Annals of Clinical Case Reports

9

White Matter Alterations in Healthy Individuals with Auditory Verbal Hallucinations Exposed to Atypical Antipsychotics: A Pilot Study

Langlang Cheng¹, Xiyuan Du¹, Feng Ji², Hongjun Tian³, Lina Wang³, Wei Zhang¹, Xiaodong Lin¹, Chuanjun Zhuo^{1,2,3*} and Jianjie Huang¹

¹Department of Psychiatric, Neuroimaging, and Genetics Laboratory, Wenzhou Seventh People's Hospital, China ²Department of Psychiatric, Neuroimaging and Genetics Laboratory, Jining Medical University, China

³Department of Psychiatry, Tinjin Anding Hospital, China

Pilot Study

Auditory Verbal Hallucinations (AVHs) are prevalent among diverse psychiatric patients, including patients with schizophrenia, bipolar disorder, borderline personality disorder, and anxiety; and they are also experienced by individuals in the general population [1-3]. Applying the strictest AVH criteria, some 0.7% of the general population has experienced AVHs; these people can be defined as healthy individuals with AVHs (Hi-AVHs) [1,4]. Investigating Hi-AVHs may help to clarify the precise pathological features, and thus treatment targets, of AVHs without conflation from other symptoms, such as delusions or thought disturbances [5-7]. Atypical antipsychotic (AaP) medications are known to alleviate AVHs in a variety of psychiatric patients, including patients diagnosed with schizophrenia, bipolar disorder, and borderline personality disorder [8,9-11]. To the best of our knowledge, no study has investigated the relationship between AaP pharmacotherapy and brain White Matter (WM) alterations in Hi-AVHs. In particular, we could not find study of WM alterations before versus after an extended AaP treatment period. In this pilot study, enrolled nine volunteered Hi-AVH subjects volunteered to the study, using Tract-Based Spatial Statistics (TBSS) [12] and paired t tests to explore the effects of AaP on these nine subjects. We found although AaPs alleviated AVH symptoms, WM alterations in these subjects expanded over 6 months of AaP treatment, encompassing most major WM tracts by the end of the observation period, including the corpus callosum, arcuate fasciculus, cortico-spinal tracts, anterior commissure, and posterior commissure. In light of the worsening of AaP-associated WM alterations observed in this study, we suggest that AaPs may not be a good choice for the treatment of Hi-AVHs despite the ability of AaPs to alleviate AVHs symptoms.

[This work was supported by grants from the Tianjin Health Bureau Foundation (2014KR02 to C.Z.), the National Natural Science Foundation of China (81871052 to C.Z.), and the Key Projects of the Natural Science Foundation of Tianjin, China (17JCZDJC35700 to C.Z.); the Key Project of Wenzhou Science and Technology Bureau (ZS2017011 to XL)].

References

- 1. Upthegrove R, Broome MR, Caldwell K, Ives J, Oyebode F, Wood SJ. Understanding auditory verbal hallucinations: a systematic review of current evidence. Acta Psychiatr Scand. 2016;133(5):352-67.
- Laroi F, Sommer IE, Blom JD, Fernyhough C, Ffytche DH, Hugdahl K, et al. The characteristic features of auditory verbal hallucinations in clinical and nonclinical groups: state-of-the-art overview and future directions. Schizophr Bull. 2012;38(4):724-33.
- 3. Waters F, Woods A, Fernyhough C. Report on the 2nd international consortium on hallucination research: evolving directions and top-10 "hot spots" in hallucination research. Schizophr Bull. 2014;40(1):24-7.
- 4. Johns LC, Kompus K, Connell M, Humpston C, Lincoln TM, Longden E, et al. Auditory verbal hallucinations in persons with and without a need for care. Schizophr Bull. 2014;40(Suppl 4):S255-64.
- 5. de Leede-Smith S, Barkus E. A comprehensive review of auditory verbal hallucinations: lifetime prevalence, correlates and mechanisms in healthy and clinical individuals. Front Hum Neurosci. 2013;7:367.
- Garrison JR, Fernyhough C, McCarthy-Jones S, Simons JS, Sommer IEC. Paracingulate sulcus morphology and hallucinations in clinical and nonclinical groups. Schizophr Bull. 2018.

OPEN ACCESS

*Correspondence:

Chuanjun Zhuo, Department of Psychiatric, Neuroimaging, Genetics Laboratory, Institute of Mental Health, Jining Medical University, Jining, Shandong Province, 272119, China, Tel: 86-537-24394542; Fax: 8653724394542; E-mail: chuanjunzhuotjmh@163.com Received Date: 17 Apr 2019 Accepted Date: 06 May 2019 Published Date: 09 May 2019

Citation:

Cheng L, Du X, Ji F, Tian H, Wang L, Zhang W, et al. White Matter Alterations in Healthy Individuals with Auditory Verbal Hallucinations Exposed to Atypical Antipsychotics: A Pilot Study. Ann Clin Case Rep. 2019; 4: 1651. ISSN: 2474-1655

Copyright © 2019 Chuanjun Zhuo. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

- Spray A, Beer AL, Bentall RP, Sluming V, Meyer G. Microstructure of the superior temporal gyrus and hallucination proneness - a multicompartment diffusion imaging study. Neuroimage Clin. 2018;20:1-6.
- 8. Bohlken MM, Hugdahl K, Sommer IE. Auditory verbal hallucinations: neuroimaging and treatment. Psychol Med. 2017;47(2):199-208.
- Slotema CW, Blom JD, Niemantsverdriet MBA, Sommer IEC. Auditory verbal hallucinations in borderline personality disorder and the efficacy of antipsychotics: a systematic review. Front Psychiatry. 2018;9:347.
- 10. Johnsen E, Hugdahl K, Fusar-Poli P, Kroken RA, Kompus K. Neuropsychopharmacology of auditory hallucinations: insights from

pharmacological functional MRI and perspectives for future research. Expert Rev Neurother. 2013;13(1):23-36.

- Kroken RA, Johnsen E. Is rational antipsychotic polytherapy feasible? A selective review. Curr Psychiatry Rep. 2012;14(3):244-51.
- Bach M, Laun FB, Leemans A, Tax CM, Biessels GJ, Stieltjes B, et al. Methodological considerations on tract-based spatial statistics (TBSS). Neuroimage. 2014;100:358-69.