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二维斑点追踪技术评价脓毒症兔模型左心室收缩功能

Evaluation of left ventricular systolic function of rabbits with sepsis using two-dimensional speckle trackin imaging

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中文摘要:

目的 应用超声斑点追踪技术(STI)评价脓毒症兔左心室收缩功能变化。 方法 将24只健康家兔随机分为实验组(*n*=12)和对照组(*n*=12),分别经耳缘静脉注射0.8 mg/kg体质量的内毒素(和4 ml/kg体质量生理盐水;于注入LPS/生理盐水前、后2、4、6、8、12 h对两组兔行常规超声心动图和STI检查,测定左心室舒张末期内径(LVDd)、左心室收缩末期内径(LVDs)、心输出量O)、左心室射血分数(LVEF)、左心室缩短分数(LVFS),左心室整体纵向应变(GLS)、整体圆周应变(GCS)、整体径向应变(GRS)。在LPS注入后6、8、12 h获得心肌标本,利用光镜观察兔心理改变。 结果 与对照组比较,实验组注入LPS后2、4 h时LVEF、LVFS和GRS无明显改变(*P*>0.05),GLS、GCS显著下降(*P*<0.05);注入LPS后6、8、12 h,LVDd、LVDs增大(*P*<0.05),LVEF、S明显下降(*P*<0.05),GLS、GCS、GRS均有明显降低(*P*<0.05)。实验前后两组CO未见明显变化(*P*>0.05)。光镜下实验组兔可见心肌细胞变性、水肿,炎症细胞浸润等病理性改变。 结论 声心动图和STI均能有效评估脓毒症兔早期即血流动力学高动力阶段左心室功能异常,尤其是STI能更早、更敏感地发现脓毒症兔心肌异常形变。

英文摘要:

Objective To observe the left ventricular systolic function of rabbits with sepsis using two-dimensional speckle tracking imaging (STI). **Methods** Twenty-four healthy rabbits were divided rando into experimental group and control group (each *n*=12). Rabbits in experimental group were given LPS (0.8 mg/kg) by intravenous injection, while in the control group were injected with saline (4 ml/k The parameters of conventional echocardiography and 2D STI were obtained before injection of LPS/saline and 2 h, 4 h, 6 h, 8 h, 12 h after injection, including left ventricular end diastolic diameter (L left ventricular end systolic diameter (LVDs), left ventricular ejection fraction (LVEF), left ventricular fractional shortening (LVFS), cardic output (CO), left ventricular global longitudinal strain (GLS) ventricular global circumferential strain (GCS) and left ventricular global radial strain (GRS). The sample was collected at 6 h, 8 h, 12 h after LPS injection. The pathological changes of cardiac tissue w checked by HE staining. **Results** Compared with control group, left ventricular GLS, GCS decreased significantly 2 h and 4 h after LPS injection in experimental group (all *P*<0.05), while LVEF, LVF GRS did not show significant alterations (all *P*>0.05). At 6 h, 8 h and 12 h after LPS injection, LVDd and LVDs became larger (both *P*<0.05), LVEF and LVFS decreased significantly (both *P*<0.05), C GCS, GRS all showed significant decrease in experimental group (all *P*<0.05). CO did not show alterations before and after the experiment in the two groups (*P*>0.05). Light microscopy showed that rabbits in experimental group had degeneration, edema and inflammatory cell infiltration, etc. **Conclusion** Both conventional ultrasonography and STI can effectively evaluate left ventricular dysfunct the early phase of sepsis rabbits in hyperdynamic hemodynamics. STI can be more earlier and more sensitively find the abnormality of myocardial deformation in rabbits with sepsis.

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