Lillehjernen er impliceret i alvorlige neurologiske symptomer i en mussemodel med en mutation i Natrium-Kalium pumpen

Mutationer i en neuron-specifik isoform af den plasmamembran-lokaliseret natrium-kalium pumpe forsager alvorlige neurologiske sygdomme.

For at forstå disse neurologiske sygdomme, benytter vi en en musemodel, der har en sygdoms-mutation i pumpen (D801Y modellen). Vi fandt, at den sygdomsmuterede D801Y musemodel udviser relavante symptomer, især bevægelses vanskeligheder og dystoni, som er karakteristisk i de neurologiske sygdomme.

Elektrofysiologiske optagelser af enkelte neuroner i cerebellum i levende mus viste at neuronerne 'fyrede' mere irregulært i D801Y musemodelen end i normale mus. Under dystoniske anfald blev neuronerne i D801Y modellen endnu mere udfordret, og fyrede i abnorme salver. Dette PhD projekt fandt således, at cerebellums aktivitet er en kritisk faktor i bevægelses symptomer og dystoniske anfald, som patienter med mutationer i natrium-kalium pumpe oplever.

PhD projektet er gennemført på Aarhus Universitet af Toke Jost Isaksen, der forsvarer afhandlingen d. 02 marts 2017.

Forsvaret af ph.d.-projektet er offentligt og finder sted den 2. Marts kl. 13.00 i Merete Barker auditoriet, Søauditorierne , Aarhus Universitet, Aarhus. Titlen på projektet er: Insights into the neurological disorders caused by disease mutations in the sodium potassium pump using mouse models. Yderligere oplysninger: Ph.d.-studerende Toke Jost Isaksen, e-mail: ti@biomed.au.dk, tlf. 2993 9851.

Severe neurological deficits in a mouse model with a mutation in the sodium-potassium pump linked to dysfunction of cerebellum

Mutations in a neuron specific isoform of the sodium-potassium pump are found in patients suffering from severe neurological disorders.

A transgenic model mouse with a disease mutation was made in out lab to invistigate these disorders. We found that this mouse model exhibited several diseases related phenotypes, in paticular movement deficits and abrupt episodes of dystonia.

Electrophysiological recordings of single neurons in awake transgenic mice revealed irregular firing of cerebellar neurons, which was further exacerbated and evolved into abnormal burst-like firing during dystonia.

Thus, these findings implicate aberrant cerebellar activity as an important factor in the motor deficits observed in patients.

The project was carried out by Toke Jost Isaksen, who is defending his dissertation on March 2.

The defence is public and takes place on March 2 at 13.00 in Merete Barker auditoriet, Søauditorierne, Aarhus University, Aarhus. The title of the project is: Insights into the neurological disorders caused by disease mutations in the sodium potassium pump using mouse models. For more information, please contact PhD student Toke Jost Isaksen, email: ti@biomed.au.dk, Phone +45 2993 9851.