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## 帕金森病的扩散张量成像研究

### Diffusion tensor imaging study of Parkinson disease

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#### 中文摘要:

目的 研究帕金森病(PD)患者锥体外系和部分功能区的扩散张量成像(DTI)参数变化及其与PD的关系。方法 PD患者30例作为研究组,按Hoehn-Yahr分级量表将20例双侧症状患者作为中晚期PD组,10例单侧症状PD患者作为早期PD组。选取年龄和性别匹配的健康志愿者30名作为对照组。所有受试者均接受常规MR头部平扫和DTI检查。在FA图和ADC图上测量各兴趣区(双侧黑质、红核、苍白球、壳核、尾状核、丘脑、胼胝体膝部、胼胝体压部、扣带回、额叶白质和中央前回)的FA值和ADC值,并进行统计分析。结果 PD组的黑质、尾状核、丘脑和胼胝体压部的FA值较对照组明显减低( $P<0.05$ );中晚期PD组的中央前回的FA值较对照组和早期PD组明显减低( $P<0.05$ ),中晚期PD组的扣带回的FA值低于对照组( $P<0.05$ );中晚期PD组、早期PD组与对照组其余兴趣区的FA值差异无统计学意义;PD病变的严重程度与黑质FA值呈负相关( $r=-0.039, P=0.025$ )。3组之间各兴趣区的ADC值差异无统计学意义,但随着病情级别的增加,ADC值呈增高趋势。结论 黑质、尾状核、丘脑和胼胝体压部的FA值有助于PD的早期诊断;DTI可为PD的在体研究提供更多与病理机制和临床表现有关的有价值信息。

#### 英文摘要:

**Objective** To investigate the change of diffusion tensor imaging (DTI) parameters on extracortical tract and some domain in Parkinson disease (PD), and to explore the relationship between DTI parameters and PD. **Methods** Ten PD patients with unilateral symptoms and 20 with bilateral symptoms were enrolled in PD group 1 and PD group 2, respectively. Control group included 30 volunteers whose age and sex matched with those of PD group. PD patients and the subjects in control group underwent routine MR plain scan and DTI scan. FA and ADC maps were obtained after postprocessing. FA values and ADC values of ROI (region of interest) were measured. ROI included substantia nigra (SN), red nucleus (NR), globus pallidus (GP), putamen (PUT), caudate nucleus (CN), thalamus, genu of corpus callosum, splenium of corpus callosum, callosal gyrus, white matter of frontal lobe and anterior central gyrus. All data were analyzed statistically. **Results** FA value of SN, CN, thalamus and splenium of corpus callosum of PD group degraded obviously compared with that of control group ( $P<0.05$ ). FA value of PD group 1 was lower than control group and PD group 2 at anterior central gyrus and callosal gyrus ( $P<0.05$ ). There was no significant difference of FA value among PD groups and control group at other ROI. There was negative correlation between the changes of FA value at SN and PD grade. No significant difference was found in ADC value among PD group 1, PD group 2 and control group, but there was an increasing tendency of ADC value along with the progress of PD. **Conclusion** FA values of SN, CN, thalamus and splenium of corpus callosum can offer some important information for the early diagnosis of PD. DTI is useful for the study about PD's pathomechanism and clinical manifestation in vivo.

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