the ICP recordings from these patients, obtained from a *Camino sensor* to compare with. The joint analyses of both ICP and EEG recordings, taken at intervals of five seconds, allowed us to develop a robust algorithm to infer the ICP dynamics solely from the EEG activity.

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TYPE OF PARTNERSHIP CONSIDERED: In this phase we seek software development partnerships, investors or licensees.