Reviewer's report
Title: Machine Learning Classification of First-Episode Schizophrenia Spectrum Disorders and Controls using Whole Brain White Matter Fractional Anisotropy

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Reviewer: Gabriele Sachs

Reviewer's report:
The manuscript "Machine Learning Classification of First-Episode Schizophrenia Spectrum Disorders and Controls using Whole Brain White Matter Fractional Anisotropy" deals with the important issue of applying machine learning to MRI data to differentiate participants with a first episode of schizophrenia-spectrum disorder (FES) from healthy controls based on diffusion tensor imaging data.

In this study the authors found that machine learning applied to whole brain maps differentiated patients with FES and healthy controls with above change accuracy of 62.34%. The white matter regions, which contributed to the correct identification of participants with FES, showed lower fractional anisotropy in patients relative to controls.

It is important to mention that in this study the intentions of the authors were primarily clinical. A simple, standardized approach potentially suitable for clinical application was used (an "out of the box" approach).

A particular strength of the study presented in this manuscript is that the method is accurate, relevant literature is included. The authors discussed limitations appropriately.

There are minimal concerns and shortcomings:

Why did the author not include DSM-IV criteria for the recruitment?
The authors mentioned that participants were hospitalized shortly after developing symptoms, some of them did not meet the criteria for schizophrenia. The patients received the working diagnosis of acute and transient psychotic disorder.

It is not clear if these persons were included in the study. How many persons got this diagnosis?
The patients were treated with antipsychotics. The authors should mention the medication that patients were taking at the time of scanning. Were there differences in the results between typical and atypical antipsychotics?
How were the results with regard to the duration of illness?
This issue should be discussed in the limitation part.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.
Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.
Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.
Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.
I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:
Acceptable

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