An interview with Ana Coito, 2020 *Epilepsia Open* prize winner for clinical research

**1 | WHO ARE YOU?**

I hold a PhD in Neuroscience from the University of Geneva, a BSc and MSc in Biomedical Engineering from the University of Lisbon and a CAS in Nutrition for Disease Prevention and Health from the ETH Zurich.

**2 | WHAT GOT YOU INTERESTED IN EPILEPSY RESEARCH?**

Since my daughter was born 1.5 years ago, I have been taking care of her (and learning German). I am currently looking for a position. As of my personal interests, I am interested in healthy lifestyle topics as well as activities such as hiking and being in contact with Nature, playing with my daughter, being with friends, dancing, reading, and watching a good documentary.

I have always found the study of our brain a fascinating field of research. I wanted to contribute to the study a neurological disorder and found epilepsy research really interesting. I then had a conversation in Lisbon with Prof. Fernando Lopes da Silva, which was very enlightening, and I got even surer that I wanted to pursue with EEG and epilepsy research in my PhD work.

**3 | EXPLAIN FOR OUR GENERAL READERSHIP WHAT QUESTION YOUR STUDY ADDRESSED AND HOW DID YOU GO ABOUT DESIGNING YOU STUDY?**

Electrical source imaging (ESI) is increasingly used to estimate the epileptogenic zone (EZ) in patients with epilepsy. Directed functional connectivity (DFC) coupled to ESI helps to better characterize epileptic networks. This is important as there is increasing evidence that epilepsy involves large-scale brain networks rather than single sources. However, studies on interictal activity have relied on high-density recordings, which are not widely available. In this study, we aimed to investigate whether ESI and DFC derived from standard clinical (low-density) electroencephalography (EEG) could reliably localize the EZ in patients with focal epilepsy during interictal spikes.

**4 | WHAT WERE THE RESULTS AND HOW DO YOU INTERPRET YOUR FINDINGS?**

We included 34 patients with focal epilepsy, who underwent standard EEG recordings at the Cantonal Hospital of Aarau or at the University Hospital of Geneva, had a focal structural lesion and an invasively well-characterized presumed EZ. We marked interictal spikes in the EEG recordings, estimated the cortical activity during each spike in 82 cortical regions, and then computed DFC. The concordance with the presumed EZ was computed using the epileptogenic lesion or the resected area (in postoperative seizure-free patients). We showed that ESI and DFC derived from low-density clinical EEG recordings could reliably estimate the EZ from interictal spikes in 90% of the temporal lobe epilepsy and 57% of the extra–temporal lobe epilepsy patients. These results provide evidence that...
EZ estimation with ESI and DFC using low-density EEG is feasible and could be applicable in clinical settings for helping in the diagnosis of patients with focal epilepsy. Connectivity measures were not superior to ESI for EZ localization during interictal spikes, but the current validation of DFC measures with low-density EEG is promising for other applications.

5 | WHAT NEXT STEPS IN EPILEPSY RESEARCH ARE YOU TAKING AND WHAT ARE YOUR CAREER GOALS?

I am very passionate about neuroscience and also healthy lifestyle topics (eg, nutrition), and ideally I would bring the two together to study, for example, the impact of certain nutritional choices on our brain. The relationship between the gut and the brain is also very interesting. This type of research is also relevant in epilepsy.

6 | WHAT DOES THE EPILEPSIA OPEN PRIZE MEAN FOR YOU, YOUR LABORATORY, RESEARCH INSTITUTE, AND YOUR FUTURE?

I am very honored to receive the Epilepsia Open Prize and thankful for the recognition of my work. At this moment of my life, I also see it as an extra motivation to restart my career.

I would like to thank all co-authors of this study for their contribution and to the institutions that supported this work.

Read the winning article “Interictal epileptogenic zone localization in patients with focal epilepsy using electric source imaging and directed functional connectivity from low-density EEG.”

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