

April 29th, 2020

Dr. Jaydev Upponi

Science Editor

Journal of Visualized Experiments

Ref.: Submission of manuscript for publication in the JoVE

Dear Dr. Upponi:

We are enthusiastically submitting our manuscript, entitled "Real-time monitoring of neurocritical patients with diffuse optical spectroscopies" for consideration for publication in the Journal of Visualized Experiments (JoVE). In this work, we propose a complete potential solution for brain monitoring at the neuro intensive care unit (neuro-ICU). Our approach is based on an optical device that employs diffuse optical spectroscopies with custom made optical sensors and a friendly graphical user interface (GUI) for clinicians. By shining near-infrared light onto the scalp, the system is capable of monitoring cerebral oxygenation, blood flow and metabolism of neurocritical patients non-invasively, in real-time and at the bedside. These are important information that clinicians can assess to base their clinical treatment in the future.

We believe this work will be of great interest to the readership of *JoVE* as it provides a new perspective on the use of diffuse optics for monitoring neurocritical patients. Although diffuse optical spectroscopies have been previously used in clinical settings, to our best knowledge no studies have yet provided a complete environment to make the technique feasible in the neuro-ICU. In particular, the real-time friendly GUI we developed was inspired by current instruments already available to clinicians at the neuro-ICU, which facilitates the adoption of the optical system by hospital staff, such as neurointensivists and nurses - which can increase the use of diffuse optical systems at the clinic.

This manuscript has not been submitted to another journal. The results presented are novel. The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: RC Mesquita has one pending patent application and two other patents relevant to this work (United States patents 10,342,488 and 10,064,554). No author currently receives royalties or payments from these patents. Any clinical investigator and/or expert in diffuse optics would be able to review the current work.

Sincerely yours,



Dr. Rodrigo M. Forti



Prof. Rickson C. Mesquita