Séminaire

Département des sciences de l'imagerie médicale et des radiations

Using neuroimaging to improve deep brain stimulation outcomes in drug-resistant epilepsy

Lauren Hart

Étudiante à la maîtrise au programme de sciences des radiations et imagerie biomédicale

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Children with drug-resistant epilepsy continue to experience seizures and face high risks of behavioural, emotional, and cognitive challenges. Deep brain stimulation (DBS) is a promising treatment, but outcomes remain variable, and seizure freedom is rare. This project aims to identify brain networks whose modulation leads to seizure reduction and improved quality of life. We will leverage the CHILD-DBS registry, a multicentre study across six pediatric hospitals, to analyze 22 children treated with DBS. Using the Lead-DBS toolbox, we will reconstruct electrode locations and map brain networks modulated by stimulation. Connectivity profiles will be compared between responders and non-responders to identify patterns linked to clinical improvement. We will also correlate network modulation with quality-of-life outcomes. By combining neuroimaging, connectomic analysis, and statistical modeling, we will identify brain network features predictive of therapeutic response. These findings will advance the understanding of DBS network mechanisms underlying seizure reduction and improved quality of life.