I want to thank the organizers and all the audiences for you patience and I feel so sorry about the technical problem which makes unable to answer the questions online. Though we test the connection a day before, problem still happened yesterday. I answer the questions below and feel happy to answer more. If you have any questions, please feel free to contact me by email (2323008200@qq.com).

Questions:

Pallab Bhattacharyya: What is the time-range of "early stage"?

RE：Here, the "early state" refers to the duration of illness within 5 years. We found that within the first 5 years, there is no progressive brain changes in drug-naïve first episode schizophrenia (Xiao et al., Schizophr Bull. 2015 Jan;41(1):201-10)

Pallab Bhattacharyya: Does the 6-week treatment show any change in clinical symptom?

RE: Yes, most of the treated patients showed reduced PANSS scores after 6-week treatment and the increased regional ALFF, but not functional connectivity correlate with the PANSS scores

Ralf Mekle: Can schizophrenia still be considered as one disease given all its heterogeneity?

RE: The current definitions of most psychiatric disorders are based on the clinical symptoms. That is why we call them disorder, not disease. Unless we find real pathogenesis of some patients, we may rename them. This happens in medical science. For example, the MS (multiple sclerosis) and NMOSD (neuromyelitis optica spectrum disorders). Current imaging markers give us opportunities to subtype schizophrenia and then reveal their different pathophysiology.

Ralf Mekle: Does MRS provide a more homogeneous picture of schizophrenia?

RE: We did collect MRS of schizophrenia and using quantitative way (LC model) to analysis. We also found the findings varied across different patients. Also, the quality control of MRS during scanning in much difficult, which also make the findings inhomogeneous.

Craig De Vincent: Are you using MRS to measure altered metabolism or levels of different neurotransmitters particularly concentrations of glutamate and GABA in different parts of the brain?

RE: Yes, we measured concentrations of glutamate and GABA in prefrontal regions and thalamus in some patients.

Dmitriy Kupriyanov 3: can you explain the meaning of red and blue zones on the slide with two patients, please?

RE: The red zones means the increased gray matter volume region, while the blue means decreased gray matter volume regions. We built a healthy people data base first. Then we can measure the gay matter volume and compare it with the healthy subjects with the same age range. Any brain region showed significant increased or decreased gray matter volume will be marked for clinical evaluation.

Dean Darnell: Q: During fMRI/DTI imaging how did you deal with the signal loss and geometric distortions near the frontal sinus and temporal lobe? Would improved imaging in those regions improve your biomarkers?

RE: First, we use software to correct the distortion of EPI sequences. Then, we will built a mask by excluding all the regions show signal loss, and use this mask for further data analysis. Some special sequences are also developed to compensate the signal loss in these regions. However, since this is a longitudinal study, we did not change our sequence.

Mohammad Sabati: Any use of MRSI in diagnostic and progress of schizophrenia?

RE: Yes, the MRS is also very useful tool in Psychoradiology. There are many studies in this field. Our recent study also use MRS to predict the first mood episode in youth bipolar offspring (Eur Child Adolesc Psychiatry. 2020 Feb 1. doi: 10.1007/s00787-020-01483-x). The challenge of transferring MRS to clinical work is the quality control during scanning and we still need large sample study to verify the findings.

Thanh Thao Nguyen: Do you use fixel based analysis for the diffusion imaging?

RE: For routine DTI processing, head motion, and eddy current correction, brain extraction and tensor model fitting were all performed using FSL software. For identifying white matter tracts, we use automating fiber-tract quantification (PLoS One. 2012;7(11):e49790).

Pallab Bhattacharyya: Why do you think there is so much disagreement in anxiety disorder between clinical diagnosis and psychoradiology?

RE: We are still collecting the clinical data. I just show the preliminary data. The sample size is quite small. Also, there are many comorbidities of anxiety disorder, and the previous reported findings of anxiety are also quite not consistent.

Ariane Fillmer: Can you comment on how MRS/MRSI results would fit into the picture together with all the other modalities you are using?

RE: The MRS is also very useful tool in Psychoradiology. There are many studies in this field, which show potential ability of MRS, especially the measuring of glutamate and GABA in diagnosis and predicting the prognosis of the disorders. The main challenges are that most of the studies included small sample and the findings varied across different studies. The acquisition of MRS and quantitative analysis take a lot time and the quality control is quite difficult, which limit its clinical applicability.