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## Presentation Abstract

Program#/Poster#: 489.03/NNN4

Presentation Title: Assessing quantification of metal concentration in epilepsy and Williams syndrome brain tissue using x-ray fluorescence imaging: A validation study

Location: Halls B-H

Presentation time: Monday, Nov 11, 2013, 3:00 PM - 4:00 PM

Topic: ++G.03.a. Staining, tracing, and imaging techniques

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Abstract: In this study we assess the use of Synchrotron X-ray fluorescence (SXRF) imaging as a quantitative tool to analyze metal concentration of postmortem and surgically resected brain tissue. Previously, our group has reported that SXRF is sufficiently sensitive to distinguish concentrations and co-localization of metals in post-mortem Williams syndrome tissue and tissue resected during epilepsy surgery. However, additional studies are necessary to further validate SXRF as a quantitative method and assess whether recorded concentrations of metals remain consistent during scan sessions and over longer time intervals (weeks to months). As such, we analyzed the concentration and distribution of metals in tissue samples over multiple scans to test whether the detection of metal levels had changed as a result of repeated exposure to the high energy x-rays used in the technique. Preliminary analysis showed no within-trial differences in metals in either the epilepsy or WS tissues. Using metal foil standards to calibrate scans we are now also examining the quantification of these metals between imaging sessions. The further validation of this technique will permit us to better describe potential differences in metal concentrations in brain structures associated with Williams syndrome and epilepsy.

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Keyword(s): BRAIN IMAGING

MAPPING

SYNCHROTRON

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