ESO Department to Department Visit Programme

July 2021

Tatia Aprasidze, MD, Tbilisi, Georgia

Time of fellowship: 16.7 - 30.08.2021

Hosting department: Department of Neuropediatrics, Development, and Rehabilitation, University Children's Hospital, Inselspital Bern, Switzerland

Supervisor Prof. em. Maja Steinlin, together with Dr.Phil.nat Leonie Steiner (Neuropsychologist) and PD dr. Arsany Hakim (Neuroradiologist)

I would like to express my gratitude to the European Stroke Organization (ESO) for an opportunity of two weeks to research at the Department of Neuropaediatrics, Development, and Rehabilitation, University Children's Hospital, Inselspital (Bern, Switzerland), chaired till the end of July 21 by Prof. Maja Steinlin (who is still working there as a Senior Consultant and being PI of the PASTA study).
It was a great pleasure to work under the supervision of Prof. Steinlin,
During my fellowship, I was introduced to the Swiss Pediatric Stroke Database SNPSR, founded by Prof. Steinlin, which is a population-based registry from the Swiss Society of Neuropediatrics with the study center in Bern. The register is running since January 2000 and up to date, more than 800 children are registered. Every child living in Switzerland from birth to 16 years who suffered an acute stroke is registered. Data on manifestation, risk factors, neuroimaging, treatment, and outcome are collected and analyzed on different aspects.
I observed the recent and ongoing studies from SNPSR, and was involved in the research of the outcome of pediatric stroke. I was also integrated into the research group of the department.
During these two weeks, I had the opportunity to finalize the design of a project including Swiss and Georgian children after stroke. I was introduced to some modern techniques for analyzing neuroimaging, which will not only be the base for the ongoing study but will also help me back home in Georgia to improve care for children with stroke.
With some further funding from the EAN, I have now the opportunity to stay for another 6 months in Switzerland and finalize the project. Our study aims to evaluate the predictive value for prognosis (outcome by PSOM and occurrence of epilepsy) in children after stroke by different methods for analyzing neuroimaging. We will analyze images from Georgian and Swiss children – all together from about 200 children.
In neuroimaging from the acute phase (first diagnostic imaging), several techniques were applied: 1. Segmentation: The DWI sequence for the determination of infarct volume and the T2 weighted sequence for the determination of supratentorial brain volume (SBV) (because of superior resolution). Segmentation of the acute/subacute infarct and determination of SBV performed using 3D Slicer volumetric software program. Infarct volume was expressed continuously as a percentage of SBV, and categorically as $\geq 5\%$ of the SBV (Wiedemann et al.). 2. Alberta Stroke Program Early CT Score using acute MRI (modASPECTS): The DWI images from clinically acquired MRIs were reviewed, cross-checked with the ADC maps, and scored, using the pedASPECTS. 3. The Diffusion-Weighted Imaging (DWI) infarct volume measurement using the ABC/2 method, calculated by two maximal orthogonal diameters multiplied by slice thickness.

The main part of the time, I spent (and will spend) at the neuroradiology department, where we worked on the MRI images of AIS patients (Supervision from Arsany Hakim). We will continue analyzing images from Georgia and CH and will get out the clinical data of the both systems.

With the support of the ESO fellowship, I got an insight into one of the best university hospitals in the field of pediatric stroke. The collaboration was established with Prof. Maja Steinlin, who is the leading expert in the field of pediatric stroke. Our common research will go on.
Working under the supervision of Prof. Steinlin, was valuable for my professional development.

Sincerely,
Tatia Aprasidze