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实时三维超声评估复杂型先心病手术前后左心功能

Pre- and post-operative assessment of left ventricular function in complex congenital heart disease with real-time three-dimensional echocardiography

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中文摘要:

目的 通过实时三维超声心动图(RT-3DE)评估复杂型先心病手术前后左心功能的对比研究,评价其临床价值。方法 22例复杂型先心病经RT-3DE检查后,应用Tomtec三维容量测量软件的心尖长轴8平面法进行手术前后左心室舒张末和收缩末容量、搏出量及射血分数等左心功能指标的测量,并用配对t检验及直线相关分析进行对比研究。结果 与术前(18.7±14.9)ml、(9.0±7.3)ml相比,术后左心室舒张末期容量(22.2±17.6)ml明显升高,术前后有显著性差异,而收缩末期容量(9.5±7.8)ml略升高,手术前、后差异无统计学意义。直线相关分析则示术前后收缩末期容量($r=0.97$)相关性高于舒张末期容量($r=0.95$),提示术前左心功能降低主要与舒张末期容量较小有关。与术前相比,术后搏出量明显升高,且术后射血分数(0.58±0.03 vs 0.52±0.03)也较术前增高,提示成功纠正左右心分流后左心功能改善,趋于正常。结论 通过对复杂型先心病作出精确的心功能定量评估,RT-3DE可完善复杂型先心病术前功能诊断,并对手术矫治和术后随访、预后判断等有指导意义。

英文摘要:

Objective To compare the pre- and post-operative left ventricular functions in children with complex congenital heart disease (CHD) with real-time three-dimensional echocardiography (RT-3DE). **Methods** Twenty-two consecutive patients with complex CHD were examined with Phillips RT-3DE System, the pre- and post-operative left ventricular functions such as left ventricular volume, stroke volume and ejection fraction were estimated and compared by Tomtec RT-3DE apical longitudinal 8-plane method, and the outcomes were assessed with paired *t*-test and Pearson's correlation coefficient analysis. **Results** Compared with pre-operative left ventricular end-diastolic and end-systolic volumes (18.7±14.9)ml and (9.0±7.3)ml, post-operative left ventricular end-diastolic volumes (22.2±17.6) ml increased after surgical intracardiac repair, while no obvious change of end-systolic volumes (9.5±7.8)ml was observed after surgical operation. Correlations of the pre- and postoperative left ventricular end-systolic volumes ($r=0.97$) were higher than those of the pre- and postoperative left ventricular end-diastolic volumes ($r=0.95$). The results indicated that the preoperative left ventricular end-diastolic volumes in the preoperative assessment of left cardiac function was lessened more than its left ventricular end-systolic volumes. Accordingly, compared with pre-operative stroke volumes (9.6±7.6)ml, post-operative stroke volumes (12.7±9.8)ml markedly increased ($P<0.05$). Moreover, post-operative ejection fractions of left ventricles increased (0.58±0.03 vs 0.52±0.03) significant difference, suggesting that left cardiac functions were improved and gradually close to normal cardiac function after the left-to-right shunt was corrected. **Conclusion** RT-3DE can provide quantitative information of cardiac function for pre- and post-operative follow-up and prognostic prediction in complex CHD.

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