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磁共振扩散张量成像在儿童脑性瘫痪诊断中的价值

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作者	单位
王欣欣	浙江省人民医院儿科
丁忠祥	放射科
袁建华	放射科
毛德旺	放射科
罗晓明	浙江省人民医院儿科
李玉梅	放射科
陈方宏	放射科

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中文摘要：目的探讨扩散张量成像在儿童脑瘫诊断中的价值。方法将42 例脑瘫患儿及性别、年龄相匹配的42 例健康儿童作为研究对象。进行常规脑MR 平扫检查后，行脑的DTI 检查，得到ADC 图、FA 图及彩色编码FA 图。分别于双侧半卵圆中心、内囊前肢、内囊膝部、内囊后肢、环池水平皮质脊髓束设置感兴趣区(ROI)，测定每个ROI 的FA、ADC 值，并以环池水平的皮质脊髓束及同侧内囊后肢为ROI，分别作出两侧皮质脊髓束图。结果42 例脑瘫患儿中，6 例常规颅脑MRI显示正常，36 例分别显示为脑室周围白质软化（PVL）、脑萎缩、脑裂畸形等。42 例脑瘫患儿ADC 图、FA 图、彩色编码FA 图显示异常。脑瘫组半卵园中心、皮质脊髓束FA降低、ADC 值增高，与正常对照相比均有显著性差异（P<0.05）。结论DTI检查对脑瘫患儿的诊断及白质纤维损伤具有重要的价值，尤其是常规颅脑MRI显示为正常的可疑脑瘫患儿，进行DTI检查是必要的。

中文关键词：儿童　脑　扩散张量成像　纤维追踪成像

Diagnostic Value of Diffusion Tensor Imaging in Children with Cerebral Palsy

Abstract: ObjectiveTo explore the diagnostic value of diffusion tensor imaging (DTI) in children with cerebral palsy. MethodsForty-two children with cerebral palsy as diseased group and 42 healthy children as control group were recruited in the study. The age and gender were matched between the two groups. Conventional plain MR scans and DTI sequence of brain were performed in all subjects by Siemens Trio 3.0T MR system. ADC maps, FA maps and color-coded FA maps were obtained. FA and ADC value of regions of interest (ROI) on cerebral structures were measured, including bilateral centrum semiovale; anterior limb, genu and posterior limb of internal capsule; corticospinal tract at the level of the cisterna ambiens. Corticospinal tract was achieved regarding corticospinal area at the level of cisterna ambiens and ipsolateral posterior limb of internal capsule as ROI respectively. ResultsIn all 42 children with cerebral palsy, 6 showed normal on conventional MR imaging, 36 appeared periventricular leukomalacia, brain atrophy, or schizenciphaly respectively. All 42 children with cerebral palsy showed abnormal on ADC map, FA map and color-coded FA map. Compared to the data of healthy children, FA and ADC value of centrum semiovale and corticospinal tract in children with cerebral palsy showed statistically significant difference (P<0.05). ConclusionDTI has significant clinical value in the diagnosis in children with cerebral palsy and injury of white matter. It is necessary for children with cerebral palsy to do DTI sequence, especially for children with cerebral palsy which conventional MR imaging shows normal.

keywords: Child　Brain　Diffusion tensor imaging　Fiber tractography

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