

论文

SWI及DTI在弥漫性轴索损伤慢性期的应用价值

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摘要:

目的 探讨磁敏感加权序列(SWI)及扩散张量成像(DTI)在弥漫性轴索损伤(DAI)慢性期的应用价值。方法 对12例CT及常规MRI无明显异常DAI慢性期的患者, 15例轻度脑外伤复查患者及15例健康志愿者进行超高场MR扫描, MRI采用GE Signa EXCITE II磁共振扫描系统, 序列包括T2*GRE、SWI、DTI, 由两名高年资放射科诊断医师共同分析MR图像, 对出血灶进行计数。在FA图上分别测量脑内多个感兴趣区的FA值。并将发现出血灶的数量及测得分数各向异性(FA)值分别与患者的GOS评分进行相关性分析。结果 在DAI中, SWI序列能发现更多的出血灶, 与T2*GRE相比差异显著(P<0.01)。在轻度脑外伤及健康对照组均未发现微出血灶; DAI组与轻度脑外伤组相比, 除了顶叶、丘脑、胼胝体压部, 其他感兴趣区的FA值、DAI组与健康对照组相比, 所有的感兴趣区的FA值均有显著性差异(P<0.05)。轻度脑外伤组与健康对照组间无明显差异(P>0.05); DAI患者中, 出血灶的数量、胼胝体膝部的FA值与GOS评分相关(r=-0.6775, P=0.0314; r=0.8360, P=0.0097)。结论 SWI及DTI可以更清晰的显示DAI病变, 并可以评价其损伤的程度。

关键词: 磁共振成像; 弥漫性轴索损伤; 磁敏感成像; 弥散张量成像

Application values of SWI and DTI in the chronic stage of diffuse axonal injury

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Abstract:

Objective To evaluate the application values of magnetic resonance imaging (SWI) and diffusion tensor imaging (DTI) in the chronic stage of diffuse axonal injury (DAI). Methods Three groups of people including 12 chronic DAI patients with normal CT and conventional MRI appearance, 15 patients with mild traumatic brain injury (mTBI) and 15 healthy volunteers (controls), were examined by GE Signa EXCITE II 3.0 MR scanner. T2*GRE, SWI, and DTI were performed and the MR images were analyzed by 2 experienced radiologists. The number of microbleeds was counted and the values of FA were measured in various ROIs. Correlation analysis was performed between Glasgow outcome scale (GOS) scores, the number of microbleeds and FA values. Results ① In the the DAI group, SWI detected more microbleeds than T2*GRE did (P<0.01). No microbleed was detected in the other 2 groups. ② Between DAI and mTBI groups, there were significant differences in the FA values in the ROIs(P<0.05) except for the parietal lobe, thalamus and the splenium of corpus callosum. Between the DAI and control groups, there were significant differences in all of the ROIs(P<0.05). ③ There was no significant difference between mTBI and the control groups(P>0.05). ④ The GOS scores were correlated with the number of microbleeds (r=0.6775, P=0.0314) and the FA value in the genu of the corpus callosum (r=0.8360, P=0.0097). Conclusion SWI and DTI can reveal DAI more distinctly, and evaluate the extent of the injury.

Keywords: Magnetic resonance imaging; Diffuse axonal injury; Susceptibility weighted imaging; Diffusion te

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