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斑点追踪技术评价兔心尖部室壁瘤形成的瘤体力学特点

Assessment on strain change of rabbits with apical ventricular aneurysm using speckle-tracking echocardiography

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中文摘要：

　　目 的　二维超声斑点追踪技术(STI)分析兔心肌应变率变化特点及其预测室壁瘤形成的力学评价价值。　方 法　利用20只新西兰白兔制作室壁瘤模型,4周后根据超声及病理学检查分为室壁瘤组和无室壁瘤组。应用STI分别测量并分析左心室短轴心尖水平径向应变率(SrR)和圆周应变率(SrC)的收缩期峰值(SrR-S、SrC-S)、舒张早期应变率峰值(SrR-E、SrC-E)及舒张晚期应变率峰值(SrR-A、SrC-A)。　结 果　与无室壁瘤组比较,室壁瘤组各节段三期SrR及SrC峰值均降低(P均<0.05)。各节段之间比较,前、侧壁SrR-S、SrC-S下降更为显著(P<0.05)。ROC曲线显示,前、侧壁收缩期SrR曲线下面积分别为0.92、0.91;SrC曲线下面积分别为0.89、0.88。以应变率小于2.00 s^{-1}为临界值,前、侧壁收缩期SrR诊断室壁瘤的敏感度分别为91.70%、89.73%,特异度分别为85.72%、71.41%;前、侧壁收缩期SrC诊断室壁瘤的敏感度分别为90.24%、88.32%,特异度分别为86.41%、85.20%。　结 论　心肌梗死后心尖部室壁瘤形成加重前、侧壁心肌应变的损害,前、侧壁收缩期SrR及SrC的下降程度可作为预测兔梗死心肌形成室壁瘤的重要参考指标。

英文摘要：

　　Objective To evaluate the strain change as well as the predictive value of left ventricular aneurysm (VA) in rabbits by using two-dimensional speckle tracking imaging (STI). **Methods** Twenty New Zealand rabbits were made into models of myocardial infarction concomitant with VA. Four weeks after the procedure, according to pathological inspect and echocardiography for whether VA formed, the experimental animals were divided into VA group and non-VA group. STI was performed to measure the peak systolic, peak early diastolic, peak late diastolic radial strain rate (SrR-S, SrR-E, SrR-A), and the peak systolic, peak early diastolic, peak late diastolic circumferential strain rate (SrC-S, SrC-E, SrC-A) were measured by STI software for each animal at the levels of apex in LV short-axis view. **Results** Compared with non-VA group, SrR-S, SrR-E, SrR-A, SrC-S, SrC-E, SrC-A in all segments reduced significantly in VA group (all P<0.05). Comparison between each section, SrR-S, SrC-S in the anterior and lateral segments significantly decreased (P<0.05). The areas under the ROC curve of SrR-S, SrC-S in the anterior and lateral segments was 0.92,0.91 and 0.89, 0.88, respectively (all P<0.05). When the critical value of myocardial strain rate was defined as 2.00 s^{-1}, the sensitivity and specificity of SrR-S in the anterior and lateral segments to predict VA were 91.70%, 89.73% and 85.72%, 71.41%, respectively, while the sensitivity and specificity of SrC-S in the anterior and lateral segments to predicts VA were 90.24%, 88.32% and 86.41%, 85.20%, respectively. **Conclusion** The myocardial strain rate in the anterior and lateral segments significantly reduced after VA formation. SrR and SrC in the anterior and lateral segments can be used as important indicators to predict the formation of VA after myocardial infarction for rabbits.

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