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组织弥散弹性成像定量分析软件评价大鼠肝纤维化分期

Tissue dispersion elastography quantitative analysis software in evaluation on hepatic fibrosis staging in rats

作者	单位	E-mail
丁静	首都医科大学附属北京友谊医院超声科, 北京 100050	
钱林学	首都医科大学附属北京友谊医院超声科, 北京 100050	qianlinxue2002@yahoo.com.cn

中文摘要:

目的 探讨组织弥散弹性成像定量分析软件评价大鼠肝纤维化分期的可行性。 方法 对48只不同肝纤维化分期的大鼠及8只正常大鼠进行实时超声弹性成像(RTE)检查,通过组织弥散定量分析软件分析弹性图,获得弹性特征参数,包括应变均值、标准差、低应变区面积百分比、复杂度、峰度、偏度、对比度、均等性、杂乱度、一致性和相关性;比较不同肝纤维化分期大鼠上述参数的差异,分析其与肝纤维化分期的相关性。 结果 除复杂度和一致性外,其他参数在不同肝纤维化分期大鼠间差异均有统计学意义($P<0.05$);相关分析显示除复杂度和一致性外,其他参数均与病理分期具有相关性($P<0.05$),其中低应变区面积百分比与病理分期相关性最好($r=0.75,P<0.001$)。以低应变区面积百分比判断肝纤维化分期绘制ROC曲线,曲线下面积分别为0.88(≥F1期)、0.92(≥F2期)、0.90(≥F3期)、0.94(F4期)。 结论 RTE中应用组织弥散定量分析软件可评估大鼠肝纤维化分期。

英文摘要:

Objective To explore the feasibility of tissue dispersion quantitative analysis software in evaluation on hepatic fibrosis stages in rats with real-time ultrasonic elastography (RTE). **Methods** Forty-eight rats of different hepatic fibrosis stages and 8 normal rats were examined by RTE. Characteristic parameters of elastography imaging, including average relative strain value, standard deviation of relative strain value, area ratio of low-strain region, complexity, kurtosis, skewness, contrast, entropy, inverse different moment, angular second moment and correlation were obtained using tissue dispersion quantitative analysis software. The above parameters in the rats of different hepatic fibrosis stages were compared, and their correlation with pathological stages were analyzed. **Results** There were significant differences of all parameters among rats of different hepatic fibrosis stages, except for complexity and angular second moment. All parameters except for complexity and angular second moment had correlation with pathological stages (all $P<0.05$), in which the area ratio of low-strain region had the highest related coefficient ($r=0.75, P<0.001$). The area under ROC curve for area ratio of low-strain region was 0.88 (≥F1 stage), 0.92 (≥F2 stage), 0.90 (≥F3 stage) and 0.94 (F4 stage), respectively. **Conclusion** Tissue dispersion quantitative analysis software is helpful to the evaluation on hepatic fibrosis stages in rats with RTE.

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