Review of: "A Quantitative Imaging Biomarker Supporting Radiological Assessment of Hippocampal Sclerosis Derived From Deep Learning-Based Segmentation of T1w-MRI"

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The article compares different forms of automated analysis of the hippocampal volume.

Freesurfer[1,2] and FSL software are already widely known and have validated results in the literature.

Using both is simple but requires specific knowledge as they are applications with a less user-friendly interface.

Furthermore, in my personal experience[3], the analysis time varies from 6 to 9 hours. This time makes it challenging to quickly analyze the data and use it in daily practice.

The authors did the data analysis and comparison between the methods in an elegant and detailed way, showing the superiority of the Deep learning method.

I believe that the next step would be to establish the method as a marker of laterality in hippocampal sclerosis. Furthermore, it would be interesting to demonstrate whether there is an absolute value for hippocampal volume or a difference between the two hippocampi that would indicate better results in surgery for epilepsy due to hippocampal sclerosis. We performed this analysis with Freesurfer demonstrating better surgical outcomes with CA1 and CA4 sclerosis in automated volumetry[3].

This evaluation could help us create a marker for predicting surgical outcomes in temporal lobe epilepsy based on findings of cortical volume and thickness of the hippocampus and its sublayers[4].

1. Khan AR, Wang L, Beg MF. FreeSurfer-initiated fully-automated subcortical brain segmentation in MRI using Large Deformation Diffeomorphic Metric Mapping. *NeuroImage*. 2008;41(3):735-746. doi:10.1016/j.neuroimage.2008.03.024.

2. Fischl B. FreeSurfer. *NeuroImage*. 2012;62(2):774-781. doi:10.1016/j.neuroimage.2012.01.021.

3. Costa BS, Santos MCV, Rosa DV, Schütze M, Miranda DM, Romano-Silva MA. Automated evaluation of hippocampal subfields volumes in mesial temporal lobe epilepsy and its relationship to the surgical outcome. *Epilepsy Res*. 2019;154:152-156. doi:10.1016/j.eplepsyres.2019.05.011.

4. Elkommos S, Weber B, Niehusmann P, et al. Hippocampal internal architecture and postoperative seizure outcome in temporal lobe epilepsy due to hippocampal sclerosis. *Seizure: European Journal of Epilepsy*. 2016;35:65-71. doi:10.1016/j.seizure.2016.01.007.