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相对表观弥散系数鉴别兔良、恶性淋巴结

Relative apparent diffusion coefficient in the differentiation of benign and malignant lymph nodes in rabbit models

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中文关键词： 扩散磁共振成像 淋巴结 肿瘤转移 相对表观弥散系数 可重复性

英文关键词:Diffusion magnetic resonance imaging Lymph nodes Neoplasm metastasis Relative apparent diffusion coefficient Repeatability

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中文摘要：

目的 通过动物模型评价相对表观弥散系数(rADC)在良、恶性淋巴结鉴别中的价值。 **方法** 20只新西兰大白兔随机分为两组,每组10只,分别建立炎性淋巴结模型(良性组,共10个淋巴结)及VX2转移淋巴结模型(恶性组,共16个淋巴结)。对所有实验兔均行常规MRI及弥散加权成像(DWI)。由2名医师以3种不同大小的感兴趣区(RO)I测量肌肉的表观弥散系数(ADC)值,评价肌肉作为rADC值的参照脏器的可重复性。测量良性淋巴结、恶性淋巴结及淋巴结对侧股四头肌的ADC值,计算良性淋巴结/肌肉及恶性淋巴结/肌肉的rADC值,并进行统计学分析。 **结果** 5个体素大小的ROI下测量肌肉的ADC值具有较好的可重复性。良、恶性组淋巴结的ADC值及rADC值差异均有统计学意义(P均<0.05)。利用ADC值鉴别良、恶性淋巴结的ROC曲线下面积(AUC)为0.82,敏感度为86.67%,特异度为80.00%,准确率为84.00%;利用rADC值进行鉴别的AUC为0.97,敏感度为93.33%,特异度为90.00%,准确率为92.00%。 **结论** 当ROI大小选择合适时,肌肉作为rADC值的参照脏器显示出较好的可重复性。较之ADC值,利用rADC值可更准确地鉴别良、恶性淋巴结。

英文摘要：

Objective To assess the value of relative apparent diffusion coefficient (rADC) in the differentiation of benign and malignant lymph nodes in rabbit models. **Methods** Twenty new zealand white rabbits were randomly divided into two groups with 10 rabbits in each group. According to the grouping, the inflammatory (benign group, totally 10 nodes) and metastatic (malignant group, totally 16 nodes) lymph nodes were established respectively. All the rabbits were examined with conventional MRI and diffusion weighted imaging (DWI). Apparent diffusion coefficient (ADC) values of the muscle were measured by two radiologists with three different sizes of region of interest (ROI) in order to evaluate the repeatability of muscles used as the reference organ. ADC values of benign, malignant lymph nodes and the contralateral quadriceps were obtained, and rADC values of benign nodes to muscles and malignant nodes to muscles were calculated. The statistical analysis was performed. **Results** Muscles revealed good repeatability when ROI included 5 pixels. Statistical differences of ADC and rADC values in nodes were found between benign and malignant groups (all P<0.05). When using ADC value to differentiate benign and malignant nodes, the area under the ROC curve (AUC) was 0.82, and the threshold of ADC value was 0.88×10^{-3} mm^2/s, while the sensitivity, specificity and accuracy was 86.67%, 80.00% and 84.00%, respectively. When rADC value was used for differentiating, the AUC was 0.97, while the threshold was 0.64 and the sensitivity, specificity and accuracy was 93.33%, 90.00%, and 92.00%, respectively. **Conclusion** Muscles revealed good repeatability as a reference organ when appropriate ROI was selected. Using rADC values can differentiate benign and malignant lymph nodes more accurately than ADC values in rabbit models.

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