Fetal brain development study using MRI

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Abstract

The development of ultrafast 2D acquisition sequences has led to significant improvements in the clinical utility of fetal MRI. However, the slice acquisition time is still very critical and has to be as short as possible to reduce the impact of fetal and maternal motion on the exam. Since 2005 there has been a series of techniques coming from computer vision that have been developed to address these limitations in fetal MRI. These motion-correction methods provide a new window into early human brain growth study. To this end, new algorithms have also been investigated to deal with tissue segmentation and the construction of spatiotemporal atlases. I will present in this talk an overview of the current research into fetal brain MRI processing for early brain development studies. I will focus on the three main steps for fetal MR data processing: image reconstruction, feature extraction (segmentation and tractography) and temporal analysis (cortical folding).

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