

论著

青年重性抑郁症患者弥散张量和静息状态下的功能磁共振成像

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摘要:

目的: 利用弥散张量成像(diffusion tensor imaging, DTI)和静息状态下功能磁共振成像(functional magnetic resonance imaging, fMRI)技术, 探讨抑郁症可能的病因和发病机制。方法: 对16例青年重性抑郁症患者(抑郁症组)和16例性别年龄及受教育程度匹配的自愿者(对照组)进行DTI和静息状态fMRI研究, 采用基于体素法(voxel-based method, VBA)分析全脑的分数各向异性(fractional anisotropy, FA), 局部一致性(regional homogeneity, ReHo)法处理fMRI数据, 并进行两组比较。结果: 抑郁症患者双侧额中回、双侧中央前回、左颞上回、右颞中回、左梭状回、右枕颞外侧回、左角回、左岛叶、左小脑后叶的FA值较对照组低(P<0.01)。抑郁症患者双侧额上回、双侧额中回、双侧额叶内侧回、双侧中央旁小叶、双侧中央后回、右顶下小叶、右楔状叶、左枕中回、左语言中枢、左颞上回、右颞中回、右扣带回及右壳核ReHo值较对照组明显降低(P<0.01)。结论: 青年重性抑郁症患者存在广泛的脑白质微观结构损害和脑功能异常, 多个脑区及它们之间的结构和功能连接失常可能是抑郁症发病的重要因素之一。

关键词: 抑郁症 功能磁共振成像 静息状态 局部一致性 弥散张量 分数各向异性

Diffusion tensor imaging and resting state functional magnetic resonance imaging on young patients with major depressive disorder

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Abstract:

Objective To explore the pathological mechanism of brain function and structure in young patients with major depressive disorder by diffusion tensor imaging(DTI)and resting state functional magnetic resonance imaging(fMRI).Methods Sixteen participants diagnosed with major depression (MD) and 16 healthy age and gender-matched controls (HC) were recruited. Resting state fMRI and DTI brain scans were performed on all participants. A voxel-based method (VBM) was used to analyze the DTI datasets, and regional homogeneity (ReHo) approach was applied to preprocess the fMRI datasets. The value of fractional anisotropy (FA) and ReHo maps were obtained in the whole brain.Results FA values in the MD group were significantly lower than those of the healthy controls in the white matter of the left middle temporal gyrus, right middle frontal gyrus, left medial frontal gyrus, right precentral gyrus, left angular gyrus, left fusiform gyrus, left superior temporal gyrus, right middle temporal gyrus, right sub-gyral, left insula, and left pyramis (P<0.01). ReHo in the MD group decreased in the left superior frontal gyrus, right superior frontal gyrus, left middle frontal gyrus, right middle frontal gyrus, left medial frontal gyrus, right medial frontal gyrus, left paracentral lobule, right paracentral lobule, right inferior parietal lobule, left postcentral gyrus, right postcentral gyrus, left middle occipital gyrus, left lingual gyrus, right putamen, right cingulate gyrus, right cuneus, left superior temporal gyrus, and right middle temporal gyrus (P<0.01). Conclusion Abnormality of brain white microstructure and function exist widely in young patients with major depressive disorder. Abnormal connection of structures and function between the brain areas may be the key reason for the depression.

Keywords: depressive disorder; functional magnetic resonance imaging; resting state; regional homogeneity; diffusion tensor; fractional anisotropy

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