WWTF Project LS20-030

PIMIENTO PrecIsion Medicine in IntravENTricular hemorrhage for Outcome prediction

Abstract

Intraventricular hemorrhage (IVH) and posthemorrhagic hydrocephalus (PHH) are a major problem in neonatology. The precise mechanisms driving onset and course of IVH are insufficiently understood. Disease progression and optimal timepoint for intervention are unknown and neurodevelopmental outcome is unpredictable. To tackle these issues, we (Medical University Vienna, Department of Pediatrics and Adolescent Medicine) have established a well-characterized patient cohort over the last 9 years covering a unique biobank of more than 1000 longitudinal blood, urine and cerebrospinal fluid samples. In addition to clinical, neurophysiological and neuroimaging data, longitudinal proteomics measurements performed by the Austrian Institute of Technology (AIT) are available from selected patients at selected timepoints. Preliminary proof-of-concept analysis indicates that we can identify adverse outcomes early during disease progression with the potential to improve clinical decision making, parental counseling and to guide individual treatment decisions in the future. We will use the existing data, enriched by carefully selected additional analysis, to (A) train models for outcome prediction and treatment guidance based on clinical, neurophysiological, molecular and neuroimaging data ("supervised analysis") and (B) use the data to identify molecular disease subtypes ("unsupervised analysis") explaining molecular bearings underpinning the heterogeneity of outcomes.

Scientific disciplines:
106044 - Systems biology (40%) | 302049 - Neonatology (30%) | 302071 - Radiology (30%)

Keywords:
neonate hemorrhage biomarker neurophysiology MRI outcome

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Status: Ongoing (29.09.2021 - 28.09.2024) 36 months

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Further links about the involved persons and regarding the project you can find at
https://archiv.wwtf.at/programmes/life_sciences/LS20-030