

International prospective observational Study on iNtrAcranial PreSsurE in intensive care (ICU): The SYNAPSE-ICU Study. Preliminary data

Claudia Bonetti¹, Francesca Elli¹, Chiara Robba², Alessia Vargiolu³, Carolina Iaquaniello¹, Giuseppe Citerio¹

¹ *School of Medicine and Surgery, University of Milan-Bicocca, Milan, Italy*

² *Department of Anaesthesia and Intensive Care, San Martino Policlinico Hospital, IRRCS for Oncology, Genova, Italy*

³ *Neurointensive Care, Department of Emergency and Intensive Care, San Gerardo Hospital, Monza, Italy*

Introduction. Increased intracranial pressure (ICP) is one of the major clinical complications of acute brain injuries (ABIs), and ICP monitoring (ICPm) is the most common neuromonitoring modality used in intensive care units (ICUs). The indications for ICPm are mostly based on traumatic brain injury (TBI), whereas uncertainties remain for ICPm in non-TBI. Practice about indications and use of ICPm is highly variable in high-income countries (HICs), while data on ICPm in low- (LICs) and middle-income countries (MICs) is scarce or inconsistent.

Objectives. SYNAPSE-ICU is an international, prospective, observational, cohort study (NCT03257904) that describes the current practice of ICPm worldwide. Aim is to quantify practice variations in ICPm in HICs, MICs and LICs, and to provide a correlation between ICPm and neurological clinical outcome.

Methods. From March 2018 to April 2019, all patients fulfilling the following inclusion criteria were recruited: age >18 years; ABI due to primary haemorrhagic stroke or TBI; Glasgow Coma Score (GCS) with Motor score (M) ≤ 5 at ICU admission or within the first 48 hours. Data was recorded during the first week of ICU stay, at discharge and after 6 months.

Results. To date, 41 countries enrolled 2302 patients in 143 active sites.

We described the main characteristics of the first 1000 patients enrolled in HICs (87.5%), upper-MICs (U-MICs) (6.7%) and lower-MICs (L-MICs) (5.8%). Primary diagnosis was TBI in 56.0% of patients and non-TBI in 44.0% of them. In the first week of ICU stay, ICP was measured in 58.5% of patients, whereas in 41.5% ICPm was never applied. ICPm patients had a 6-months lower mortality compared to no ICPm ones (40.0% vs 56.1%).

Conclusions. The high number of patients and the distribution of ICUs will represent the worldwide variability in ICPm practice variations. Further analysis will be presented at the end of the study period.