

论著

早发性精神分裂症脑功能连接的功能磁共振

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摘要:

目的: 探讨早发性精神分裂症患者在静息状态下是否存在脑功能连接异常以及异常区域的定位。方法: 采用第4版美国精神障碍诊断与统计手册(diagnostic and statistical manual, fourth edition,DSM-IV)诊断标准诊断早发性精神分裂症患者19例。对19例早发性精神分裂症患者及19例正常对照分别进行静息状态下的功能磁共振(fMRI)检查。选取扣带回为感兴趣区,对早发性精神分裂症患者和正常对照进行静息状态下全脑的磁共振脑功能扫描。比较两组的脑区与扣带回之间的功能连接的差异,对处理后的两组功能连接的图像,以体素为基础,进行两样本t检验。结果:早发性精神分裂症在静息状态下存在功能连接的异常,包括功能连接减低和功能连接增强。功能连接减低的脑区包括双侧小脑后叶、额上回、额中回、直回、海马、楔回、梭状回、枕中回、枕下回、右侧颞下回、右侧颞中回、右侧角回。而功能连接增强的区域为左侧颞中回和左侧颞下回。结论:早发性精神分裂症在静息状态下存在脑区与扣带回的功能连接异常。静息状态下的fMRI将在精神分裂症的研究中发挥重要作用。

关键词: 早发性精神分裂症 功能磁共振 静息状态 脑功能连接

Brain functional connectivity of functional magnetic resonance imaging of patients with early-onset schizophrenia

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Abstract:

ObjectiveTo detect whether and where brain functional connectivity exists in the resting state of patients with early-onset schizophrenia by using functional magnetic resonance imaging (fMRI). MethodsNineteen early-onset schizophrenic patients were diagnosed with Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) of American Psychiatric Association. The 19 early-onset schizophrenic patients and another 19 healthy volunteers underwent fMRI in resting state. Cingulate gyrus was selected as region of interest and the difference was analyzed in the cingulate gyrus functional connectivity pattern between the 19 patients with early-onset schizophrenia (EOS) and 19 matched controls using resting-state fMRI. A two-sample t test was performed on the individual in a voxel by voxel manner. ResultsStatistical map was set a combined threshold of $P < 0.005$ and the number of voxel > 20 . Functional connectivity in the resting state was abnormal in the patients, including decreased functional connectivity and increased functional connectivity. The abnormal area was distributed all over the brain. The brain area with decreased functional connectivity included bilateral posterior cerebellar lobes, superior frontal gyrus, middle frontal gyrus, gyrus rectus, hippocampus, cuneus gyrus, fusiform gyrus, middle occipital gyrus, inferior occipital gyrus, right inferior temporal gyrus, right middle temporal gyrus, and right angular gyrus. The brain area with increased functional connectivity included left middle temporal and left inferior temporal gyrus. ConclusionAbnormal cingulate gyrus functional connectivity of schizophrenia might exist in the resting state. Resting state fMRI is important for the research of schizophrenia.

Keywords: early-onset schizophrenia; functional magnetic resonance imaging(fMRI); resting state; brain functional connectivity

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参考文献:

- [1] Friston K J, Frith C D. Schizophrenia: a disconnection syndrome? [J] . Clin Neurosci, 1995, 3(2): 89-97.
- [2] First M B, Spitzer R L, Gibbon M, et al. Structured Clinical Interview for DSM-IV-TR axis I disorders, patient edition (SCID-I/P, fourth Edition, revision) [M] . New York: New York State Psychiatric Institute, Biometrics Research Department,2001.
- [3] Zhou Y,Liang M,Jiang T,et al.Functional dysconnectivity of the dorsolateral prefrontal cortex in first-episode schizophrenia using resting-state fMRI [J] . Neurosci Lett, 2007,417(3):297-302.
- [4] Greicius M D, Krasnow B,Reiss A L,et al. Functional connectivity in the resting brain:a network analysis of the default mode hypothesis [J] .Proc Natl Acad Sci USA, 2003,100(1): 253-258.
- [5] Foucher J R,Otzenberger H,Gounot D.Where arousal meets attention: a simultaneous fMRI and EEG recording study [J] .Neuroimage, 2004,22(2): 688-697.
- [6] Cohen J D, Botvinick M, Carter C S. Anterior cingulate and prefrontal cortex: who' s in control? [J] . Nat Neurosci, 2000, 3(5): 421-423.
- [7] Tamminga C A, Vogel M, Gao X.et al. The limbic cortex in schizophrenia: focus on the anterior cingulate [J] . Brain Res Brain Res Rev, 2000, 31(2/3):364-370.
- [8] Dierks T, Lindon D E J, Jandl M, et al. Activation of Heschl' s gyrus during auditory hallucinations [J] . Neuron,1999, 22(3):615- 621.
- [9] Fallon J H,Opole I O,Potkin S G, et al.The neuroanatomy of schizophrenia: circuitry and neurotransmitter systems [J] . Clin Neurosci Res, 2003, 77(1): 77-107.
- [10] Fox M D, Snyder A Z,Vincent J L,et al. The human brain is intrinsically organized into dynamic,anticorrelated functional networks [J] . Proc Natl Acad Sci USA, 2005, 102(27):9673-9678.
- [11] Katanoda K,Yoshikawa K,Sugishita M,et al.A functional MRI study on the neural substrates for writing [J] .Hum Brain Mapp, 2001, 13(1):34-42.
- [12] Preibisch C, Berg D, Hofmann E, et al.Cerebral activation patterns in patients with writer' s cramp: a functional magnetic resonance imaging study [J] .J Neurol, 2001, 248(1): 10-17.
- [13] Wassink T H, Andreasen N C, Nopoulos P,et al. Cerebellar morphology as a predictor of symptom and psychosocial outcome in schizophrenia [J] . Biol Psychiatry, 1999,45(1):41-48.
- [14] Neckelmann G, Specht K, Lund A,et al. Mr morphometry analysis of grey matter volume reduction in schizophrenia: association with hallucinations [J] . Int J Neurosci, 2006,116(1):9-23.
- [15] Middleton F A, Strick P L.Cerebellar projections to the prefrontal cortex of the primate [J] .J Neurosci, 2001, 21(2): 700-712.
- [16] Mitelman S A,Buchsbaum M S,Brickman A M,et al.Cortical intercorrelations of frontal area volumes in schizophrenia [J] .NeuroImage, 2005, 27(4): 753-770.
- [17] Gallagher H L, Frith C D. Functional imaging of theory of mind [J] . Trends Cogn Sci, 2003, 7(2): 77-83.
- [18] Frith U, Frith C D. Development and neurophysiology of mentalizing [J] . Philos Trans R Soc Lond B Biol Sci, 2003, 358(1431): 459-473.
- [19] Lui S, Deng W, Huang X, et al.Association of cerebral deficits with clinical symptoms in antipsychotic-naive first-episode schizophrenia: an optimized voxel-based morphometry and resting state functional connectivity study [J] . Am J Psychiatry. 2009,166(2): 134-136.
- [20] Friston K J, Frith C D, Frackowiak R S J. Time-dependent changes in effective connectivity measured with PET [J] . Human Brain Mapping, 1993, 1: 69-80.
- [21] Davies C E, Jeste D V, Eyler L T. Review of longitudinal functional neuroimaging studies of drug treatments in patient with schizophrenia [J] . Schizophr Res, 2005,78(1): 45-60.
- [22] Schlosser R,Wagner G,K hler S, et al. Schizophrenia as a disconnection syndrome.Studies with functional magnetic resonance imaging and structural equation modeling [J] .Radiologe,2005,45(2): 137-140,142-143.

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